Language Disorders

from Infancy through Adolescence

Listening, Speaking, Reading, Writing, and Communicating

Fourth Edition

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To the memory of my father, who was the kind of teacher I have always tried to be, and of my sister, whose too-short life was devoted to helping handicapped children.

— Rhea Paul

A Note to the Instructor

This book attempts to tell students everything they ever wanted to know—and then some—about child language disorders. It covers the entire developmental period and delves into many additional concepts that are important to the treatment of child language disorders, including prevention, syndromes associated with language disorders, and multicultural practice. The fourth edition of *Child Language Disorders from Infancy through Adolescence* brings a tremendous new resource to this work: Dr. Courtenay Norbury of the Department of Psychology at Royal Holloway, University of London, has joined me in updating this edition. Dr. Norbury is one of the foremost young researchers in child language disorders in the world today, and she has an astonishing command of emerging evidence on genetic, neuropsychological and neurophysiological aspects of child language disorders. Her perspective adds greatly to the currency of this edition. She also brings with her a commitment to integrating all forms of linguistic communication into our work. So a major change you will see in this edition is a heightened emphasis on the effects of language disorders on the acquisition of reading and writing, not only in school-aged children and adolescents, but in their emergent stages in toddlers and preschoolers. A second change is also thanks to Dr. Norbury. Because of her expertise and our shared interest in autism spectrum disorders, we have added specific recommendations for assessment and intervention approaches for this population to each of the chapters in Sections II and III.

In reviewing the literature since the third edition of this text, one of the changes we have been pleased to see is that many of the intervention approaches described have now undergone more rigorous evaluation. When I prepared the third edition, I found many studies that systematically examined the efficacy of approaches that had been advocated extensively and used widely without much basis in empirical evidence. Preparing the fourth edition, we have been happy to learn that many of these studies have now been aggregated and subjected to meta-analyses, so that the evidence in their favor has become clearer and stronger. This has been one of the most gratifying aspects of updating the text—seeing our field advance as it develops a stronger commitment to and a broader basis for evidence-based practice.

As before, this book is relatively short on theory (although not quite so short as it was before Dr. Norbury signed on) and long on clinical application and concrete procedures. Our goal has been to provide a broadly based, practical introduction to the field of language pathology to students planning a career as clinicians in speech-language pathology, students who need to know what to do that first Monday morning of their clinical career, but who also need to develop the ability to think critically and creatively about the myriad kinds of clinical problems they would encounter in the course of their practice.

Our hope is that students will use this book during their introductory language disorders course and will also find it a helpful reference as they progress through their clinical education and even into their professional practice. For this reason, students reading the book for the first time may feel that it is too comprehensive, that they cannot possibly absorb all the information in it in one or two terms. They are probably right. Our hope is that their instructors can help them to understand that they can return to the book later and not only refresh their memories, but also take in more of it as their experience broadens and they have more background information and more clinical savvy with which to approach it. Helping students understand that they do not have to master the entire volume the first time through, that they will have opportunities as their career goes on to assimilate more of the material, can help alleviate their anxiety. What they should get from reading the book the first time is knowledge of the basic concepts and vocabulary used in the field, an overview of its issues and controversies, an understanding of the scope of communicative difficulties that make up child language disorders, and a sense of how a speech-language pathologist approaches the processes of assessment and intervention.

In order to provide this sense, case studies and vignettes are included throughout the book. These are meant to serve as examples of applying the material in the text to some real-life situations. In using the case studies in class presentations, one approach might include having students work in groups to come up with alternative approaches to the ones given in the book for dealing with the cases presented. This can help students develop a sense that there is no one "right" way to deal with a client and that several different approaches might be equally appropriate, so long as each takes the client's needs into account. Another way to use the case studies is to have some students present their own clients as case studies for the chapters that apply to them. They can use the case studies in the book as models for applying the principles discussed in the chapter and use a similar approach to come up with an assessment or intervention plan for a client being presented. If the students work on the case in a cooperative learning arrangement, with several groups of four to six students working independently to come up with a plan for the case to present to the whole class, the diversity of possibilities for addressing a client's needs can again be illustrated.

As the Preface of this book states, much of the material contained here represents the authors' opinion or point of view. As a result, many instructors who teach courses in child language disorders will find themselves in disagreement with some aspects of the book's content. Our hope is that instructors will let students know when this happens, and give them that alternate point of view. As we've tried to emphasize throughout the book, language pathology is not a field in which there are long-established sets of accepted premises and practices. Our field is lively with controversy and differing opinions about how to conceptualize, organize, categorize, explain, assess, and treat child language disorders. Students should be aware of this ferment. The best way to give them this awareness is for an instructor to focus on points of disagreement with the text, to elaborate and explicate the differences, and argue an alternative point of view. Students exposed to opposing points of view from two authoritative sources—their teacher and their textbook—have a good chance of becoming critical thinkers about

the material in their coursework and later in their professional practice.

This book is organized into 14 chapters, which could correspond roughly to the 14 weeks of a typical semester. If the book is being used to teach a one-semester course, one chapter of the book could be covered during each week of the term. Increasingly, though, programs in speech-language pathology are expanding their language curriculum to cover two terms rather than one. Some programs divide the curriculum into assessment and intervention portions. Others divide along developmental lines, teaching early assessment and intervention during a first term and language learning disorders in school-age children the second. If this book is used over a two-term sequence using an assessment/intervention structure, the chapters could be covered in the following order:

Term 1	Assessment
Chapter 1	Definitions and Models of Language Disorders in Children
Chapter 2	Principles of Assessment
Chapter 6	Assessment and Intervention in the Prelinguistic Period
Chapter 7	Assessment and Intervention for Emerging Language
Chapter 8	Assessment of Developing Language
Chapter 10	Language, Reading, and Learning in School: What the SLP Needs to Know
Chapter 11	Assessment of Language for Learning
Chapter 13	Assessing Advanced Language

Term 2	Intervention
Chapter 3	Principles of Intervention
Chapter 9	Intervention for Developing Language
Chapter 12	Intervention at the Language-for-Learning Period
Chapter 14	Intervention for Advanced Language
Chapter 4	Special Considerations for Special Populations
Chapter 5	Child Language Disorders in a Pluralistic Society

If, on the other hand, the sequence is organized along developmental lines, the chapters could be covered as follows:

Term 1	Early Assessment and Intervention
Chapter 1	Definitions and Models of Language Disorders in Children
Chapter 2	Principles of Assessment
Chapter 3	Principles of Intervention
Chapter 6	Assessment and Intervention in the Prelinguistic Period
Chapter 7	Assessment and Intervention for Emerging Language
Chapter 8	Assessment of Developing Language
Chapter 9	Intervention for Developing Language

Term 2	Working with Language Learning Disabilities
Chapter 10	Language, Reading, and Learning in School: What the SLP Needs to Know
Chapter 5	Child Language Disorders in a Pluralistic Society
Chapter 11	Assessment of Language for Learning
Chapter 12	Intervention at the Language-for-Learning Period
Chapter 13	Assessing Advanced Language
Chapter 14	Intervention for Advanced Language
Chapter 4	Special Considerations for Special Populations

Finally, if an undergraduate course is included in the child language curriculum, the first section of the book, Topics in Child Language Disorders, could serve as the text for the undergraduate course, and Chapters 6 through 14 could be covered in the graduate curriculum.

Most of the chapters on assessment contain detailed procedures for doing analyses of various communicative behaviors. Some of these contain sample transcripts or other material on which students can try the analyses being presented. The best way to learn these analyses is by doing them, either on the transcripts given in the book or on others provided by the instructor. Having students work in groups, again, reduces their anxiety and provides more heads addressing the problem. Using class time to practice some of the analyses or assigning students to do them as group projects outside of class can be effective ways to be sure that students "get their hands dirty" with the nitty-gritty of analyzing communication. Having done so will give them more confidence to try some on their own and, we hope, to continue using communication analyses in addition to testing as part of their professional practice.

As stated in the preface, the answers to the exercises given in the book are, like all language sampling results, subject to disagreement. If disagreements with the answers given to the exercises occur, this is an excellent opportunity to discuss the reasons for the disagreement and to probe the justification for the opposing judgments. It may be that the instructor and class together will decide that their answer is better than the one given in the text. Over the years the text has been in use, I have received feedback from instructors who worked through the communication samples with their classes, disagreed with the answers in the text, and wrote to let me know. At least two of our analyses have been changed, because instructors were convincing in their arguments. This kind of exercise, too, helps students realize the subjectivity involved in most communicative analyses and brings home the point that so long as analyses are thorough, thoughtful, and careful, they do not always have to be in exact agreement to be useful in intervention planning.

Each chapter has an accompanying study guide at the end to help students review the material. Some instructors may wish to use the study guides to structure discussion of the topics in class. Students also can be encouraged to form study groups and discuss the questions in the guide together. Taking questions from the guides to elicit essay responses on examinations is another way to use them. Students can be encouraged to study the guides for a particular set of chapters on which they are to be tested, and can be told that examination questions will be chosen from among the questions in the guides. I have found this method to be an effective way of getting students to study the full range of material covered, and still have a reasonably small number of questions for them to answer on a 1- or 2-hour examination.

Suggested projects for each chapter are provided at http://evolve.elsevier.com/Paul/Language/. These can be used in several ways. Students can be asked to choose two or three of the suggested projects from the chapters covered each term and turn them in as short papers. Some of the projects also lend themselves to in-class cooperative learning activities. Each set of suggested projects contains several ideas for research papers as well. Instructors might have students choose a research paper subject from the topics listed in the chapters covered for a particular term. In my courses, I have students do two short papers and one 10- to 12-page research paper each term, using the suggested projects for the chapters covered during that term.

The companion website also offers a video vignette to accompany each chapter. These provide additional examples drawn from topics covered in the chapter. Some contain communication samples for analysis, some provide visual models of various approaches to intervention, and others show how children at particular developmental levels manifest language disorders. There are also some comments by parents to help students understand family perspectives. These can be used as in-class material or students can be assigned to view them on their own and discuss them or apply concepts discussed in class to each one. Our hope is that the video vignettes will bring a touch of authenticity and save the instructor hours of YouTube searching!

We hope instructors will find using this book helpful in preparing their students for practice in child language disorders. In some ways, having a comprehensive text should make this job easier. It will no longer be necessary to gather reams of reprints and handouts to copy and distribute in order to cover all the material that needs to be covered. It should no longer be as difficult to find video samples, case studies, and transcripts with which to illustrate points made in class; at least a starter set is provided here. Teaching child language disorders, though, will continue to be a challenge. It requires helping students begin to assimilate the vast amount of information that has been accumulated and letting them know that it won't all stick with them after just one pass. It includes helping students to accept the degree of flux and tension over ideas in the field and teaching them by example to find a way to develop their own point of view on controversial topics. It means imparting the skills to master many specific procedures and concepts without losing sight of the need to remain flexible, creative, and attuned to the needs of each client. While it is hoped that this book can help instructors to meet these challenges, it is certain that teaching child language disorders will remain an exciting and demanding endeavor.

Preface

One thing you will notice right away as you read this book is that it is written in first person. It's cranky, preachy, and personal. Many of the positions taken here will be debated by others in the field. Your instructor, in fact, may disagree with some of the material in the book. It is this lack of consensus among experts in language pathology that prompted us to write this book as we did, in a style that constantly reminds the reader that a lot of what it contains is opinion rather than established fact. Language pathology is a relatively young field, and many of its tenets, assumptions, and paradigms are still in the process of being established. Given this state of affairs, it would be inaccurate to suggest to students that there is a broad consensus about its basic issues. It's just not true, although it is more true now than it was when the first edition of this book appeared, and changes in this edition reflect the evolution of our field. Still, a range of opinion exists, and we've given you our perspective on it. Your instructor's point of view may differ, but our hope is that when it does, you will be exposed to both sets of thinking and be in a better position to establish your own view. While it may seem confusing at first to be told that your textbook does not contain the last word on every question, learning to live with this kind of "creative confusion" is part of what it takes to develop into a thoughtful and critical professional, one who evaluates information rather than merely "consuming" it.

Creative confusion reigns even in the text's practice exercises. The chapters on assessment contain several example transcripts on which you can try the analysis methods discussed in each chapter. Answers to these practice exercises are given in the appendices to these chapters. We've called these "our" answers, rather than the "right" answers. That's because you and your instructor may disagree with some of them. Language pathology is not an exact science. There are no laboratory tests or firmly established quantitative measures. Many of the analyses we do in our business involve a considerable amount of judgment, and even careful judges can sometimes disagree. If you or your instructor disagrees with a judgment we've made about a transcript, consider the opposing positions and try to evaluate the data in light of each. You may come to the conclusion that your analysis is correct and ours is in error. That's happened more than once over the years in which this book has been available. Several times instructors have written that they disagree with one or our answers to the analysis practice items, and in several cases, they have convinced us we were wrong and they were right, so changes in our answers have been made. Again, the important thing is not to decide which answer is right, but to think each decision through, and to develop a consistent set of criteria that you will apply reliably to all the analyses you do, whether or not it conforms to ours. If you have a good justification for your position, stick with it. Developing a clearly delineated set of criteria for analyzing the language you study is the goal of these exercises.

The book is organized into three sections. The first deals with some issues in the practice of language pathology with children that cut across developmental levels. These issues have to do with how we define and organize language disorders, and the basic principles we will try to follow in assessing and intervening with children at any developmental level. Some other topics that apply to children of any age include understanding the causes of language problems with an eye toward making concentrated efforts to prevent them, knowing something about the various syndromes and conditions that often accompany language disorders in children, and developing techniques for working with children who come from cultural or linguistic backgrounds that differ from our own.

The next two sections of the book look in detail at the communicative issues that are specific to each developmental level from birth through adolescence and give assessment and intervention methods targeted for each level. The levels should be thought of as developmental rather than age-related. Because of developmental disabilities, children of widely varying ages could perform at any of these levels, so it is better to try to think of them as representing stages of functioning rather than chronological age. For this reason we have given them labels that do not refer to age.

Section II deals with development from birth to the point at which basic language skills are acquired. In the child language literature, the acquisition of these basic language skills is often indexed by stages introduced by Roger Brown (1973). We have labeled the end of this period with the highest of Brown's stages of early language development, Brown's Stage V. Essentially, this section covers the period of development that normally occurs between birth and the end of the preschool period, at about age 5. It includes information on what is usually considered "early" assessment and intervention and is divided into three periods: the "prelinguistic" stage (corresponding to the first year and a half of normal development), the "emerging language" stage (corresponding to developmental levels from 18-36 months), and the "developing language" phase (corresponding to developmental levels from 3-5 years). Again, though, some developmentally delayed clients who need the methods discussed in these sections will be older than preschool age.

Section III deals with children who have acquired basic oral language skills but have trouble with the linguistic demands of the academic curriculum. They will be at least school age; that is, older than 5 years, though not all clients older than 5 will have skills commensurate with this level. The section divides later language development into two broad periods: "language for learning," which comprises what normal children acquire during the elementary school years, and the "advanced language period," which deals with skills typically learned in adolescence and used in the secondary school curriculum.

Because such a large amount of information is covered in each chapter, we've tried to help students assimilate it by providing a study guide for each one. The guide essentially lists, in question form, all the major topics introduced in the chapter. For the information that is more or less factual, the questions ask you just to recall or review it. For portions of the chapter that are more

conceptual or debatable, the study guide encourages you to discuss or argue the issues. The point of the study guide is to supply an outline to use in reviewing the material in the chapter and to help you organize the information in your own mind. Answering the questions literally is not the most important goal. It's more fruitful to use the guide as a way of thinking back through all the issues raised in the chapter. Because studying this material often involves mastering concepts and understanding issues rather than memorizing facts, many students find that using the guides in study groups is more helpful than doing them alone. Suggested projects that can be used for class assignments are also included for each chapter at http://evolve.elsevier.com/Paul/language/.

In order to bring the discussion down from an abstract to a more concrete level, we've included many vignettes and case studies in the text to illustrate the points being made or to serve as examples of how the principles discussed in the book can be applied in real practice. All the vignettes and case studies are drawn from our own clinical experience, although they are usually embroidered to illustrate a particular point in a short time period. Their purpose is to breathe some life into the text and to show how the methods can be integrated in working with a single child. As case studies, though, they are limited in scope and are not meant to represent the only way to implement the procedures in the text. They are just an example of one way. At http://evolve.elsevier.com/Paul/language/ you will also find a video vignette to accompany each chapter and illustrate some of the points each makes.

Many of the problems that we've raised here—the youth of our field, its lack of a firmly established knowledge base, the fluidity of development that makes age a poor indicator of functioning level—can make the study of language disorders in children a daunting task to beginning clinicians. But these same problems are what make our field so fertile and exciting. There is so much to learn, so much room for growth and acquisition of new knowledge, and so much opportunity for each clinician to contribute unique information and develop innovative methods that really address children's needs. We hope you'll try, as you struggle through the sense of being overwhelmed that inevitably accompanies learning a lot of new things in a short time, to keep those possibilities in mind.

Acknowledgments

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Models of Child Language Disorders

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. Give a brief history of the field of developmental language disorders.
2. Discuss terminology to describe children's language-learning problems.
3. List the aspects and modalities of communication.
4. Discuss diagnostic issues that surround developmental language disorders.
5. Describe different methods used to investigate the biological bases of developmental language disorders.
6. Discuss comorbidity in developmental language disorders.
7. Summarize current theoretical models of developmental language disorders.

When one of us was a graduate student of speech-language pathology, circa 1977, in the course of a seminar in language disorders in children, one whole class session was spent debating just what was meant by *developmental language disorders* (DLD). After a good deal of discussion, it became clear that no one, including the professor, had a really good definition. Instead, most ways of defining it came down to saying what it was not. The disgruntled students were shocked and confronted the professor in dismay: "You mean we've spent this whole term talking about something, and you don't even know what it is?"

Perhaps even more surprising is that some 30 years later, on a different continent, the other of us was engaged in a similar debate. And even today, after all of the advances in our understanding of the underlying architectures and mechanisms that support language development, we are still no nearer a clear consensus on what developmental language disorders are, how they should be defined, or even what they should be called!

The complexities surrounding DLD are illustrated by Jamie's story.

When 6-year-old Jamie was referred for assessment in September, the school's speech-language pathologist (SLP), Ms. Reese, conducted an intensive assessment and reported that Jamie was functioning at the level of a 4-year-old in terms of his expressive and receptive language abilities. The school psychologist also tested Jamie and reported that his nonverbal skills (as measured by a standard IQ test) were borderline, not low enough to be identified as globally delayed or to warrant placement in a special classroom. Ms. Reese therefore decided to include Jamie in her caseload because her testing clearly indicated that his language skills were below the level expected for his chronological age.

Ms. Reese moved to a different school in October and Mr. Timmons took over her caseload. He reviewed Ms. Reese's assessment records and the school psychologist's report. He concluded that Jamie was functioning at the level expected given his mental age, which the school psychologist reported as 4 years 2 months. Mr Timmons therefore dropped Jamie from the caseload and put him on monitoring status.

Who's right? Does Jamie have a language problem, or doesn't he? Even his speech-language pathologist can't decide, yet determining who is eligible for services is one of the major functions of the SLP. What goes into making this decision?

DIAGNOSTIC ISSUES IN DEVELOPMENTAL LANGUAGE DISORDERS

The American Speech-Language and Hearing Association (ASHA) has defined language disorder as an impairment in "comprehension and/or use of a spoken, written and/or other symbol system. The disorder may involve (1) the form of language (phonology, morphology and syntax), (2) the content of language (semantics)

and/or (3) the function of language in communication (pragmatics), in any combination" (1993, p. 40).

This definition assumes a *naturalist* perspective (Tomblin, 2008), in which impairment is characterized as a deviation from the average level of ability achieved by a similar group of people. In this case it is useful because it covers a broad range of language behaviors across different modalities. However, it does not help the clinician decide what differences in language behavior constitute an impairment or at what level of impairment intervention is warranted. In Jamie's case we might ask, should the decision be based on deviation from chronological age expectations, or overall level of cognitive ability? How far behind does a child's language need to be to warrant intervention? Is an isolated impairment in one aspect of language as serious as a more mild impairment across a range of language skills?

Instead of worrying about absolute level of language impairment, we could ask about the *impact* of the language impairment on the child's overall development and ability to function in everyday situations. Tomblin (2008) refers to this as a *normative* perspective, which takes into account society's values and expectations concerning individual behavior. He states that "a language disorder exists when the child's level of language achievement results in an unacceptable level of risk for undesirable outcomes" (p. 95). In other words, a language disorder should only be diagnosed when it interferes with the child's ability to meet societal expectations now or in the future. This could include difficulties with social relationships, academic achievement, and future employment prospects.

Such a definition is neutral regarding the causes of the language impairment; instead, it focuses on those language behaviors that increase risk for adverse outcomes. But how do we identify the level of language impairment that incurs the greatest risk of poor outcome? And how do we measure the impact of language impairment on the child's everyday activities?

You probably won't be surprised to hear that there is little consensus in the field about how best to resolve these issues. You might be more surprised to hear that there is also little consensus about the terms we use to describe these disorders, yet this clearly has an impact on the public awareness of and provisions for developmental language disorders (Bishop, 2010).

A BRIEF HISTORY OF THE FIELD OF LANGUAGE PATHOLOGY

Descriptions of a syndrome of disorders of language learning in children date back to the early nineteenth century to the late eighteenth century (see de Montfort Supple, 2010; Stark, 2010 for more comprehensive reviews). Gall (1825) was one of the first to describe children with poor understanding and use of speech and to differentiate them from those with intellectual disability (ID). Subsequently, a great many discoveries about the relations between the brain and language behavior in adults were made by neurologists such as Broca (1861) and Wernicke (1874). The disorders Gall first identified were thought to be parallel to the aphasias these neurologists were studying in adults. For the first century of the existence of the study of language learning and its disorders, neurologists dominated the field, focusing attention on the physiological substrate of language behavior.

The neurologist Samuel T. Orton (1937) can perhaps be thought of as the father of the modern practice of child language disorders. He emphasized the importance not only of neurological but also of behavioral descriptions of the syndrome and pointed out the connections between disorders of language learning and difficulties in the

acquisition of reading and writing. In the 1940s and 1950s, other medical professionals, such as psychiatrists and pediatricians, took an interest in children who seemed to be unable to learn language but did not have mental retardation or deafness. Gesell and Amatruda (1947) were pioneers in developmental pediatrics; they devised innovative techniques for evaluating language development and recognized the condition they called "infantile aphasia." Benton (1959, 1964) provided the fullest descriptions of children with this syndrome and is credited with evolving the concept of a specific disorder of language learning that is structured by excluding other syndromes, such as autism, deafness, and intellectual disorders, rather than by parallels to adult aphasia.

At about the same time as these medical practitioners were refining notions of language disorders, another group of workers also was advancing concepts about children who failed to learn language. Ewing (1930); McGinnis, Kleffner, and Goldstein (1956); and Myklebust (1954, 1971) were all educators of the deaf and, as such, had developed a variety of techniques for teaching language to children who did not talk or hear. They all noticed that some deaf children's language skills were worse than could be expected on the basis of their hearing impairment alone. This observation led them to focus more interest on the language impairment itself and to attempt to develop more effective methods of remediation for children who did not succeed with the standard approaches that were used to teach language to other children with hearing impairments.

However, until the 1950s, no unified field of endeavor addressed the problems of the language-learning child; considered these problems to be disorders of language itself, rather than a result of some other syndrome (deafness, for example); or treated language disorder in children regardless of its cause. Aram and Nation (1982) give credit to three individuals for developing this new field: Mildred A. McGinnis, Helmer R. Myklebust, and Muriel E. Morley. These pioneers integrated the information currently available on language disorders in deaf and "aphasic" children and devised educational approaches that could be used to remediate the language dysfunctions demonstrated by these children.

McGinnis (1963) developed the "association method" for teaching language to "aphasic" children. This method was very influential in the development of the field of language disorders, providing the first highly structured, comprehensive approach to language intervention. McGinnis also was one of the first to distinguish between two types of language problems seen in children: what she called expressive, or motor, aphasia (what we today would call *expressive language disorder*) and receptive, or sensory, aphasia (what we would term *receptive language disorder*).

Morley (1957) was instrumental in applying information on normal language development to the problem of treating children with a language disorder and was one of the first individuals from a speech pathology background to push language and its disorders into the purview of the "speech therapist." She fostered the use of detailed descriptions of children's language behavior in making diagnoses and planning intervention programs. She also was important in providing definitions that allowed clinicians to distinguish language disorders from articulation disorders.

Myklebust (1954) went, perhaps, the furthest in establishing a new and distinct field of study and practice, which he dubbed "language pathology." Like Morley and McGinnis, he was interested in differential diagnosis. He developed schemes for classifying language disorders in children, which he called "auditory disorders," and for differentiating them from deafness and ID. But Myklebust, like Orton, was also concerned with the continuities between disorders of oral language acquisition and their consequences for

the acquisition of literacy skills. In founding the new discipline of language pathology, Myklebust pointed the way toward considering language disorders in this broad context, including difficulties not only in producing and comprehending oral language but also in the use of written forms of language.

At about the same time that the field of language pathology was being established, the study of language itself was being revolutionized by the introduction of Chomsky's (1957) theory of transformational grammar. This innovation led to an explosion in research on child language acquisition that the new discipline could use. In the 1960s and 1970s, as child language research expanded in focus from syntax to semantics to pragmatics and phonology, language pathology followed in its footsteps, broadening our view of the relevant aspects of language that needed to be described and addressed in clinical practice. The vast amount of new information on normal development being compiled made it possible for language pathologists to describe a child's language behavior in great detail and to make specific comparisons to normal development on a variety of forms and functions. Furthermore, the large database on normal acquisition provided a blueprint of the language development process that could serve as a curriculum guide for planning intervention. This possibility has greatly influenced how language pathology is conceptualized and practiced today. Stark (2010) provides a history of language pathology from this period to the beginning of the current century.

As the twentieth century drew to a close, rapid developments in our understanding of genetics and our ability to study brain structure and function greatly enriched the field of language pathology. It has become increasingly clear from family and twin studies that genetic factors exert a strong influence on language development and disorders (Bishop, 2009). However, it is equally clear that we are unlikely to discover a "gene for language" (Box 1-1). Instead, it is probable that multiple genes of small effect alter the way the brain develops in subtle but important ways, rendering the developmental path from genes to brain to behavior extremely complex and difficult to predict (Fisher, 2006). In addition, we now know that children with language impairments in the absence of other syndromes do not have obvious neurological lesions that could explain their language difficulty. In fact, we now know that children with early focal brain lesions rarely have long term deficits in language learning (Bates, 2004). This realization has led to some changes in the terminology we use to label language difficulties in children.

Young children with DLD are sometimes labeled "language delayed."

BOX 1-1   Is There a Gene for Language?

In 2001, researchers in the UK discovered a single gene mutation that caused a severe speech and language disorder in members of a three-generation family (Lai, Fisher, Hurst, Vargha-Khadem, & Monaco, 2001). This caused much speculation in the media that the gene, *FOXP2*, was a "gene for language." You will have realised by now that genes do not directly encode behavior and so we can't really talk about a gene for language (or a gene for reading, autism, obesity, etc.; see http://deevybee.blogspot.com/2010/09/genes-for-optimism-dyslexia-and-obesity.html for a detailed discussion). Instead, *FOXP2* is better thought of as a "chief executive officer" (Marcus & Fisher, 2003) regulating the behavior of other genes (see Fisher & Scharff, 2010 for review). *FOXP2* is expressed in the brain, in regions that are important for speech and language and in regions that are atypical in affected members of the KE family (Watkins et al., 2002). These areas include the caudate nucleus, putamen, cerebellum, temporal cortex, inferior frontal gyrus, and motor cortex, suggesting that the gene product is particularly crucial for the development of motor systems in the brain. This suggestion is consistent with the behavioral phenotype of the KE family, which includes a marked verbal dyspraxia, in addition to impairments in vocabulary and grammar. More recent studies have confirmed the role of *FOXP2* mutations in disorders that include aspects of verbal dyspraxia (Feuk et al., 2006; MacDermot et al., 2005; Zeesman et al., 2006). At the same time, *FOXP2* does not appear to be implicated in more common forms of DLD (Newbury et al., 2002; O'Brien et al., 2003; SLI Consortium, 2004), and the pattern of inheritance seen in more common forms of DLD is inconsistent with a single-gene disorder.

It is also interesting to note that *FOXP2* is expressed in other body tissues such as the heart, lungs, and gut and is also expressed in other species, such as song birds and mice. Although we've yet to see a talking mouse, it does appear that mice bred to have mutations of *FOXP2* produce fewer innate ultrasonic vocalisations (Fujita et al., 2008) while in song birds it has been reported that reducing the expression of *FOXP2* can disrupt song learning (Haesler et al., 2004). These finds have generated considerable debate about the role of *FOXP2* in speech and language disorders. Is it important for the development of motor skills that support language production? Or is it more important for learning and synaptic plasticity (see Fisher & Scharff, 2009 for a detailed discussion)? Answers to these questions will require in-depth study of the neurobiological pathways of *FOXP2* and its downstream targets (Newbury et al., 2010).

TERMINOLOGY

Speech, Language and Communication

A first question might be "why do we use the separate terms *speech*, *language*, and *communication* when a single word label might be preferable?" The answer is that the three do not always go together, although impairments in one area may well influence development or competencies in another. For instance, a child with a speech sound disorder typically produces a restricted range of speech sounds, rendering spoken output unintelligible. This is likely to affect the ability to communicate, as conversational partners may not always understand the intended meaning. Nevertheless, the child may have normal language skills, understanding what others

Some children with DLD have appropriate communication skills.

say and using grammatically complex sentences. He or she may also have a typical drive to communicate, supplementing impaired speech with gestures and reformulating spoken output order to be understood.

A child with a language disorder may not have difficulties producing speech sounds, but his ability to communicate may be limited by his poor understanding of what others say to him, by his limited vocabulary and his reliance on simple and immature sentences. However, he may still use these limited language skills to share his thoughts and experiences with other people. In contrast, some children have perfect articulation, exceptional vocabularies, and can express themselves using long and grammatically complex sentences; yet their communication skills are limited by odd and tangential speech, repetitive language, and a reduced ability to repair breakdowns in conversation, as in the case of some children with autism spectrum disorders (ASD). Thus researchers and practitioners often make a distinction between the three in order to highlight the child's most salient difficulty.

What's in a Name?

Very often, speech, language, and communication impairments occur in the context of another developmental disorder with a recognized label, for example, ASD or Down syndrome (see Chapter 4). In these cases, descriptive terms such as *speech, language,* and *communication impairment* are very helpful in identifying the strengths and weaknesses of a child's communication profile. However, when impairments are not associated with a more pervasive disorder, we seem to struggle to label them in a way that conveys a child's needs or that the wider public readily recognizes and understands. This issue was highlighted by Kahmi (2004) who wondered why, unlike autism and dyslexia, "no one other than speech-language pathologists and related professionals seems to know what a language disorder is" (p. 105).

One possible reason for this is that there are a variety of names given to the problems we have been discussing, including *specific language impairment, language delay, language disability, language disorder*, or *developmental language disorder*. In addition, the terms we use have changed considerably over time, while other diagnostic terms (such as dyslexia) have remained relatively stable. For instance, the term *congenital aphasia* (from the Greek word

aphatos, meaning "speechless") was first used in 1866 (de Monfort Supple, 2010), gradually becoming "developmental aphasia" or "dysphasia," terms popular until the mid-twentieth century. These terms had their foundations in adult neuropsychology and referred specifically to loss of language ability following brain damage; when it became clear that developmental language disorders did not arise from similar neurological insults, these terms became less fashionable. The notion that language could be impaired in the context of "spared" capacities in other aspects of development led to labels such as *specific language impairment* (SLI) replacing *dysphasia*, at least in the research literature. But that is a mouthful and still suggests that deficits are restricted to speech, language, and communication. That is clearly not always (and indeed, many would argue, rarely) the case. In clinical practice, it is not uncommon to find practitioners describing language *difficulties* or *delays*, particularly with young children. This stems from a recognition that some children are "late bloomers" as far as language development is concerned; they generally catch up after a late start in learning to talk, and we can't assume an underlying pathology in such cases. Still, a large body of research suggests that even late talkers who seem to catch up with peers often continue to show subtle weaknesses in language function (Rescorla, 2009). For all these reasons, we will use a term in this book that we believe is more neutral and descriptive than the others we have mentioned. We use the term *developmental language disorder* to describe children who are not acquiring language as would be expected for their chronological age, for whatever reason.

Throughout this book, then, we highlight three groups of children who together will form the bulk of the SLP caseload:

1. Children with *primary* DLD, for whom language impairments are the most salient presenting challenge, for whom the biological cause of disorder is not yet known, and for whom no other diagnostic label is appropriate. The most recent version of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-V; APA, 2012) uses the term *language impaired* to refer to this group.

2. Children of school age with primary DLDs that co-exist with *literacy disorders* (dyslexia and poor reading comprehension), whom we will refer to as having *language-learning disorders* to call attention to the consequences of their difficulties on academic achievement. We will focus on these children in Section III of this book.

3. Children with DLDs that are associated with or secondary to some other developmental disorder such as ASD or intellectual impairment (ID). We will discuss many of the syndromes that are often accompanied by DLD in Chapter 4.

Now that we have agreed what to call it, we need to decide when a child would qualify for a diagnosis of developmental language disorder. It might help to consider the components of our label: *developmental* indicates that a problem arises in childhood, *language* refers to the code we use to communicate, and *disorder* suggests a significant deviation from the typical developmental trajectory. Simple, right? Well, not exactly. One issue is that *developmental* also suggests a changeable target—a 4-year-old with language disorder will look quite different from a 14-year-old with language disorder, and the challenges each needs to overcome will require very different approaches. A second issue is that *language* itself is a multi-faceted and highly interactive system that can be conveyed in different modalities, for example, spoken language or written text. Which aspects and modalities should we assess and what should we prioritize for treatment? Finally, as we've already

highlighted, in a behaviorally defined *disorder,* the point at which a problem becomes a *significant* deviation from normality is often an arbitrary decision. What factors go in to making this decision? Let's take a look.

ASPECTS AND MODALITIES OF LANGUAGE DISORDER

Bloom and Lahey (1978) and Lahey (1988) provided a useful framework for exploring language competencies that has stood the test of time. They suggested that language is comprised of three major aspects, illustrated in Figure 1-1:

1. *Form*: including syntax, morphology, and phonology
2. *Content*: essentially consisting of semantic components of language, vocabulary knowledge, and knowledge of objects and events
3. *Use*: the realm of pragmatics, or the ability to use language in context for social purposes.

Below is an outline of the key linguistic characteristics of DLD with respect to *form, content,* and *use* (summarized in Table 1-1). Not all of these features will be present in all children with a diagnosis of DLD and the features that characterize a child at one age may be very different to the features that stand out as that child gets older. Let's look at these features in a little more detail.

Form

Deficits in grammar are hallmarks of primary DLD. While many grammatical deficits occur in the context of weak phonology and semantics, it may also be possible for grammatical deficits to occur in isolation (van der Lely, 2005). The most consistently reported finding is that young children with primary DLD omit morphosyntactic markers of grammatical tense in spontaneous speech where these morphemes are obligatory. These errors include omission of past tense –ed ("He walk__ to school yesterday"), third person singular –s

FIGURE 1-1   Bloom and Lahey's taxonomy of language. (Adapted from Lahey, M. [1988]. *Language disorders and language development.* New York: Macmillan.)

("She walk__ to school everyday"), and the copular form of the verb be ("I eating chocolate") (Rice, Wexler, & Cleave, 1995). An important observation is that these are errors of omission, not commission (Bishop, 1994); in other words children do not confuse tenses and morphemes. These grammatical forms are typically acquired by the age of 5, therefore persistent errors in older children is a sensitive indicator of language impairment. Older children with DLD have problems producing wh- questions (van der Lely & Battell, 2003), may omit obligatory verb arguments ("the woman is placing on the saucepan"), and use fewer verb alternations ("the girl is opening the door" versus "the door is opening") (Thoradottir & Weismer, 2002). These deficits in production are matched by problems in making grammaticality judgments (Rice, Hoffman, & Wexler, 2009) and in understanding complex syntax. For instance, children with DLD have poor understanding of passive constructions ("the boy was kissed by the girl"), embedded clauses ("the boy chasing the horse is fat"), pronominal reference (e.g., knowing who "him" refers to in the sentence "Mickey Mouse says Donald Duck is tickling him"), locatives ("the apple is on the napkin") and datives ("give the pig the goat") (Bishop, 1979; van der Lely & Harris, 1990).

Although grammatical errors are a striking feature of DLD, it is not the case that children with DLD completely lack grammatical knowledge. Instead, children are inconsistent in their application of this knowledge, behaving as if certain grammatical rules were "optional" (Bishop, 1994; Rice et al., 1995). If children lacked knowledge, on formal tests of grammatical understanding we would expect either a systematic response bias (i.e., always interpreting a passive sentence such as "the boy was kissed by the girl" by word order "boy kiss girl") or random guessing. In fact, performance on grammatical tests is typically above chance levels, even when non-syntactic strategies to support understanding are not evident. This suggests that factors other than grammatical knowledge influence performance, a hypothesis supported by the finding that grammatical errors may be induced in typically developing individuals by increasing processing demands (Hayiou-Thomas, Bishop, & Plunkett, 2004).

Phonological deficits are frequently described in terms of a child's repertoire of available speech sounds and the consistent error patterns a child uses in speech. An epidemiological study of 6-year-olds in the United States found the prevalence of speech sound disorders (SSD) to be 3.8% with a co-occurrence of SSD and language impairments of 1.3% (Shriberg, Tomblin, & McSweeny, 1999). Problems with speech production are likely to be more prevalent in clinically referred samples, perhaps because they are more readily identified by parents and teachers (Bishop & Hayiou-Thomas, 2008).

For the most part, phonological impairments do not have a physical basis. Instead, these deficits arise from problems with phonological processing. Phonological processing encompasses a range of behaviors, including the ability to discriminate and categorize speech sounds, produce speech sounds and meaningful phonemic contrasts, remember novel sequences of speech sounds, and manipulate the sounds of the language. Children with DLD may therefore fail to recognize which sounds are important for signalling meaning in the language, with implications for vocabulary and grammatical development.

Content

Children with DLD tend to have impoverished vocabularies throughout development (Beitchman et al., 2008), but their semantic difficulties extend beyond the number of words available to

TABLE 1-1 Common Linguistic Characteristics of Primary DLD

Form	Errors in speech production and poor phonological awareness; i.e., the ability to manipulate sounds of the language, particularly in the preschool years.
	Errors in marking grammatical tense, specifically the omission of past-tense –ed and third person singular –s, as well as omission of copular "is," and errors in case assignment (e.g., "Him run to school yesterday").
	Simplified grammatical structures and errors in complex grammar, for example, poor understanding/use of passive constructions ("the boy was kissed by the girl"), wh- questions, dative constructions ("the boy is giving the girl the present")
Content	Delayed acquisition of first words and phrases
	Restricted vocabulary and/or problems finding the right word for known objects, for example uses the word "thing" for most common objects
Use	Difficulties understanding complex language and long stretches of discourse
	Difficulties telling a coherent narrative
	Difficulties understanding abstract and ambiguous language

Note: number of symptoms present in any one child is variable and profile of language impairment may change over time.

them. In general, children with DLD are slow to learn new words, have difficulty retaining new word labels, encode fewer semantic features of newly learned items, and require more exposure to novel words in order to learn them (Alt, Plante, & Creusere, 2004). Children with DLD often make naming errors for words they do know, for instance, labelling "scissors" as "knife" or using less specific language such as "cutting things." As children get older, the problem may not be how many words the child knows, but what the child knows about those words. For instance, children with DLD may not realize that words can have more than one meaning, for example that "cold" can refer to the temperature outside, an illness, or a personal quality of unfriendliness. This lack of flexible word knowledge may account for reported difficulties in understanding jokes, figurative language, and metaphorical language, all of which draw on in-depth knowledge of semantic properties of words, and how words relate to one another (Norbury, 2004). Finally, there is some indication that learning about verbs may be a particular source of difficulty for children with DLD (Riches, Tomasello, & Conti-Ramsden, 2005). Problems acquiring verbs may have implications for learning about sentence structure because of the unique role verbs have in determining other sentence constituents (arguments) and in signalling grammatical tense.

Use

Pragmatics is commonly associated with the notion of "social communication," which encompasses formal pragmatic rules, social inferencing, and social interaction (Adams, 2008). In general, pragmatic skills of children with primary DLD are considered to be immature rather than qualitatively abnormal, as in the case of autism. In addition, although they perform more poorly than age-matched peers on various measures of social understanding, their difficulties are rarely as severe as those seen in autism. Nevertheless, children with DLD may have difficulties understanding and applying pragmatic rules. In conversation these may include initiating and maintaining conversational topics, requesting and providing clarification, turn-taking, and matching communication style to the social context. Children with DLD may be impaired relative to peers in their understanding of other minds (Farrar et al., 2009) and in understanding emotion from a situational context (Spackman, Fujiki, & Brinton, 2006). Individuals with DLD also have difficulties integrating language and context, resulting in difficulties generating inferences about implicit information in discourse (Adams, Clarke, & Haynes, 2009), understanding figurative

language (Norbury, 2004) and constructing coherent narratives (Reed, Patchell, Coggins, & Hand, 2007).

Chapman (1992), Miller (1981), and Miller and Paul (1995) talked about language in terms of its two primary modalities—comprehension and production—integrating each of the three aspects previously listed within these two modalities. From their viewpoint, *language disorders* would be defined according to the modalities primarily affected; the aspects or domains affected within these modalities are used to describe the language disorder once it is identified. But whether it is the domains and their interactions or the modalities of language that are used to define disorders, the important point is that disorders be defined broadly. We certainly want to be able to identify clients who fit the traditional idea of a child with a DLD (the one who has trouble learning to put words together to make sentences), but we also want to be able to identify and, therefore, help the child like Tommy, who is described in the following text.

Tommy was a very easy baby. His mother remembers that he was happy to lie in his crib for hours on end, watching his mobile. By age 2 Tommy was using long, complicated sentences and knew the name of every model of vehicle on the road, as well as the names of most of the parts of their engines. At age 4 he took apart the family lawn mower and put it back together. However, his preschool teacher was concerned about him. He took almost no interest in the other children, choosing, when he spoke, to speak only to adults. When he did talk, he invariably asked complex but inappropriate questions on his few topics of interest, such as mechanical objects. He dwelled incessantly on a few events that were of great importance to him, such as the time the doors of the family car would not open. Tommy seemed very bright in many ways and did well on an IQ test that was part of his kindergarten screening. But in social settings, he just did not know how to relate, and his language was used primarily to talk about his own preoccupations rather than real interactions.

Tommy might be considered a child with high-functioning ASD syndrome (see Chapter 4), but the primary manifestation of his disorder is in social communication, not in the understanding or production of sounds, words, or sentences. It is important that a definition of *language disorder* allow a child such as Tommy to qualify for services, even though his problem is confined to the use

of language for communicative purposes, with formal aspects of language relatively unaffected.

DIAGNOSTIC ISSUES

DLD Relative to What?

One way to describe children with developmental disabilities is to say that their developmental level is significantly lower than their chronological age. (This description is by no means complete; other conditions are necessary for a child to be diagnosed as having intellectual disability, for example.) Mental age is an index of developmental level; it is an age-equivalent score derived from a standardized measure of cognitive ability.

In talking about mental age for children with DLD, we try to use cognitive tests that do not involve the production or understanding of speech, or that do so as little as possible. We do not want to evaluate the cognitive ability of children with DLD on the basis of their language abilities. We already know that these children's language skills are not likely to be very good or they would not have been referred in the first place. Most intelligence tests use language-based items extensively, because in normal development, language and general intellectual level are very highly related. But some tests of cognitive skill are designed to assess aspects of thinking and problem solving that minimize the involvement of language.

Why might we want to use mental age, rather than chronological age, as a reference point to decide whether a child has a language disorder? For one thing, we usually would not expect a child's language skills to be better than the general level of development. Should a child functioning at a 3-year-old level overall be expected to achieve language skills commensurate with his chronological age of 8 years? Miller (1981) suggests that language level very rarely exceeds nonverbal cognitive level in the developmentally delayed population, even though the relationships between language and cognition are more complex and variable in normal development (Krassowski & Plante, 1997; Miller, Chapman, Branston, & Reichle, 1980; Notari, Cole, & Mills, 1992; Rice, Warren, & Betz, 2005).

But criteria for disability that are based on discrepancies between scores on IQ and other tests are no longer thought to be valid. Lahey (1990) was perhaps the first in the field of language pathology to stake out a position against mental-age referencing. She pointed out that many psychometric problems are associated with measuring mental age. For one, it is not psychometrically acceptable to compare age scores derived from different tests of language and cognition that were not constructed to be comparable, were not standardized on the same populations, and may not have similar standard errors of measurement or ranges of variability (see Chapter 2). Second, there are fundamental problems in using age-equivalent scores at all to determine whether a child's score falls outside the normal range. These issues are discussed further in Chapter 2. Lahey also emphasized the theoretical difficulties of assessing nonverbal cognition, centering her argument on the justification for deciding which of the many possible aspects of nonlinguistic cognition ought to be the standard of comparison. For all of these reasons, Lahey suggested that chronological age is the most reliably measured benchmark against which to reference language skill to identify language disorders.

Remember Jamie? The two clinicians involved in his case differed on precisely this point. But ASHA (2000a) argued strongly against "cognitive-referencing" in making decisions about eligibility for services. A major criticism is that different combinations of tests can yield different eligibility recommendations for the same student. How can this be? Often, young children with DLD show an uneven language profile, with severe deficits in morphology and syntax and relative strengths in vocabulary knowledge (Abbeduto & Boudreau, 2004; Rice, 2000, 2004). Therefore, we might expect vocabulary scores to be more in line with nonverbal IQ scores, while tests of morphosyntax might result in a very large discrepancy. A second criticism is that longitudinal studies of children with language disorders have reported a drop in nonverbal IQ scores over time (Botting, 2005; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998). It is unlikely that this reflects an actual loss in ability; rather it shows that nonverbal assessments are rarely "pure" measures of nonverbal ability. The majority of nonverbal tests incorporate verbal directions, and many linguistically able children use verbal strategies to help them reason out the answers. This puts the child with DLD at a distinct disadvantage. Third, the degree of discrepancy between verbal and nonverbal abilities does not necessarily predict a child's responsiveness to intervention. Research has shown that children with generally depressed nonverbal scores can still benefit from therapy (Fey, Long, & Cleave, 1994). Finally, a categorical denial of services to children because of generally depressed nonverbal IQ scores is not consistent with the ethos of the Individuals with Disabilities Education Act (IDEA Amendments of 1997, Public Law 105-17), which stipulates that services be determined on an individual basis (Whitmire, 2000a).

But even if we do not use mental age−based discrepancy criteria to identify children with language disorders, mental age still provides us with some guidelines to help in determining the goals of intervention. By getting a general idea of a child's developmental level, through standardized tests as well as through instruments that measure adaptive behavior, we can determine what behaviors are reasonable to target in an intervention program. We would not expect a child with ID, for example, to work on language goals appropriate for his or her chronological age, even if that age were used as the reference point to identify the need for language intervention. Instead, we would want to evaluate at what level the child is functioning currently and target language behaviors closer to overall developmental level.

Are There Subtypes of DLD?

Clearly there are many different ways that language may be impaired, which raises the question of whether there are subtypes of DLD. For example, van der Lely (2005) describes children with "grammatical-SLI," in which grammatical skills are more severely impaired relative to other aspects of the language system. In addition, there has been considerable debate in the literature regarding the diagnostic status of children with "pragmatic language impairments," or PLI, and whether they are continuous with more specific language impairments or autism (cf. Whitehouse, Watt, Line, & Bishop, 2009). Nosologies for "subtypes" of language disorder have been used for a number of years (cf. Conti-Ramsden et al., 1999; Rapin and Allen, 1987), but are they useful constructs?

One assumption here is that the biological mechanisms that give rise to a particular subgroup, "G-SLI" for example, differ from those that give rise to other types of language difficulty. At the moment there is simply insufficient evidence that this is the case. A second concern is that these nosologies rarely take development into account. Longitudinal studies have demonstrated that although subgroups appear to exist throughout the school years, the

children that make up those subgroups move fluidly between them over time (Conti-Ramsden et al., 1999; Tomblin et al., 2003). In other words, children may start off with a predominantly lexical-syntactic pattern of language disorder, but, as they grow older, may more closely resemble children with pragmatic language concerns. Information about very young children who go on to have "G-SLI" is lacking; we therefore don't know if these children are characterized by more pervasive language, perceptual, or cognitive deficits at earlier developmental time points. In other words, while the presence of a language disorder tends to be stable over time, the nature of that language disorder is very likely to change.

How Low Can You Go?

A central tenet of the naturalist perspective held by Tomblin (2008) that we discussed earlier is that impairment can be defined as deviation from average performance. Standardized tests fulfil this role nicely; they measure a set of skills in a large number of children drawn from the general population and set normative scores based on the average performance of those children. This enables us to compare an individual child's performance against the average abilities of his or her peer group. However, where we set the cut-off for significant deviation from the average is entirely arbitrary; in medical diagnoses, the "normal" range is often taken to be scores within two standard deviations (SDs) of the mean, which encompasses 95% of the population (see Chapter 2). A naturalist might therefore diagnose children scoring more than 2 SD below the mean (i.e., the third percentile and below) with DLD.

While this would not be an unreasonable approach, there are a number of issues with it. First, children with DLD often have uneven profiles of language skill and deficit. Remember Jamie? If we gave him ten tests tapping different aspects of language and he only achieved a "deviant" score on one of those tests, would that constitute a DLD? On the other hand, Jamie might score between –1 and –2 SDs on 9 of those 10 tests. If we stick rigidly to our –2 SDs cut-off Jamie would not meet criteria for DLD and yet might have considerable difficulty coping in everyday situations.

In some agencies or school districts, cut-off scores for eligibility for services are mandated and the clinician must abide by them, having leeway only in choosing which instruments to use to measure performance. In other cases, this decision is made on the basis of caseload considerations. For example, if a clinician were to accept into the caseload all the children who scored more than 1 SD below the mean on a single standardized test (approximately 16% of the population), the result might be chaos and rapid burn out. On the other hand, sticking rigidly to the –2 SDs cut-off would serve only about 3% of the population, limiting access to support for children who may really need it. Often, researchers and clinicians inhabit the middle ground and consider those children scoring in the bottom 10th percentile (equivalent to a standard score of 80, or –1.25 SDs below the normative mean) to have DLD.

Is there any empirical evidence to support this middle ground? In an epidemiological sample, Tomblin and colleagues (Tomblin, 2010; see also www.uiowa.edu/~clrc/epidemiologic/index.html) used a battery of tests that tapped three language domains (vocabulary, grammar, and narrative) in two modalities (production and comprehension), yielding five composite scores. They diagnosed primary DLD at school entry if at least two of the five composite scores were more than –1.25SD (10th percentile), the standard score on a nonverbal intelligence test was 87 or greater, and the child met typical exclusionary criteria. In a population sample,

this resulted in 0.85 sensitivity (ability to identify true cases of disorder) and 0.99 specificity (ability to correctly identify unimpaired cases), yielding a prevalence estimate of 7.4%. Three points about this study are noteworthy. First, the overall degree of impairment required by these authors was fairly lenient (overall severity of –1.12 SD), and therefore may have included children with more transient language delays. Indeed, 46% of children identified by Tomblin et al. as having DLD at school entry did not meet diagnostic criteria for DLD a year later, suggesting these criteria identify a large number of false positives (Tomblin et al., 2003). Second, an intriguing finding from this study was that only 29% of children who met the research criteria for DLD had been identified by parents or practitioners as having language difficulties. Even if more stringent severity criteria were employed to include only those children with composite language scores of –2 SDs or greater, the percentage of children clinically referred for language difficulties only rose to 39%. This suggests that the features that lead to identification of DLD in everyday circumstances may be different from those identified by standardized tests (Bishop & Hayiou-Thomas, 2008). Third, the assessment battery did not include measures of phonological skill or pragmatic ability; deficits in these areas may also negatively impact educational and/or social development. Interestingly, Bishop and Hayiou-Thomas (2008) reported that in a population sample of twins with DLD, children referred for speech-language evaluation were more likely than the others to have phonological processing deficits. Thus, inclusion of phonological measures in diagnostic batteries may increase concordance between population and clinical samples.

What Is the Impact of Language Disorders on Daily Living?

Standardized test scores can give us some useful information about a child's abilities relative to his or her peers. But sometimes we may need to go beyond the standard score in determining whether or not speech-language services are required. Why is that? To begin with, tests with adequate psychometric properties (such as validity; standard error of measurement; and large, representative norming samples) are not always available for testing at all age levels, for all language communities, or for all aspects of language and communication. For instance, measuring pragmatic language abilities is notoriously difficult (Adams, 2002), in large part because pragmatic skills are so context dependent. Thus, any attempt to structure and standardize the context removes a large degree of the challenge. In addition, although the situation is improving, many of our standardized instruments are culturally and linguistically biased, putting children from less mainstream cultural backgrounds at a disadvantage. One solution is to develop tests that are not reliant on cultural or linguistic knowledge and instead assess the ability to "process" novel information, such as a non-word repetition task. While these tasks reliably distinguish language difference from language disorder (Rodekhor & Haynes, 2001; Windsor, Kohnert, Lobitz, & Pham, 2010), they do not provide the clinician with a picture of the child's linguistic capabilities, making them of limited used in intervention planning. Thus, in some situations, age-appropriate scores on a standardized test may occur even when the child is having significant difficulty communicating in everyday situations. On the other hand, sometimes children obtain lower than expected scores on a test, yet their communicative skills are very much in line with other individuals from their cultural background.

The *normative* position advocated by Tomblin (2008) stresses that language disorders must involve a significant deficit relative, in part, to *environmental expectations*. In common-sense terms, that means a deficit big enough to be noticed by ordinary people such as parents and teachers—not just language development experts—and one that affects how the child functions socially or academically in his or her immediate environment. The impairment, in other words, has to have some adaptive consequences. One challenge for this perspective is that certain types of language impairment are more readily apparent to non-specialists. For example, children referred for professional assessment are more likely to have overt difficulties with speech sounds or immaturities in expressive language; (Bishop & Hayiou-Thomas, 2008; Zhang and Tomblin, 2000). Subtle problems with language comprehension may be more easily missed; however, these subtle difficulties may manifest in poor scholastic attainment, social difficulties, or behavioral problems. On the other hand, children may achieve low scores on formal tests of language and yet not incur any disadvantage in daily life. For these children, it may not be prudent to intervene.

Diagnostic frameworks such as DSM-V (APA, 2012) and the World Health Organization International Classification of Disease—10 (WHO, 2004) stress the importance of evaluating the *impact* of disorder on everyday well-being, although standard methods of assessing this impact are not well developed in the area of children's language. One method for systematically considering impact is offered by the *International Classification of Functioning, Disability and Health* (WHO, 2001; www.who.int/classifications/icf/training/icfbeginnersguide.pdf). This framework (Table 1-2) considers the biological impairment in *body structure or function* (including psychological function) experienced by the individual and how that impairment interferes with the individual's *activity and participation* in daily events. Finally, consideration of *contextual factors* is advocated. These include social attitudes and beliefs about impairment, but also practical obstacles to well-being. Contextual factors are not considered in diagnosis—in other words, a child from a culturally diverse background should not be diagnosed with a language disorder simply because he or she cannot access the school curriculum due to language differences. However, for children with language disorders, identification of key activities and participation and the contextual factors that facilitate or hinder this participation can assist intervention planning.

ETIOLOGY OF DLD

Why Do Children Have DLDs?

One conclusion that we can be pretty certain of is that there is no single cause of DLD. This must be the case, since some children with ID have additional DLD; that is, language skills that are much less than would be expected not only for their chronological age,

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TABLE 1-2 International Classification of Functioning (WHO, 2001): Implications for Diagnosis and Treatment

Construct	Includes	Diagnosis	Treatment Planning
Body function	Speech, language, communication, and literacy	Q: What is the child's level of communication functioning? Method: Standardized assessment of speech, language, communication, and literacy	Identify aspects of speech, language, communication, and literacy that are below chronological age expectations.
Body structures	Structure of the nervous system The eye, ear and related structures Structures involved in speech	Q: Are there any physical impediments to acquiring speech, language, communication, or literacy? Method: Hearing evaluation, oral-motor evaluation, and neurological assessment (if indicated)	Identify any aids, devices or medical interventions that might restore normative function; i.e., hearing aids, pharmaceuticals, oral-motor surgeries, etc.
Activities and participation	Learning and applying knowledge General tasks and demands Communication Self care Domestic life Interpersonal interactions and relationships Major life areas Commmunity and social life	Q: Are there daily activities that are more challenging as a result of speech, language, communication, or literacy impairments? Method: Direct observation of child in different contexts (i.e., home or school), parent/teacher questionnaires, and discussion with child	Prioritize communication intervention in key areas of daily living (e.g., taking public transport, using the computer to contact friends, ordering food in a cafe). Develop strategies to alert others to communication needs.
Contextual factors	Products and technology Natural Environment and human-made changes to environment Support and relationships Attitudes Services, systems, and policies	Q: Is there anything that can be changed about the child's environment to facilitate communication and language/literacy learning? Method: Observation in different contexts, interview/questionnaires with significant others, review policies/practices of school, care, or employment services	Collaborative interventions that seek to modify communication behaviors of significant others, rather than child directly; encourage use of signs and /or symbols in school/work place; allocation of advocate or support worker; provision of computer or alternative communication device; extra time to complete exams/coursework

but even for their developmental level; while other children with ID, even with exactly the same nonverbal IQ, have much better language ability. We don't know why one child with ID has additional DLD and another does not, any more than we know why one child with an IQ in the normal range has primary DLD, while his next-door neighbor with the same nonverbal performance doesn't, or why one child with a 35 dB hearing loss has almost normal language, while another child with the same hearing level has significant language deficits. But we know that it happens. That's why in this book, although we discuss the etiologies associated with language disorders, we don't rely on the etiological label to tell us everything we need to know about a child's language. But we'll talk more about that later. For now, we'll just admit our basic ignorance about the causes of both primary and secondary DLD, and say that it's likely that multiple risk factors for disorder will co-occur to give rise to a diagnosable condition. These risks may arise from a biological disposition, from the child's pre- or post-natal experiences, or from chance events. In thinking about causal routes to DLD, it can be helpful to structure our thoughts according to "levels of explanation" (Morton, 2004; Morton & Frith, 1995). Figure 1-2 illustrates this approach. At the bottom of the figure is the "behavioral" level; these are the observed characteristics of DLD that we are trying to explain. At the top is the "biological" level; these are the genetic influences and the differences in neurological structure and function that increase risk for impaired language development. We've alluded to the fact that there is no direct route from brain to behavior. For this reason an intermediate "cognitive" level is postulated that mediates biological and behavioral levels. At the cognitive level, we are interested in differences in perception, processing, storage, and learning of information that may contribute to language difficulties. Finally, the "environment" runs alongside each level, because environmental factors can influence each level of explanation. It makes sense that the child's environmental circumstances can have a profound effect on language development and behavior; for instance, numerous studies have demonstrated a link between level of maternal education and children's later language status (Reilly et al., 2010). However, the environment can also have substantial influences on biological mechanisms. For example, Meaney (2010) has discussed how differences in early parental care can affect gene expression in offspring. Similarly, there is some evidence that environmental factors can induce differences in brain structure and function. Intervention is a key example; Krafnick, Flowers, Napoliello, and Eden (2010) reported changes in gray matter volume following an intensive reading intervention for dyslexic children. Environment can also influence cognitive processes. For example, differences in the age at which children succeed on tasks that tap understanding of other minds (known as "social cognition") appears to differ significantly depending on cultural and language differences (Lecce & Hughes, 2010; Liu, Wellman, Tardif, & Sabbagh, 2008). For these reasons, our discussions of etiological and cognitive factors associated with DLD includes each of these levels of explanation (Figure 1-3).

Many years ago, clinicians and researchers fiercely debated the origins of DLD: did language impairments reflect differences in *nature,* the biological capacity to learn and use language, or differences in *nurture,* the frequency and quality of language input to the child? Today, we have an understanding that the two forces interact within a developing child. We also have more information about the precise neurobiological and environmental factors that increase risk for DLD. However, we still have much to learn about the precise route from genes to brains to language behavior and how environmental factors can alter the developmental trajectories of each of these levels. In the sections below, we outline our current state of knowledge about the biological foundations and environmental influences on DLD.

Genetic Factors in DLD

Clinicians and researchers have known for some time that primary DLD tends to run in families, suggesting that genes may influence susceptibility to disorder. We cannot be sure of this, however, because families share environments as well as genes. Over the last 25 to 30 years, *behavioral genetic* methods, including family and twin studies, have been instrumental in specifying genetic and environmental contributions to disorder. These methods have also helped to refine the heritable DLD phenotype (the observable, measurable characteristics related to individual variations in genetic makeup); this in turn has facilitated exciting advances in molecular genetics, which are beginning to isolate the specific
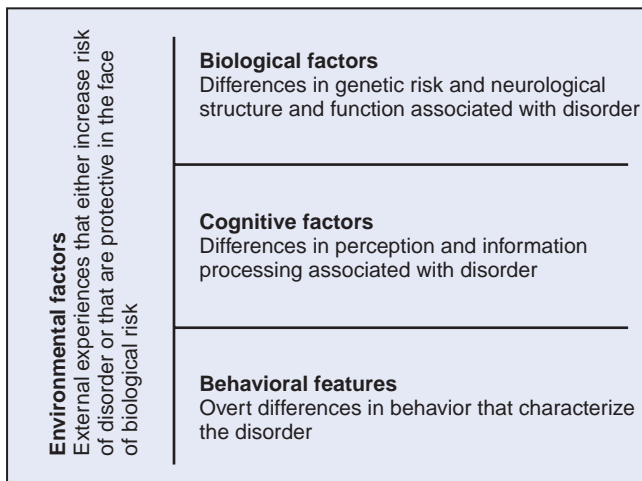
FIGURE 1-2   Levels of explanation for developmental language disorder.
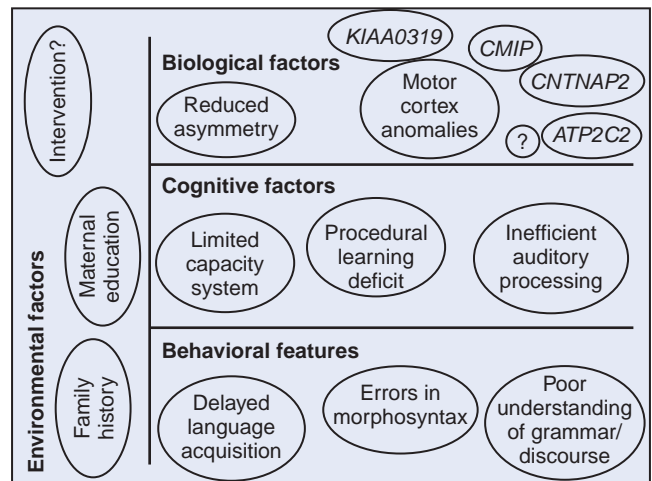
FIGURE 1-3   Example of explanations for developmental language disorder at each level.

genes implicated in DLD (see Bishop, 2009; Newbury, Fisher, & Monaco, 2010 for reviews).

Twin studies have been invaluable in establishing that DLD is a highly heritable disorder. Twin studies capitalize on the fact that monozygotic (MZ), or identical, twins are genetically identical, whereas dizygotic (DZ), or fraternal, twins share only 50% of segregating alleles (normal genetic variations). MZ twins resemble each other with respect to DLD diagnosis more closely than do DZ twins, with heritability estimates (i.e., the proportion of variance explained by genetic relationships) of 0.50 to 0.75 (see Bishop, 2009 for review). One notable exception to this highly consistent pattern was a population study of 4-year-old twins, which found negligible genetic influence on language impairment (Hayiou-Thomas, Oliver, & Plomin, 2005). In this study, children were classified as having DLD on the basis of standardized tests of speech and language (cf. Tomblin et al., 1997). Reclassification of this population found that heritability estimates increased substantially when referral to speech-language pathology services was used to index affected cases (Bishop & Hayiou-Thomas, 2008). This suggests that children attracting clinical attention may represent a phenotypically and etiologically distinct group.

This highlights the challenges that stem from investigating a complex and heterogeneous disorder like DLD; heritability estimates vary depending on the precise definition of DLD used, and isolating specific genes becomes much more challenging in the midst of phenotypic "noise." Bishop (2006a) has advocated an approach that does not attempt to identify genetic influences on a diagnostic category such as primary DLD, but rather investigates genetic influences on underlying cognitive traits that affect language skills (known as *endophenotypes*). By identifying children at risk according to performance on marker tasks such as non-word repetition and morphosyntactic marking, rather than clinical diagnosis, Bishop and colleagues have demonstrated that both deficits are highly heritable, but weakly correlated, suggesting independent genetic influences (Bishop, Adams, & Norbury, 2006). On the other hand, deficits in auditory processing were not heritable and appear to be more influenced by environmental factors (Bishop et al., 1999). These studies have also demonstrated that the clinically identified and most severely affected children are ones who have multiple deficits. Thus, language may be fairly robust in the face of adversity, but accumulation of risk factors of either genetic or environmental origin may have deleterious consequences for language development.

The same "trait" approach has been applied to molecular genetic studies of primary DLD. Individuals are selected on the basis of poor performance on a standard measure of some aspect of language ability; for instance, families have been selected in which one member scored −1.5 SDs below the normative mean on one of three measures: non-word repetition, expressive language ability, or receptive language ability (SLI Consortium, 2002, 2004). Genome-wide screens have consistently found linkage (a correlation between an inherited stretch of DNA and a phenotypic trait) between chromosome 16q and non-word repetition and chromosome 19q and expressive language scores (see Newbury, Fisher, & Monaco, 2010 for review). These techniques enable investigators to narrow their search for specific genes implicated in these behavioral traits. There are currently five candidate genes that have been reliably associated with spoken language disorders: *FOXP2* and *CNTNAP2* on chromosome 7 (Vernes et al., 2008), *ATP2C2* and *CMIP* on chromosome 16 (Newbury et al., 2009), and *KIAA0319* on chromosome 6 (Newbury et al., 2011; Rice et al., 2009). Variations of some these genes have been associated with the ability to repeat nonsense

words; Newbury et al. (2009) found that individuals carrying risk variants of both *ATP2C2* and *CMIP* had average non-word repetition scores of 1 SD below the mean of individuals who did not carry risk variants of either gene.

However, finding an association between genetic variation and behavioral performance is only a first step in unravelling the relationships between genes and behaviors. In complex disorders, this relationship is probabilistic; even if we are able to definitively identify specific genetic variations associated with DLD, we still could not accurately predict individual phenotypes. In addition, genes do not encode specific behaviors—there is no "gene for non-word repetition." Instead, it is most likely that normal genetic variations affect the efficiency of gene expression in the developing brain (Newbury, Fisher, & Monaco, 2010). With this in mind, it is important to note that the genes that have been implicated in DLD have also been implicated in a host of other neurodevelopmental disorders, including Tourette syndrome (Verkerk et al., 2003), attention-deficit hyperactivity disorder (ADHD; Ella et al., 2009), dyslexia (Newbury et al., 2010), autism spectrum disorders (Alarcon et al., 2008; Arking et al., 2008), epilepsy (Strauss et al., 2006), schizophrenia (Wang, Liu, & Aragam, 2010), and intellectual disability (Zweler et al., 2009). That these disparate disorders show at least partially overlapping etiologies may help to explain the high rates of co-morbidity seen in developmental disorders. How subtle variations in genes impact neural development in a way that adversely affects the course of language development, and why language should be particularly vulnerable across disorder groups are empirical questions that will occupy researchers in this field for a long time to come.

Neurobiological Factors in DLD

Language in the Brain

Before we consider how the brain might be different in DLD, we need to say a bit about key developmental processes that occur in the typically developing brain. It might surprise you to learn that the human brain starts developing in utero and continues to grow and develop throughout adolescence. The current view (see Johnson, 2005 for in-depth discussion) is that, initially, regional differences in the brain favor different types of input for processing or computations. Smaller regions within these areas become more specialized through activity-dependent processes that respond to environmental input. How the environment shapes neural development is to some extent constrained by the architecture of different brain regions, itself determined by genetic influences.

Increased cortical specialization and learning require changes in the number and strength of connections between neurons in order for more effective "communication" within the brain. In development, less is definitely more; a process of "synaptic pruning" eliminates weak or underused connections and helps to strengthen remaining connections. Ultimately, this results in specialized neural networks that are more finely tuned to processing particular inputs, known as "functional specialization." This specialization also results in greater "localization" of information processing.

Language in the adult brain is a great example of localization and functional specialization. In most individuals, language processing is "left lateralized," meaning it is processed predominantly by structures in the left hemisphere. As a result, the cortical structures that process language tend to be larger in the left hemisphere than homologous structures in the right hemisphere. Critical cortical areas for language are situated in the frontal and temporal lobes (Figure 1-4). Within the frontal lobe, the inferior frontal gyrus

FIGURE 1-4   Language-related areas in the left hemisphere of the brain.   (From Tropper, B. & Schwartz, R. [2009]. Neurobiology of child language disorders. In R. Schwartz [Ed.], *Handbook of Child Language Disorder* (pp. 177; Fig. 7-1). N.Y.: Psychology Press/Taylor & Francis.)
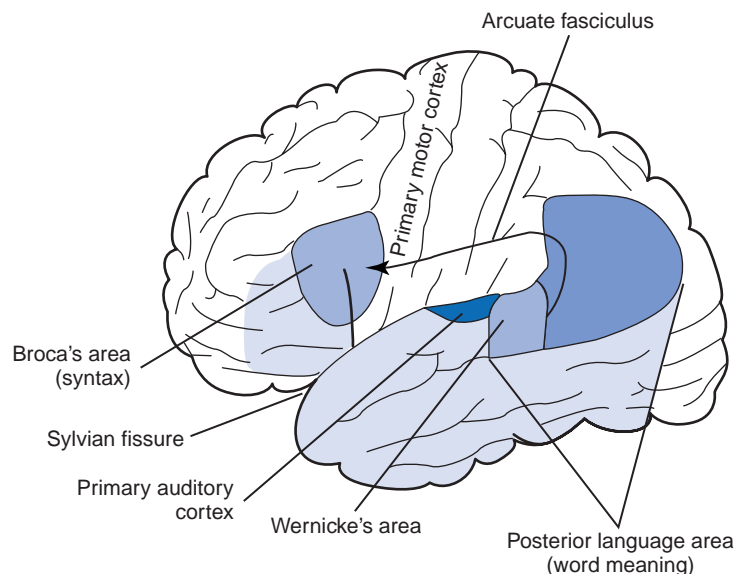
includes the pars opercularis and the pars triangularis, which together form Broca's area. We know from studies of adults with lesions in this area that these structures are critically important for speech motor planning needed to produce spoken language. The temporal lobe contains structures important for auditory processing and language comprehension, historically referred to as Wernicke's area. Key structures in this region include Heschl's gyrus, the superior temporal gyrus, and the planum temporale. A fiber bundle, called the arcuate fasciculus, connects the frontal and temporal regions, thus linking the brain regions involved in the production and comprehension of oral language.

These areas are prime candidates for investigating the neurobiological basis of DLD. Researchers do this using neuroimaging techniques described in Box 1-2. These methods have demonstrated that, unlike cases of adult stroke, there are no gross lesions of these neurological structures that could cause DLD; indeed when such lesions do occur in childhood they rarely result in such profound language impairments (see Chapter 4). However, researchers have identified subtle differences in brain structure and function that are *associated* with primary DLD, BUT: anomalies in brain development are not deterministic—some individuals have brain differences and yet develop language as expected (see C. Leonard et al., 2006). However, the presence of these anomalies substantially increases *risk* for disorder. So what are the neurobiological risk factors for DLD?

Brain Structure in DLD

Only a handful of investigators have applied structural magnetic resonance imagining (MRI) to the study of primary DLD. The most consistently reported finding is that, as a group, individuals with primary DLD show atypical patterns of asymmetry of language cortex (De Fosse et al., 2004; Gauger, Lombardino, & Leonard, 1997; Herbert et al., 2005; Jancke, Siegenthaler, Preis, & Steinmetz, 2007; Plante, Swisher, Vance, & Rapcsak, 1989, 1991). Other relevant findings have included abnormalities in white matter volume (Herbert et al., 2004; Jancke et al., 2007), cortical dysplasia (abnormalities in the organisation of different types of brain cell; Galaburda, Sherman, Rosen, Aboitiz, & Geschwind,

1985), additional gyri in frontal or temporal regions (Clark, 1998; Jackson & Plante, 1997), and unusual proportions of anatomical structures implicated in language processing (Jernigan, Hesselink, Sowell, & Tallal, 1991; Leonard et al., 2002; Leonard, Eckert, Given, Berninger, & Eden, 2006).

Despite these differences, the relationship between structure and function is far from perfect. For instance, Plante et al. (1991) investigated patterns of asymmetry not only in boys with DLD, but in their siblings and parents as well. The majority of these relatives also had deviant patterns of asymmetry, but not all of them had DLD. Christiana Leonard and her colleagues have further highlighted the probabilistic nature of developmental anomalies in brain structure. Leonard et al. (2002) contrasted children with DLD and children with dyslexia and sought to identify the structural brain features that distinguished the two groups. Children with DLD tended to have a smaller surface area of Heschl's gyrus in the left hemisphere and the planum temporale tended to be more symmetrical, relative to children with dyslexia. Leonard et al. (2006) replicated and refined this anatomical risk index: children with a negative risk index had smaller and more symmetrical brain structures and experienced more marked and pervasive deficits in language comprehension. In contrast, children with a positive risk index had larger brain structures and exaggerated asymmetry; these children had significant phonological deficits and reading impairments, but relatively preserved language comprehension. Further research by this group has revealed that the anatomical risk index is applicable in other disorders, such as schizophrenia, that may involve aberrant language development (Leonard et al., 2008).

Brain Function in DLD

Two techniques have been used to study the way children with primary DLD function differently from typical controls: functional magnetic resonance imaging (fMRI) and electrophysiological measures.

fMRI

Studies of brain function in primary DLD using MRI are rarer than studies of brain structure and are limited by small sample sizes and task difficulties. Hugdahl et al. (2004) investigated language

BOX 1-2   How Do We Study Language in the Human Brain?

Recent advances in neuroimaging technology provide non-invasive methods of investigating the structure, function, and connectivity of brain regions implicated in language processing.

Magnetic resonance imaging (MRI) uses strong magnetic fields and nonionizing radio frequency energy to generate a signal from the body. In structural MRI, this signal enables detailed measurement of the volume, shape, and position of brain tissues. One advantage of MRI is that different components of brain structure, such as subcortical structures (brain structures lying beneath the cerebral cortex), white matter (consisting mostly of myelinated axons, or the brain's "wiring"), and gray matter (a layer of neuronal cell bodies) have different intensities (or contrasts) allowing detailed anatomical structures of the brain to be visualized. The typical spatial resolution of such structural images is approximately 0.5 to 1 mm³, which represents anatomical groups of several hundred thousand neurons.

Functional MRI (fMRI) refers to the use of MRI scanners to detect brain activity in response to some external stimuli. The most widely used type of functional MRI is known as blood oxygenation level dependent (BOLD) imaging, which takes advantage of the fact that oxygenated and de-oxygenated blood have different magnetic properties. As neurons become active, they consume oxygen leading to compensatory changes in blood flow to the active area that can be detected in an MRI scanner. The BOLD signal is therefore an indirect measure of neural activity. fMRI is usually regarded as having sufficient spatial resolution to allow inferences about the location of neural activity to be made. However, because blood flow changes relatively slowly (5 to 8 seconds after the external event), temporal resolution is poor and limits the use of fMRI for the study of the time course of language processing.

Diffusion tensor imaging (DTI) is a technique that allows us to examine the anatomical connectivity between different brain regions. It exploits the fact that water molecules diffuse differently around white and gray matter; water moves slowly and in many different directions through gray matter, but quickly and less diffusely through white-matter tracts. DTI tracks the movement of water molecules over time, enabling identification of the location and orientation of white-matter tracts.

Functional transcranial doppler ultrasound (fTCD) is a non-invasive and less costly method for assessing cerebral lateralization. The procedure involves measuring blood flow in the middle cerebral artery via an ultrasound probe placed just in front of the ear. In typical development, it is possible to see a clear increase in left-sided blood flow during language generation, with lateralization agreeing well with that obtained using other methods. It is particularly well-suited for studying language lateralisation in young children, because it is not loud or intimidating and does not require the participant to remain still to the extent that MRI does. A video of this procedure applied to the study of language can be viewed here: www.jove.com/Details.stp?ID=2161.

Near infrared spectroscopy (NIRS) is used in medical contexts as a non-invasive measurement of the amount and oxygen content of hemoglobin. It can be used for non-invasive assessment of brain function through the intact skull in human subjects by detecting the absorption of light, which is sensitive to the concentration of hemoglobin, to measure activation changes in blood hemoglobin concentrations associated with neural activity. NIRS measures changes in blood oxy- and deoxy-hemoglobin concentrations in the brain as well as total blood volume changes in various regions of the cerebral cortex using near-infrared light. The NIRS system can determine the activity in specific regions of the brain by continuously monitoring blood hemoglobin level. In this way, it can be a partial replacement for fMRI, and does not require patients to lie still in a closed, noisy chamber. NIRS can be used on infants, where fMRI is difficult, and NIRS is much more portable than fMRI machines; even wireless instrumentation is available, so that subjects can move about during the procedure. However, at this time, NIRS cannot fully replace fMRI because it can only be used to scan cortical tissue, whereas fMRI can be used to measure activation throughout the brain.

Electrophysiological measures such as electroencephalogram (EEG) and magnetoencephalography measure the tiny electrical currents or associated magnetic fields, respectively, that are associated with the firing of many hundreds of thousands of neurons in the human brain. These techniques measure this electrical activity through hundreds of electrodes/sensors placed on the scalp and provides a more direct measure of brain function. A major advantage of EEG or MEG is that measurement of electrical activity may be time-locked to an external stimulus, such as a spoken word or sentence, allowing a moment by moment picture of neuronal response to language (an "event-related potential," or ERP). This superior temporal resolution allows us to make inferences about the time-course and speed of language processing, but comes at the cost of poorer spatial resolution. Indeed, it is now quite common for language researchers to combine MRI methods (good spatial resolution) with EEG/MEG (good temporal resolution) to better understand language processing.

All of the above methods are noninvasive and do not require any form of ionising radiation or the administration of contrast agents (e.g., gadolinium). This is of particular advantage in studies of DLD as participants can be assessed and scanned repeatedly over time, allowing researchers to visualize how the language areas develop with age.

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processing in five Finnish family members with DLD and six age-matched peers as they listened passively to isolated vowel sounds, pseudowords, and real words. The family members with DLD showed bilateral activation in the temporal lobes, including the medial temporal gyrus and the superior temporal sulcus, which was much weaker and more focal than activations seen in the comparison group. This reduced activation is believed to be associated with the difficulties individuals with DLD have in decoding the phonological structure of words and pseudowords (Friederichi, 2006).

Weismer, Plante, Jones, and Tomblin (2005) investigated working memory abilities using fMRI in eight teenagers with primary DLD and eight individuals with normal language (NL) abilities. Like Hugdahl et al. (2004), they found that individuals with DLD exhibited hypoactivation in frontal and parietal regions that are implicated in memory and attention and the inferior frontal gyrus, commonly associated with semantic processing and other aspects of language processing. However, the participants performed more poorly on the working memory task overall, so it is not

clear whether these differences are attributable to working memory deficits specifically, or increased/decreased effort in task performance.

Obtaining brain scans from young children and children with developmental concerns using MRI is not always easy; the scanner is large and noisy and participants have to keep very still while lying in a restrictive space. Dorothy Bishop and colleagues have been developing a technique called functional transcranial Doppler ultrasound (fTCD), which is a more user-friendly method of investigating cerebral lateralization (see Box 1-2). She has demonstrated that adults with DLD show reduced blood flow to the left hemisphere when engaged in language tasks, providing evidence of reduced lateralization of language (Whitehouse & Bishop, 2008). Near-infrared spectroscopy is another new technique being employed in language studies (Bortfeld, Wruck, & Boas, 2007; Kuhl, 2010).

Despite the contradictory findings and confusions in the literature, a number of observations can be made. First and foremost, the direction of causation in reported brain differences is not at all clear. Do differences in brain structure or activation cause language impairment, or do these differences arise as a result of a lifetime of processing language differently? Second, the relationships between brain and language in DLD are weak and probabilistic, and not specific to DLD (Herbert et al., 2005; Leonard et al., 2006). Comparisons across developmental disorders will be necessary to identify clearer relationships between disorder and brain anomaly (cf. DeFosse et al. 2004; Leonard et al., 2006). Finally, the anomalies that are associated with DLD appear to arise early in development, rather than as a result of an early acquired lesion. Bishop and Norbury (2008) suggest that this is consistent with genetic influences on brain development leading to a brain that is wired up in a non-optimal fashion for language learning.

Electrophysiological Measures

Relative to studies of primary DLD using MRI, many more studies have explored language processing using electroencephalograms (EEG). This technique allows investigators to measure the electrical brain activity that is directly related to a specific external event (hence the term "event-related potential" or ERP; see Box 1-2). ERPs are displayed as wave forms and are described in terms of components that vary with respect to polarity (positive or negative), the latency of peak occurrence (time elapsed between when the stimulus is delivered and when the peak occurs), and their topographical distribution (location) over the scalp. The patterns of ERP response change dramatically over time, making it an ideal method for exploring continuities and discontinuities in DLD (see Friederici, 2006 for a review). For example, the N400 (a negative peak that is seen 400 msec. after a stimulus is delivered) is an ERP component that is thought to index semantic processes; it is observed in the centroparietal region of the brain. When typical individuals are confronted with semantically anamolous or incongruous material, these elicit a larger N400 response relative to semantically congruous material, reflecting increased processing effort. Individuals with DLD and their fathers tend to show exaggerated N400 responses in both situations (Ors et al., 2001).

Another advantage of ERPs is that they allow us to investigate auditory processing without requiring children to attend to the stimuli or engage in an overt task. In this case, an oddball paradigm in which children hear a "standard" stimulus (usually a tone or speech sound, for example, /ba/) that repeats regularly is punctuated occasionally by the "deviant" stimulus (a change in tone or speech sound, /da/). Each sound is compared to the memory trace of the last sound, thus, if the new sound is different, it should elicit a larger response as the brain registers novel input. The difference in waveforms between the standard and the deviant is referred as the "mismatch negativity" (MMN): a sharp negative shift between 100 and 300 msec. post stimulus onset that is thought to index automatic encoding of acoustic change and potentially memory traces of auditory information (see Bishop, 2007). Studies employing this technique in children with DLD have tended to show a reduced MMN response (Bishop, Hardiman, & Barry, 2010); longitudinal studies indicate that the brain responses of children with DLD are immature, showing a similar pattern of response to younger, typically developing children (Bishop & MacArthur, 2005).

So, there is clear evidence that biological factors are associated with DLD, but we have to be careful about assuming the causal directions of these effects. Prospective studies of infants selected because of genetic risk for DLD are lacking; such studies would allow us to trace brain structure and function developmentally, enabling us to determine if brain differences occur prior to language onset, or result from years of faulty language processing. We also need to stress the probabilistic nature of these biological risk factors; not all children with risk gene variants or negative anatomical indices go on to have DLD. One key implication of this is that brain scans to diagnose DLD are highly unlikely! It also means that in our assessments of children and families we need to consider risk from multiple levels of explanation, in order to weigh up the child's prognosis.

And as little as we know about genes and brains in children with primary DLD, we know even less about DLD that is secondary to other disorders. Very little research has been done on the language features of DLD that is secondary to ID, ASD, hearing impairment, or the other disorders DLD can accompany, and we have no explanation for why Sam and Max, two 12-year-olds who each have an IQ of 50, are as different as Box 1-3 describes. But

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BOX 1-3 Sam and Max

Sam is a little charmer. When he meets you, he walks right up to you, shakes your hand, and says, "Hi, I'm Sam. What's your name?" In school, he gets reading and writing instruction and does well on the primary-level readers that have been adapted for his use. Sam is in a special vocational training program in which he works in his middle school's cafeteria each lunch period, helping to refill the steam trays. All of the cafeteria workers are fond of him and look forward to hearing him tell them what he did in class each morning when he comes in for work at noontime. Sam follows the cafeteria staff's directions easily and cheerfully and doesn't get confused when he is told to do a new task, as long as it is explained slowly with some demonstration.

Max works with Sam in the cafeteria at lunchtime and does a good job at the tasks that he's practiced for some time. He seems quiet, though, and rarely talks spontaneously. Even when spoken to, he answers in one or two words, which are often so misarticulated that the cafeteria workers don't understand what he says. Max's teachers and parents have worked hard to try to improve his social communication and to increase his spontaneous speech, but it's an uphill battle. He just doesn't seem to have much to say to anyone, and even when he does, he can't seem to put more than two or three words together to say it.

the fact that we know children like Sam and Max exist means that knowing a child's diagnosis or developmental level—or his genetic make-up or neurobiological status, for that matter—won't be enough to decide how to address his communication difficulties; we'll need to know about those communication difficulties themselves, regardless of their underlying cause(s). It is the detailed description of communicative competence that will define a communication intervention program. We'll return to this point later.

One final point should be made before leaving this section. Few clinicians share our enthusiasm for etiological studies that highlight genetic and neurological origins of DLD, reasoning that if the problem is in the brain or the genes, there is little we can do about it. We hope what we've discussed so far has convinced you that this is not the case at all. As illustrated in Figure 1-3, the environment exerts strong influences on gene expression and neurological development, as well as on behavior. Intervention is therefore a powerful environmental tool that can shape development and positively influence behavioral outcome. This has been demonstrated in other areas of medical research; dietary restrictions to combat the effects of phenylketonuria, now identified through newborn screening, is an excellent example. What other environmental influences have been linked to language learning and disorder? Let's take a look.

Environmental Factors

Conventional wisdom tells us that if only parents would turn off the television and spend some time talking to their children, we could ameliorate DLD. However, the research evidence is that language learning is remarkably robust in the face of impoverished language input; so it appears that environmental factors alone cannot account for the relatively circumscribed deficits in grammar that characterize DLD (Bishop, 2006b). Nevertheless, environmental factors can have an important role in mediating the developmental course of the disorder and the impact of disorder on the child's adaptation and well-being.

Family socioeconomic status (SES) has long been associated with language development; children from families with low SES have protracted rates of language development relative to peers from more affluent environments. Hoff and Tian (2005) suggested that the relationship between SES and language impairment is mediated by maternal education, via the quantity and quality of mothers' interactions with their children. However, other studies have found that SES (measured by income or maternal education) is not a reliable predictor of long-term language impairment (Dale, Price, Bishop, & Plomin, 2003; Zubrick, Taylor, Rice, & Slegers, 2007). Furthermore, environments are often at least partially genetically influenced, in other words, limited education and lower incomes may reflect parental language impairments. Therefore, DLD in the context of low SES should alert clinicians and educators to the need for careful monitoring and language support.

In a multi-cultural society, clinicians are frequently asked whether or not exposure to more than one language can cause language delay or exacerbate language impairments. Unfortunately there is very limited evidence available to address these important questions. In general, the view is that exposure to two or more languages does not cause or compound DLD (Paradis, Crago, Genesee, & Rice, 2003) and families are advised to provide rich linguistic input to their children in whichever language they themselves are most comfortable speaking. We will discuss this issue in more detail in Chapter 5.

Culturally appropriate assessments can include informal observation of play behavior.

Cognitive Models of DLD

In primary DLD, cognitive theories have attempted to explain why language may be disproportionately impaired relative to other developmental achievements. In the past, theories have suggested that the grammatical deficits that characterize DLD occurred because of a "selective" deficit in dedicated cortical structures that subserve language (cf. van der Lely, 2005). However, our recognition that grammatical deficits are rarely "all or nothing," coupled with our understanding of the developing brain means that a strong version of this hypothesis is no longer tenable. Increasingly, researchers and theorists are trying to elucidate the more general cognitive processes that, if faulty (or inefficient), could render language acquisition unduly challenging. Like many other aspects of DLD, there is little consensus about which theory is right. It is very likely that more than one deficit is necessary to derail language learning to the extent seen in DLD. The pros and cons of key theories are highlighted below.

Auditory Processing

Auditory accounts of DLD have argued that children with DLD have difficulties perceiving sounds that are presented rapidly, are of brief duration, and therefore are not perceptually salient. Such deficits could conceivably lead to problems perceiving and categorizing meaningful phonemic contrasts, leading to problems with language learning (Chiat, 2001). Furthermore, many grammatical contrasts in English are signalled with unstressed phonemes of brief duration occurring in a rapidly changing speech stream; thus, a general impairment in temporal or perceptual processing may lead to highly selective impairments in grammatical processing (Joanisse & Seidenberg, 2003). Although an intuitively attractive account of DLD, auditory deficits have been shown to be neither necessary nor sufficient to cause DLD. Notably, while auditory deficits are more common in children with DLD, not all children are affected and some children with auditory deficits do not have any language difficulties (McArthur et al., 2008). In addition, intervention studies have indicated that improving auditory skills does not confer improvements to other aspects of language or literacy, calling the causal relationship into question (see Strong, Torgeson, Torgeson, & Hulme, 2011 for a meta-analysis of one such intervention program).

FIGURE 1-5   Model of bottom-up language processing presented by the Illinois Test of Psycholinguistic Abilities. (Used with permission from Kirk, S, McCarthy, J, and Kirk, W (1968). *Illinois test of psycholinguistic abilities* (revised edition). Urbana, IL: University of Illinois Press.)
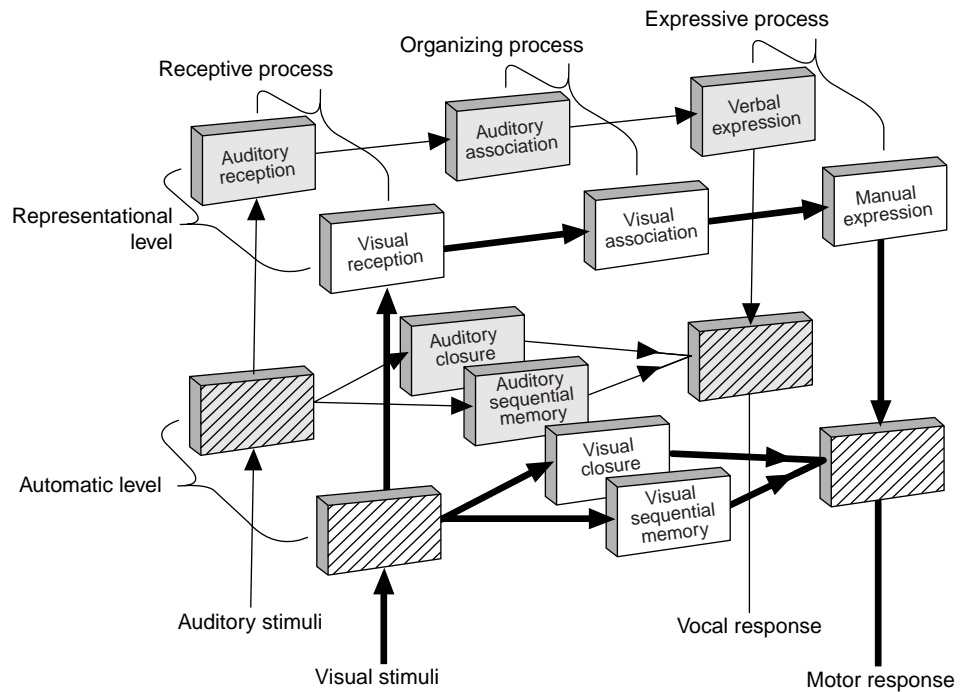
Limited Processing Capacity

Leonard (1998) argued that perceptual deficits are more detrimental to language development in the context of a system that has limited capacity to hold information in store while processing perceptually challenging input. Evidence for a limited capacity system stems from poor performance on tasks of working memory and phonological short term memory (see Vance, 2008 for review). Measures of working memory typically require children to make true/false judgements about simple statements such as "balls are round" and "pumpkins are purple" (the processing component) and then recall the last words of each statement, "round" and "purple" (the capacity component). The argument is that there is a trade-off between processing and capacity, so that when processing demands increase, capacity for recall is reduced and vice versa. If this is true, children with DLD would be expected to have greater difficulty processing sentences of increasing length and complexity. Indeed, Montgomery and Evans (2009) demonstrated such a relationship in young people with DLD.

Remember the non-word repetition task? Deficits on this task are thought to index phonological short-term memory, as children with DLD tend to have more difficulty at increasing syllable length ("hampent" vs. "blonterstaping"). The significance of the test relates to its role in language learning; acquiring new words depends on the ability to retain novel sound sequences in memory, learning syntax requires the child to hold sentences in memory while they are analysed. Thus, is has been argued that a deficit in non-word repetition (NWR) could lead to a host of language deficits (cf. Graf-Estes et al., 2007).

But what does the NWR test actually measure? Bloom and Lahey (1978) were among the first to point out that auditory processing and other cognitive models of DLD generally take a "bottom-up" view of language processing. In a "bottom-up" model, lower-level processes, such as perception and discrimination,

provide input necessary to the function of higher-level processes such as comprehension. Figure 1-5 illustrates such a model. But, as Bishop (1997) and Lahey (1988) made clear, these "lower-level" processes do not operate in a vacuum or on a blank slate. Instead, they work in the context of prior knowledge. So prior knowledge, including knowledge of language, always influences how one processes input. For example, suppose that an examiner gave you these two lists of words to memorize and repeat:

LIST 1	LIST 2
Gigan	Pterodactyl
Gigantis	Giraffe
Angiris	Hippopotamus
Mogra	Triceratops
Megalon	Tyrannosaur
Hedora	Alligator
Mothra	Rhinosauros
Minya	Elephant

From which list do you think you could recall more items? Most people choose List 2. Even though the words in it are long, they are generally more familiar (the names of large animals, living and extinct). List 1, though, would be easier to learn if you had the appropriate background knowledge. You see, List 1 contains the names of characters from several *Godzilla* movies. For *Godzilla* aficionados, this list, too, contains familiar elements and would be readily recalled. In fact, when we began to write out this list for you as an example, we could only recall three or four of the

Godzilla characters' names. We had to put in a quick call to a 6-year-old Godzilla fan we knew, and asked him to name all the monsters in the Godzilla movies he'd seen. He rattled them off without hesitation, producing more than we needed for the list!

Now, let's say you were given List 1 to repeat after one brief presentation without prior knowledge or associations with the words on it. Suppose you scored significantly lower than some other subjects, say, people who were attendees at the Godzilla Fan Club International Convention. Would it follow that you had auditory memory deficit? Of course not! Your familiarity with the stimuli strongly influences how easy they are to remember and recall.

The same might be said of a 5-year-old with a DLD who is trying to complete the NWR test. Success on this task is related to the "wordlikeness" of the non-words or the extent to which they have real words embedded in them (Dollaghan, Biber, & Campbell, 1995; Gathercole, 1995). In other words, the more a non-word resembles a known word in a person's vocabulary (e.g., trumpet—trumpetine), the easier it is to remember. Children with DLD who have smaller vocabularies will have fewer words on which to "hook" novel words. So again, this deficit may be seen as more a consequence than a cause of DLD. Just as you had trouble remembering "Angiris" because you hadn't heard or used the word before and had no associations with it, our child with DLD has the same problem with "trumpetine" because he has very limited experience with the word "trumpet." Ask him to recall several of these relatively unfamiliar terms, and he'll show the same difficulty you had in recalling "Angiris," "Mothra," "Gigan," and "Minya."

Now, there is little doubt that children with DLD have substantial verbal memory deficits, but the direction of causation is debatable. Cognitive theories that take a bottom-up view of language processing often fail to take into account evidence for top-down influences on task performance. In fact, the sensitivity of the NWR test in identifying DLD may stem from the complexity of the test and the fact that it taps a number of different underlying skills (Archibald & Gathercole, 2007; Coady & Evans, 2008). Similarly, verbal working memory tasks are essentially complex language tasks, making poor performance in DLD populations difficult to interpret (Baird et al., 2010). Recent findings of working memory deficits outside the verbal domain lend credence to the view that domain-general cognitive processes contribute to language difficulties (Bavin, Wilson, Maruff, & Sleerman, 2005).

Procedural Deficits

Ullman and Pierpont (2005) made a distinction between procedural memory systems, which are important for rule-based learning (such as grammar), and declarative memory systems, which underlie knowledge-based learning (such as vocabulary). They hypothesized that DLD was the result of a primary deficit in procedural memory systems, which could potentially be compensated for by reliance on relatively intact declarative systems. The appeal of this theory is that it makes explicit connections between brain and behavior, has the potential to explain deficits outside the language system that are also contingent on procedural learning (such as some motor tasks), and is developmentally more attractive in its emphasis on reorganization and compensation. Several recent investigations have noted that children with DLD are impaired on measures of implicit learning, which tap procedural memory systems (Evans, Saffran, & Robes-Torres, 2009; Lum et al., 2010; Misyak, Christiansen, & Tomblin, 2010), and that performance on

these learning measures is correlated with language scores (Evans et al., 2009; Misyak et al., 2010). However, impairments in learning are not limited to procedural memory systems (Lum et al., 2010) and extend to declarative memory impairments involved in learning facts and associations.

The conclusions from theoretical studies of DLD are that there is unlikely to be a single cognitive factor that can cause the variety of language profiles seen in DLD. What is perhaps even more important is that attempts to remediate underlying cognitive processes have generally not been any more successful in improving language performance than interventions that specifically target language behavior. This is the reason that in later chapters we will focus on assessing and remediating language behavior rather than potential underlying cognitive mechanisms.

Figure 1-3 summarizes the biological, cognitive, and environmental contributions to primary DLD that have been reported in the literature. It is unlikely that these are the only factors and it may be that the combination of factors the child brings to the task of language learning is more important than any one particular risk. An interesting question for researchers and clinicians alike is whether these same factors confer risk for language impairment in other developmental conditions such as autism spectrum disorder, and how the additional risks associated with these disorders impacts language development in other ways. It is certainly the case that rates of language impairment in autism spectrum disorders and literacy disorders are much higher than we would expect from chance; shared underlying etiology may help to explain why this is so.

COMORBIDITY IN DLD

Comorbidity refers to a situation in which a child may experience two or more disorders simultaneously. An important question concerns the nature of the relationship between these two disorders: Do they arise from completely independent causal origins, or are they causally related? Pennington and Bishop (2009) provide an excellent discussion of the comorbid relationships between speech sound disorders, reading disorders, and DLD. Here we consider two disorders in which comorbid language impairments occur at extremely high rates, increasing the likelihood that these children will form a substantial proportion of the average clinician's caseload.

Autism Spectrum Disorders

Early studies comparing children with ASD and DLD reported considerable overlap in structural language profiles (especially vocabulary and grammar) of the two disorders, though children with ASD invariably had more severe impairments (Bartak, Rutter, & Cox, 1975). However, these studies also highlighted language behaviors that reliably differentiated the two groups. Children with DLD were more likely than peers with ASD to have impairments in speech production; recent studies have also demonstrated that articulation deficits rarely feature in ASD (Kjelgaard & Tager-Flusberg, 2001). The language profiles of children with ASD, on the other hand, were more likely to be characterized by deviant features that would not be regarded as typical at any age; these features include repetitive use of stereotyped phrases, unusual and exaggerated intonation, pronoun reversal, idiosyncratic words, echoing the speech of others, and failure to respond to the speech of others.

Furthermore, pragmatic skills, or the use of language, is universally impaired in ASD (see Tager-Flusberg, Paul, & Lord, 2005 for a review), whereas children with DLD present with more variable pragmatic skills.

Textbook cases of ASD and DLD are relatively easy to distinguish; the prototypical child with DLD enjoys social interactions, seeks friendships with his or her peers, is keen to communicate, and uses gesture and other forms of nonverbal communication to get his or her message across. However, many children present with a symptom profile that does not unambiguously align with either diagnosis. These children have pragmatic deficits that cannot be fully accounted for by the grammatical impairments that are more characteristic of DLD, yet they do not have the full triad of impairments in severe enough form to warrant a diagnosis of autism. Differential diagnosis may be further hampered by a clinical picture that changes with time; children with unequivocal diagnoses of DLD early in development may more closely resemble individuals with ASD years later when structural language impairments resolve and the social demands of society increase (cf. Howlin, Mawhood, & Rutter, 2000; Michellotti et al., 2002). Conti-Ramsden, Simkin, and Botting (2006) applied standard diagnostic assessments (Autism Diagnostic Interview—Revised; LeCouteur, Lord, & Rutter, 2003; Autism Diagnostic Observation Schedule; Lord, Rutter, DiLavore, & Risi, 2001) to 76 adolescents with DLD, none of whom had been regarded as having DLD at the age of 7. Although the majority of adolescents did not meet criteria on either measure, 3.9% of participants met criteria on both, a prevalence rate approximately three times greater than would be expected from the general population (Baird et al., 2006). A further 26% met criteria on one or other measure but not both. Similar findings are reported by Bishop and Norbury (2002) and Bishop, Whitehouse, Watt, and Line (2008). Both studies found that children were more likely to meet criteria on these measures if they had been identified as having "pragmatic language impairment"; however, repetitive and restricted interests and behaviors were not characteristic of these children. It is still an open question as to whether this overlap represents misdiagnosis, a changing symptom profile in which children with DLD develop more autistic behaviours over time, or "diagnostic substitution" (Bishop et al., 2008), in which today's more inclusive diagnostic criteria identify children who would not have met more stringent diagnostic criteria in the past. Bishop et al. (2008) argue that a proportion of children diagnosed with DLD have pragmatic impairments and some evidence of autistic symptomatology, but that these children are eager to communicate and their pragmatic deficits do not interfere with daily family life, contrary to the more traditional image of a child with ASD.

Recently there has been considerable research interest in the heterogeneous language profiles of children with ASD. Kjelgaard and Tager-Flusberg (2001) first noted that a sizeable proportion of children with ASD also met diagnostic criteria for DLD (see also Loucas et al., 2008). Subsequent studies delineated behavioral similarities in morphosyntactic and nonword repetition deficits (Tager-Flusberg, 2006), literacy difficulties (Lindgren et al., 2009), and overlaps in neurobiological anomalies (Tager-Flusberg & Joseph, 2003). Children with autism and DLD appear to have more significant impairments in language comprehension, suggestive of a 'double deficit' that results in a more severe profile (Loucas et al., 2008).

A strong hypothesis that emerges from these findings is that the same causal factors that confer risk for DLD also increase risk for language impairment in ASD. Of course, not everyone agrees (Whitehouse et al., 2007; Williams, Botting & Boucher, 2008). There are subtle differences between the language characteristics of children with ASD and those with DLD, and the patterns of family performance also differ substantially between the two groups (Lindgren et al., 2009), raising doubts about the degree of shared etiological overlap. However, we might expect that children with ASD will have qualitative differences in language performance *because they have ASD*; the combination of DLD risk genes and ASD risk genes may also impact on family patterns of language performance (Bishop, 2010). So the jury is still out on the nature of the relationship between the two disorders. Nevertheless, there is no doubt that many children with ASD have language impairments that require careful assessment and intervention planning.

Language Learning Disabilities (Literacy Disorders)

Skilled reading requires the marriage of two complementary skills: reading accuracy (the ability to decode single words) and reading comprehension (understanding connected text) (Hoover & Gough, 1990). Extensive research on typical reading development has demonstrated that these skills are in turn reliant on underlying language processes (see Bishop & Snowling, 2004, for a review). Decoding in alphabetic languages such as English requires the mapping of orthography (the letters of printed words) to phonology (the sounds represented by the letters). Decoding alone does not guarantee literacy success, because the ultimate goal of reading is to extract meaning from printed text. Reading comprehension is supported largely by nonphonological language skills such as semantics and contextual processing (Perfetti, Landi, & Oakhill, 2005). Although decoding and comprehension frequently develop in concert, they may be dissociated (Bishop & Snowling, 2004).

Children who experience problems decoding printed text are frequently referred to as 'dyslexia'. The majority of children with dyslexia have phonological processing difficulties that disrupt their decoding abilities, leading to the prevailing theoretical view that phonological impairments are the primary cause of dyslexia (see Snowling, 2000, for review). Deficits in other aspects of language have also been reported in dyslexia. For instance, McArthur, Hogben, Edwards, Heath, & Mengler (2000) found that approximately 50% of children identified as having a specific reading disability also met criteria for DLD (defined as Total Language scores of 85 or less on the CELF) and a similar percentage of children identified as having DLD achieved significantly low scores on a measure of reading accuracy.

Children who experience problems understanding text despite adequate decoding skills are commonly referred to as "poor comprehenders." Nation, Clarke, Marshall, and Durand (2004) investigated the language profiles of poor comprehenders and found that although the group scored within normal limits on measures of phonological processing, as a group they showed significant deficits in all other language domains, including vocabulary, grammar, verbal working memory, and higher-level discourse processing (i.e., making inferences) relative to skilled comprehenders. In addition, approximately 30% of poor comprehenders met criteria for DLD, depending on the cut-off scores used for diagnosis.

There is little doubt that DLD places children at greatly increased risk for reading impairments, contributing to lower educational attainments (Catts, Fey, Tomblin, & Zhang, 2002; Snowling, Adams, Bishop, & Stothard, 2001). The particular

profile of literacy skill will depend in part on the child's profile of language impairment; however, children with deficits in language comprehension have particularly poor literacy outcomes. For example, in a longitudinal study of children attending language units at age 7, Botting, Simkin, and Conti-Ramsden (2006) found that 67% of children with predominantly expressive language impairments and 88% of children with comprehension deficits had literacy impairments at age 11.

The considerable behavioral overlap between reading disorders and DLD have led many to regard the two as symptoms of the same underlying disorder, simply representing different points on a continuum of severity. However, this might be an overly simplistic conclusion, because severity of language impairment does not necessarily predict severity of reading deficit; there are children who read accurately despite DLD (Bishop, McDonald, Bird, & Hayiou-Thomas, 2010). In addition, evidence for consistent overlap between the two disorders at the biological or genetic level is lacking. Most importantly, the relationship between the two disorders cannot be fully captured by a single dimension of severity. Instead, Bishop and Snowling (2004) advocated the need for at least two dimensions of impairment to characterize the relationship between reading disorders and DLD: a phonological dimension and a nonphonological language dimension that incorporates semantics and grammar. Thus for children with DLD, the profile of reading difficulty should map onto the profile of language impairment experienced by the child.

CONCLUSION

In this chapter we have discussed some of the issues that face speech-language pathologists when engaging in clinical practice with children. We have talked about definitions and terminology, and we have explored some of the difficulties and controversies surrounding these issues. We have given you our view on these things, but have also noted that there is rarely consensus in the field. Many researchers and practitioners in the field would disagree with some of our comments, but until definitive research allows us to achieve consensus, each individual clinician must make an independent decision. We've tried to give you some of the information you need to make those decisions.

We've also given you some frameworks for assessing and treating DLD that will be examined in more detail in later chapters. In addition, we've discussed a range of causal models for primary DLD, and how these may be related to other developmental conditions in which language may be impaired. We'll discuss these situations in more detail in Chapter 4. Finally we've discussed three major tenets that lead to the model of assessment and intervention practice we will advocate in this book, which, for want of a better term, we call a descriptive-developmental approach. We'll make these tenets, and the descriptive-developmental approach that grows out of them, explicit now.

The first tenet concerns the role of etiology in developing assessment and intervention for children with DLD. We've shown you that even the most advanced science today does not go very far in explaining how DLDs, either primary or secondary, arise. And we've given you several examples to show you that the diagnostic category into which a child is placed may not always either explain or predict language behavior. Knowing the etiology of DLD does not, in itself, tell us what a child's communication is like and what is needed to enhance it. We would make the argument that, as

important as etiology is for understanding a child's condition, we need something in addition to develop an intervention program. That something is a detailed description of the child's current language function. It is this thorough delineation in terms of the use of vocabulary, meanings expressed, use of syntactic rules and morphological markers, pronunciation of sounds, knowledge of phonological rules, and the appropriate use of language for communication in social contexts—in other words, the range of language performance, including form, content, and use—that determines the course of intervention, and the course of assessment is determined by the aim of collecting this comprehensive description.

The second tenet of our approach suggests that it is much more important to detail the child's language skills themselves than to have extensive information on memory, auditory perceptual or perceptual-motor abilities, or skills typically tested in "auditory processing" test batteries. The reason is that, as we've discussed, we don't always know the direction of causation when children with language problems perform poorly on bottom-up processes like these. Since we don't know if these auditory, processing, and memory problems are chickens or eggs, we can't rely on remediating them to have any effect on language. Instead, we work directly on the language forms and functions that assessment identifies as disordered. So we don't address "auditory processing" or "verbal memory," we work on functional understanding and use of sounds, words, and sentences in real communicative contexts. Extensive reviews (cf. Guralnick, 1997; Law, Garrett, & Nye, 2005) of treatment research done over the past 20 years support the notion that treating language goals directly results in improved language behavior, especially for expressive language behavior. There are still many questions about the best methods for remediating language disorders, the best time to initiate and terminate services, the best candidates for intervention, and other issues. But it does seem clear that language behaviors can be changed for the better when targeted directly and that communication improves as a consequence.

The third tenet of a developmental-descriptive orientation is the *developmental* part. We take the position that the best way to decide what a child should learn next in a language intervention program is to determine where he or she is in the sequence of normal development and what the next phase of normal development for that form or function would be. In general, with some exceptions, most research in disordered language has shown that its course parallels normal development at a slowed down rate with particular, predictable asynchronies (e.g., Bishop, 1994; Leonard, 1991; Rice, Warren, & Betz, 2005; van der Lay, 2005). This finding underlies the assumption that leads us to use the normal sequence as a guide to intervention.

What does it mean in practice to use the normal developmental sequence as a guide for intervention? First, it means that we must identify where in the normal sequence a child is currently functioning, then consult the research on normal language development and find out where in the sequence the client falls for each area of linguistic behavior. We then establish goals for language intervention by identifying language skills just above the child's current level of functioning. We'll talk more in Chapter 3 about other issues involved in selecting goals for intervention. But, in principle, the descriptive-developmental approach suggests that it is the normal sequence of acquisition that serves as the curriculum guide for language instruction.

This suggests that if a 5-year-old is producing primarily two-word utterances, our immediate goal is not to teach him to produce the sentences typical of a 5-year-old but to begin work on

expanding the two-word sentences to include the next elements that would appear in normal development, such as three-word agent-action-object constructions or "-ing" marking. The same would be true for a 16-year-old with ID at the same language level. But this is not to say that the two clients would receive the same intervention. The stimuli and materials for intervention for these two clients would differ in that we would attempt to choose props and contexts for intervention that were chronologically age appropriate, even though the words, structure, and meanings being taught were similar in many ways. Let's take an example.

Megan is a kindergartener referred for language evaluation to SLP Ms. Keene by her teacher because she used "short, babyish sentences." Language sampling revealed that most of her utterances were telegraphic, although she used these telegraphic utterances to talk about age-appropriate ideas. After a thorough evaluation, it appeared that semantic, pragmatic, and phonological skills were relatively intact compared with her limited syntactic production, and language comprehension appeared age appropriate. The speech-language clinician decided to target three-word sentences that encoded the same meanings already expressed in the telegraphic utterances. To elicit these sentences, she used a variety of dolls and toys that she manipulated in agent-action-object sequences she expressed verbally for Megan, having Megan imitate some, providing opportunities for her to produce others, and using modeling and expansion of Megan's telegraphic productions.

Ms. Keene also had another client on her caseload by the name of Izzy. Izzy was a teenage boy with Down syndrome placed in a special education class in the high school. Izzy also spoke primarily in telegraphic utterances, although his language comprehension skills were considerably higher than his production level. While Izzy had some difficulties with phonological production, he could generally make himself understood, and he expressed a wide range of ideas with his simple sentences, engaging often and enthusiastically in social conversation. Ms. Keene decided that Izzy, too, needed help expanding his sentence structures. But rather than using toys and dolls as stimulus materials, she used the tools and equipment that Izzy was learning to use in his vocational education program. She focused on producing sentences that he could use to talk about the work he was learning to do.

These two examples illustrate an important corollary of the descriptive-developmental approach. The normal developmental sequence provides the goals for intervention but other considerations, such as the client's chronological age and the communicative context in which he or she must function, influence the materials and settings the intervention uses. So even if the child's language level is preschool and the goals of intervention target preschool-level structures and functions, the materials and equipment, the particular vocabulary items, the teaching style, and context used are influenced by considerations beyond the language level, such as the child's chronological age or functional needs

(Olley, 2005) and the functional communicative demands of the child's environment. Targeting preschool level language structures and functions does not necessarily mean that they must be approached with a preschool style of intervention.

For the purposes of clinical practice in language pathology—that is, for diagnosing problems in the acquisition of language, detailing the parameters of these problems, and deciding what to do about them—we believe that a descriptive-developmental approach conforms best to what we know about DLD today, and provides the best guide to serving our clients. In the next two chapters, we will discuss how to implement this model in assessment and intervention for children with language disorders.

STUDY GUIDE

I. Diagnostic Issues in Developmental Language Disorders
  A. Define "naturalist" and "normative."
    1. Give an example of each type of criterion as it would be used to identify a child with a language disorder.
    2. Why are both considered necessary to make a diagnosis?
  B. Explain the differences between speech, language, and communication. How are they related?
  C. Discuss the issue of labels in the field of speech-language pathology. What terms would you use in your clinical practice? Why?
II. A Brief History of the Field
  A. What field of study gave rise to the study of DLD?
  B. Why was the development of theoretical linguistics important for our field?
  C. How does the history of DLD tie in with issues of terminology?
III. Aspects and Modalities of Language Disorder
  A. What are the key linguistic features of DLD?
  B. Name and describe the different domains of language. Imagine a child with a deficit in each domain. What would his or her conversation look like?
  C. Which criterion would result in identifying more children with language disorder: the 10th percentile or one standard deviation below the mean?
  D. Are there subtypes of DLD? Explain your answer.
  E. What are the key components of the International Classification of Functioning, Disability and Health? How would you use this system in clinical practice?
  F. What are the different levels of explanation in a causal model of disorder? How do these apply to DLD?
IV. Etiology of DLD
  A. How do we study language in the brain?
  B. Why are twin studies important to understanding the biological basis of DLD?
  C. What are some of the differences in brain structure and function associated with DLD?
  D. Are genetic disorders impossible to treat? Explain your answer.
  E. What environmental factors should we consider in DLD?
V. Cognitive Models of DLD
  A. Is DLD a disorder of language or learning?
  B. What are the differences between "top-down" and "bottom-up" processing?

C. Why is non-word repetition an important (and theoretically interesting) test to use in DLD?

D. What have intervention studies revealed about the role of auditory processing in DLD?

E. Is there a single cognitive explanation of DLD? Explain your answer.

VI. Comorbidity

A. Define comorbidity.

B. Describe similarities and differences between the language impairments that characterize primary DLD and those that characterize autism spectrum disorders.

C. What aspects of literacy development are particularly vulnerable in children with DLD?

D. What distinguishes children with DLD who can read (i.e., decode text) from those who cannot?

2 Assessment

The approach to language evaluation presented in this chapter derives from the work of Jon Miller, Peg Rosin, Gary Gill, and others at the Waisman Center at the University of Wisconsin-Madison. This approach has been developed during the last four decades by these clinicians taking a developmental approach to understanding developmental language disorders (DLDs). Some of the material discussed in this chapter has been drawn from published sources (Miller, 1978, 1981, 1996) but much of it derives from their inspirational teaching and our clinical experiences of using this approach with children and their families.

GENERAL PRINCIPLES OF ASSESSMENT FOR SUSPECTED DEVELOPMENTAL LANGUAGE DISORDER

We saw in Chapter 1 that there are different ways of conceptualizing DLD: the naturalist approach, which views DLD as an impairment or disease process within the individual that disrupts functioning, and the normative approach, which focuses more on societal expectations and obstacles to meeting those expectations (Tomblin, 2008). Traditionally, clinicians coming from a medical model would adopt a naturalist approach to *appraisal,* the collection of data from a variety of sources to describe the client's condition; and *diagnosis,* the assignment and labelling of the clinical condition by means of the interpretation of standardized tests, case history information, observation, and medical examination, often with some inference about its underlying cause. From a normative perspective, on the other hand, identification of the problem and its cause are less important than understanding how the impairment influences social and behavioral outcomes for the child. As Tomblin (2008) puts it, "the causes of individual differences (environments, genes, etc.) in

language development are different from those that cause us to be concerned about some of these individual differences" (p. 95). In practice, we tend to blend the two perspectives together. The goal is to decide whether the child has a significant impairment in language form, content, and/or use, to describe that deficit in some detail relative to the normal developmental sequence of language acquisition, and to determine how this deficit will affect the child's daily activities (school, family, and social well-being). Issues of cause or the identification of a disease category are less central to the speech-language pathologist's (SLP's) mission, though we should bear in mind that we are often the first port of call for concerned parents or teachers. We should therefore be alert to the need to refer the child on for more detailed medical assessment.

Federal guidelines provided by the Individuals with Disabilities Education Improvement Act of 2004 (PL108-466), known as IDEA, make a distinction between *evaluation* and *assessment*. For clinicians working under the aegis of IDEA, *evaluation* is used to refer to the initial process of establishing eligibility for educational services. For children under the age of 6, it is not necessary to assign a diagnosis, or label, during this process, only to establish that the child has developmental delays sufficient to qualify for special educational services. Children over 6 will have to meet specific criteria for a disability as defined by IDEA in order to receive special education through the public schools. *Assessment* in this context is used to refer to the rest of the appraisal process, following the evaluation. Once a child is deemed eligible for services, clinicians need to describe communicative functioning, determine what the child needs in terms of specialist intervention and educational support, and how best to address those needs. It can be useful to think of the assessment process as hypothesis testing: the clinician forms a working hypothesis about the child's strengths and deficits based on initial observations and information from parents and caregivers. This hypothesis helps the clinician to develop an assessment plan, selecting those measures that can confirm or refute the hypothesis. The clinician may need to revise the assessment plan based on assessment results, observation of the child in different settings, or key information from another professional. But in the end, this hypothesis testing approach will yield a rich description of the child's communication strengths and needs, with clear implications for intervention and education.

The SLP almost never comes to assessment conclusions in isolation. The clinician is always working as part of a team, either with the child's family and/or teacher, or as part of a larger multidisciplinary team. Each member of the team will have expertise and unique insights into the child's strengths and needs. Putting this information together provides a more holistic picture of the child, his or her skills and deficits, and priorities for intervention and education planning. The SLP will be the expert in eliciting speech, language, and communication profiles, and answering questions about how an individual's profile may affect learning and social well-being. This information may be gathered in isolation,

or by working collaboratively with other members of the team. Whatever the method, it is important to understand the role of the other team members and recognize the value of their expert contributions to understanding the child's language disorder. Key people contributing to assessment teams are outlined in Box 2-1.

Prior to meeting the child and/or family for the first time, it is necessary to review the referral letter and any other supporting documentation. When reviewing this information, the clinician needs to determine what information is already in the file and what needs to be learned during the assessment process. Basic questions to be answered include the following:

1. What is the problem, if known, in medical terms? What do other professionals (doctor, teacher, other speech-language pathologist) see as this child's area(s) of deficit?
2. When did the problem begin, or has the child always had it? Was the onset sudden or gradual?
3. Does the problem vary in severity, getting worse at some times or with some people and better with others, or is it always about the same?
4. How does the social environment interact with the child's problem? Is the child perceived as failing at school or other

important social settings? How does the family see the child and react to the difficulties?

Many agencies use a standard intake questionnaire to collect some of these data before meeting with the family. Appendix 2-1 gives one example of this kind of questionnaire that is filled out by a parent before the child's first meeting with the clinician. Appendix 2-1 also contains a request for release of information. Such a request must be signed by the parent and must be sent along whenever clinicians attempt to solicit information about a child from another agency. When developing an assessment plan it is wise to assemble any information available from other agencies where the child may have been a client. Including a form like this one with an intake questionnaire is usually an efficient way to find out whether the child has been seen by other professionals and to get access to the information they collected.

Case History

Once background data have been reviewed and key remaining questions have been highlighted, a detailed case history will be helpful in refining assessment plans. Techniques for clinical

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BOX 2-1   Multidisciplinary Assessment Team

TEAM MEMBER	WHEN NEEDED AND ROLE
Audiologist	A referral is required for all children with suspected DLD, to ensure that there is no undiagnosed hearing impairment.
ENT	Refer to ENT for suspected cleft palate, recurrent ear infections, hearing, voice disorders, hoarseness. Will also lead assessment teams when considering children for cochlear implants.
Geneticist	Refer to a genetic counselor when a child presents with physical features that are suggestive of a genetic disorder, there is a family history of such disorder (parents, siblings or other close relatives), or a prenatal diagnosis has been made.
Learning disabilities/literacy specialist	Works in mainstream schools to support literacy development for children with reading difficulties. A key contact for school-aged children with speech and language impairment, as these children are highly likely to experience difficulties with written language.
Neurologist	Refer to a pediatric neurologist any time there is language regression, or possible seizure activity. Also likely to be involved in case management for children with Traumatic Brain Injury.
Nutrition specialist (feeding problems)	Particularly important for children with structural or motor impairments of the oral apparatus (e.g., cleft palate or dyspraxia), or neurological disorders (dysarthria, head injury). May also be required for children with ASD who have diet issues.
Occupational therapist (fine motor difficulties, clumsiness, hand movement problems)	Important for developing adaptive behaviors and daily living skills.
Parents	Key to all assessment and intervention programs. Experts in the child's development, and the environmental context in which the child will need to function.
Pediatrician	Should be kept informed of all diagnostic and therapeutic decisions as he or she has responsibility for monitoring the child's general health and development.
Physical therapist	Professional with expertise in assessing gait, gross motor skills, and clumsiness.
Psychiatrist	Likely to be involved in the assessment and treatment of children with selective mutism, anxiety, emotional/behavioural difficulties, and ASD.
Psychologist	Will provide cognitive assessment important for establishing global developmental delay, attention deficits, and managing children with selective mutism.
Mainstream teacher	It is important to liaise with the classroom teacher in order to establish meaningful language and communicative targets and to adapt curriculum and provide classroom accommodations.
Special educator	Will be involved in developing individualized education plans, modifying the curriculum, and providing individual instruction to clients with DLD.

interviewing are beyond the scope of this chapter, though detailed information is available in the work of Shipley and McAfee (2008). These authors suggest that sensitive interviewing requires mutual respect; making sure that the clients understand the purpose of the interview; listening carefully; asking clear, open-ended questions that are not leading or loaded (e.g., a loaded question might be: "you don't scold him when he makes mistakes do you?"); and answering any questions posed by the family. Above all, the case history should highlight the family's major concerns. It is important to remember that parents may not always see language as the primary problem, but may be more concerned about the child's behavior, social skills, or learning and that these concerns may be related to underlying language difficulties. A case history also provides an opportunity to document any pre-, peri- or post-natal risk factors that may affect language development (e.g., drugs and alcohol, illness, hearing loss) and family history of speech, language, or literacy difficulties. The case history should also be used as a vehicle to elicit from parents clear examples of the child's communicative attempts, what motivates the child to communicate, how the child communicates, with whom the child communicates, and what he or she does when communication fails.

The clinician should be prepared for some emotion to surface in these interviews, particularly if the family has not talked to many people about the child's problem. The main focus of the interview should be to gather information; while a caring and accepting response to parental emotion is appropriate, dwelling on the emotion or becoming defensive if it becomes hostile is not. After expressing sympathy with the parents' feelings, move on to a different, more neutral topic.

Low Structure Observations

As part of initial preparations for developing an assessment plan, it can be beneficial to observe the child in low structure settings. This can be achieved by engaging in free play with the child in the clinic, videoing the child playing with his or her parents or siblings, or observing the child at school or home. If the child has sufficient verbal abilities, these sessions may be supplemented by engaging the child in conversation and asking him or her to relay a favorite story or game.

During these less formal tasks, a number of observations can be made. First, the practitioner will gain an impression of the child's expressive language abilities, including the length, complexity, and intelligibility of the child's utterances. The clinician may also note the ease with which the child chooses words, how fluent the child is, and whether speech is coherent with a clear structure. Second, potential comprehension difficulties may be apparent in the child who fails to respond appropriately to the questions or comments of others, cannot follow adult directions, echoes what others say, or misinterprets key events in a story. Pragmatic skills may also be observed; including the child's ability to use facial expression, eye contact, and gesture to communicate; whether the child shows toys or other materials to parents; the ways in which the child requests help, initiates and maintains conversation, requests clarification; and any evidence that he or she adapts speech style in recognition of listener needs. Finally, observation of behaviors outside the domain of language may also be informative. These may include the quality of the child's imaginative play, attention span, gross and fine motor skills, and social interests and interactions. This set of observations provides the clinician with a working hypothesis of the nature and severity of the child's language impairment, which can then be tested using standardized assessments.

Language or Communication Sample

Taking a sample of the child's communication skills in less formal contexts can also be illuminating. The format of the language sample may depend on the clinical context and potential intervention approaches. For example, with a very young child with suspected autism spectrum disorder (ASD), it may be most appropriate to make a video recording of the child and parent playing together. This will allow the clinician to document how synchronous the parent and child are in their communication; as well as recording the child's use of gesture, eye contact, communication attempts, vocalizations, and preferred play activities. The clinician may also get a sense of how well parents identify communication attempts, how they respond to these attempts, and how they naturally reinforce gesture and vocalizations with language. For more verbal children, recording a conversation between the child and his or her parents and/or clinician can give insight into articulation accuracy and fluency, diversity of vocabulary, utterance length, and grammatical complexity. Software programs such as the Systematic Analysis of Language Transcripts (Miller & Iglesias, 2008) allow for automatic calculation of a number of language variables that are useful in distinguishing speakers with DLD from their typically developing peers (Heilmann, Miller & Nockerts, 2010). Language samples have other advantages that make them a useful complement to standardized testing. First, they can be readily used with children from diverse linguistic and cultural backgrounds. Although standard metrics are not currently available for all language communities, normative data for speakers of Spanish (Bedore, Pena, Gilliam, & Ho, 2010) and African-American English (Oetting et al., 2010) dialects are being developed. Second, even without these normative data, language samples can be a useful way of documenting change, either over time or in response to intervention (Adams & Lloyd, 2005). Finally, as well as documenting articulation, vocabulary, and grammar, language samples provide a unique opportunity to survey pragmatic language skills in more naturalistic contexts. Aspects of pragmatic language such as turn-taking, initiation, topic maintenance, intonation, and reciprocity can be reliably coded and differentiate individuals with autism spectrum disorders from non-ASD peers, independently of structural language deficits (de Villiers et al., 2007; Paul, Orlovski, Marcinko, & Volkmar, 2008). These pragmatic language skills are difficult to assess using standardized tests, but will be important in formulating treatment plans. In summary, a language sample is a key component of the assessment process as it allows the clinician to gauge how the child uses his or her language for conversational exchange, to assess difficult to measure aspects of language, and can give insights into the skills and difficulties experienced by the child's primary communication partners.

THE ASSESSMENT PLAN

As we have discussed so far, by the time a clinician begins a standardized assessment of language ability, he or she will have reviewed existing case files and requested information from other professionals working with the child, interviewed the family (and possibly the child) about the history and context of the presenting problem, observed the child during less formal activities, and taken a sample of the child's language and communication skills in naturalistic conversation. This information should result in a working hypothesis about the nature of the language and communication

deficit, and an idea of the assessments that should be carried out to confirm or refute that hypothesis.

Some of these assessments will be carried out by the speech-language pathologist, while others may require referral to other agencies. In most instances, the clinician will want to confirm that the child does not have a hearing loss that may be contributing to language difficulties, so referral to an audiologist may be necessary. In addition, the clinician needs to determine the child's general developmental level, as this will influence the level at which to begin a communication assessment. The main question to consider is whether the child's day-to-day functioning is at or near the level we would expect given the child's age. If the client is a toddler, does the child walk, feed himself or herself, and so on? As a preschooler, does the child engage in pretend play, drawing, some self-dressing, bathing, toileting, and similar activities? As a school-aged child, is he or she placed in the appropriate grade? As an adolescent or young adult, are daily living skills (cooking, independent travel, social activities) age-appropriate? As we discussed in Chapter 1, communication skills are not usually more advanced than other areas of development, so general developmental level provides a reasonable baseline for beginning to assess communicative performance. If further assessment indicates that language and communication skills are out-of-step with other aspects of development, appropriate adjustments in the plan can be made.

For clinicians working under IDEA guidelines, the next step in the assessment process will be evaluation, determining whether the child is eligible for education services. This will usually involve some standardized testing, but will also require gathering information from parents and teachers about the child's ability to function at home and at school. This information allows us to address the "functional" criterion for eligibility, and also can highlight intervention priorities. Ways of gathering this information are discussed later on in this chapter. Clinicians will need to know what the specific eligibility guidelines for their work setting are, as these can vary from state to state and district to district. Once it has been determined that the child meets eligibility guidelines, more detailed assessment can take place.

Based on the information gathered from case history, parental interview and observation of the child, the clinician will need to decide what aspects of speech, language, and communication to evaluate. Even if the presenting problem is in only one aspect of communication, say, articulation, it is usually wise to get as much information about other areas of development as possible. Although articulation may be the most obvious problem to people in the child's environment, assessment may reveal that other deficits are involved. For instance, the child may have a hearing loss, a submucosal cleft of the palate, or a syntactic disorder that was masked by the unintelligibility. At the minimum, assessment should establish hearing level, oral-motor function, expressive language level, and comprehension of language.

It is also important to think about the order in which the assessments are done so that they provide the client with some variety and maximize his or her potential for success. We might want to start the assessment with a relatively low-structured activity, such as observing pretend play, or an activity in which the child is likely to experience success, to allow the child to warm up to the setting. Standardized tests tapping more challenging areas for the child might then follow. We might want to give the child a break and a snack while we observe oral-motor and feeding skills, and also give the child an opportunity to initiate communication with

parents or the examiner. A well thought out assessment plan often involves alternating high-structure and low-structure activities. We'll want to be careful not to put all the most difficult assessments at the very beginning, when the child may feel shy and uncomfortable, or at the very end, when the child is likely to be tired. For some children, it may be important to let them know what they will be expected to do, for example, by using a chart or simple timetable, and to think about ways to keep them motivated, for instance by putting stars on the chart after each activity, and giving stickers or free play with a favorite toy at the end of each portion of the session.

The most important thing about an assessment plan, though, is that it be *planned*. We want to get into the habit of reviewing case history and intake data and using them to make decisions about the most appropriate goals and methods for assessment. We should then write out a plan that includes the goal and methods decided upon for each area being assessed, keeping in mind that we may have to deviate from the written plan if our interactions with the child suggests an alternative course of action. A sample of a form for such a written plan is provided in Figure 2-1. Using this approach, we can ensure that we use the client's time well in the assessment, and that we will come out of it with the most comprehensive and valid information possible.

Why Assess?

Westby, Stevens, Dominguez, and Oetter (1996) identified four basic reasons for assessing language performance in a child that still motivate our assessment practices today. Each reason involves somewhat different goals and methods. Let's talk about each of these assessment purposes.

Screening

Very often in clinical practice, clients are referred for assessment because someone (usually a parent or teacher) is concerned about the child's development. This kind of referral suggests it is likely that the child's problem is interfering with daily activities to such an extent that our help is sought. However, many children who attract clinical attention have multiple developmental concerns or a particular pattern of speech, language, and communication

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Child Name:	Date of Birth:	Age:
Parent Names:		
Referral source:		
Probable developmental level:		
Primary presenting problem:		
Other problems:		
Areas to assess:	Question to be answered:	Assessment tool:
_____	_____	_____
_____	_____	_____
_____	_____	_____
Referral to other agencies:		
Audiologist		
ENT		
Educational psychologist		
Specialist SLP (literacy team, autism team)		

FIGURE 2-1   Sample assessment plan.

concerns that is obvious to non-professionals, even though it might not be the fundamental problem. For instance, children with speech sound disorders are more likely to be referred for clinical services compared to peers with similar levels of language ability who do not have problems with intelligibility (Bishop & Hayiou-Thomas, 2008). In contrast, problems with language comprehension may be "hidden" and unlikely to be noticed unless accompanied by behavioral difficulties (Zhang & Tomblin, 2000). These children with hidden language impairments are at greatly increased risk for academic failure and, in particular, reading comprehension deficits (Nation, Cocksey, Taylor, & Bishop, 2010), and it would therefore be useful to identify these children earlier in development so that we may intervene before academic problems become entrenched (Clarke, Snowling, Truelove, & Hulme, 2010).

Screening measures attempt to do this. Here, the psychometric properties of the test instrument are especially important, because a test with adequate psychometric properties is essential to provide a fair screening measure. We'll talk more about what makes up these properties in the section on standardized tests. For now, we just need to know that a good screening test is one that meets high psychometric standards.

In addition to its psychometric properties, a good screening measure should tap a broad range of language and communication functions in the most efficient way possible. If, for example, we used the *Peabody Picture Vocabulary Test—IV (PPVT-IV;* Dunn & Dunn, 2006) as a screening instrument, we might learn that a child does not score below our cut-off (e.g., the 10th percentile). Does that mean that the child does *not* have a language disorder? Not necessarily. A child could have a normal receptive vocabulary and still have a great deal of difficulty with expressive language skills or comprehension of complex syntax. On the other hand, we don't want to spend significant amounts of time testing children on a full language battery before we know whether they need in-depth assessment. The *Children's Communication Checklist—2* US Edition (CCS-US; Bishop, 2006b) is a good example of a screener that samples a range of language and communication skills for children aged 4 to 16 with a minimum investment of time. The *Childhood Communication Checklist—2* US (CCC-2US) asks parents and/or caregivers to rate the frequency of both positive and negative communication behaviors, has excellent psychometric properties, and does a good job of identifying children at high risk of language impairment (Bishop & McDonald, 2009).

In evaluating the results of our screening, we need to ask whether a child who appears to have a language problem is demonstrating a linguistic difference or disorder. We need to be aware of this issue for any child who comes from a culturally or linguistically different background, such as the child from a family that speaks Spanish in the home or an African-American child whose family uses a non-standard dialect of English. For those children, whose experiences with English may be different from those of children from mainstream backgrounds, our first decision will be whether the child has a *bona fide* impairment or a communication problem that results primarily from a mismatch between the child's experience and the expectations of the social environment. We'll talk in detail about making this decision in Chapter 5.

If a child fails a screening measure, this does not, of course, mean he or she definitely has a developmental language disorder. Screening is used only to identify children at risk of DLD. For children who fail screening, a more extensive assessment will be needed to determine whether they meet eligibility criteria under IDEA legislation. This assessment will incorporate a range of techniques that we will discuss throughout this chapter. A final word of caution is warranted when considering screening. In assessing children from the general population for potential language impairment, there is often potential to identify "false-positives," or children who fail the screening measure but do not in fact have DLD. We need to be careful not to cause undue concern among parents and educators. However, reviews of screening measures have failed to identify a "gold-standard" measure that has been adequately evaluated in a population study. That's why universal screening for DLD has not been established (Nelson, Nygren, Walker, & Panoscha, 2006). Generally, apart from screening that takes place for all children as they enter kindergarten, clients will come to us for screening because someone has noticed something is not going quite right in the communicative development.

Establishing Baseline Function

Once the initial screening question has been answered and we have determined that a child is eligible for special services, assessment is used to determine the child's current, or *baseline level of functioning*. This purpose is distinct from the screening and evaluation functions and requires the use of different strategies and instruments. To determine baseline function, it is crucial to examine all areas of communicative function, as well as areas related to the child's ability to use language, such as hearing, cognitive skills, and oral-motor abilities. Establishing baseline function involves finding out not only the areas in which the child is experiencing difficulty, but also identifying areas in which the child is functioning relatively well. This assessment should result in a profile of "strength" and "weakness," such as the one illustrated in Figure 2-2. We must be somewhat cautious in using this profile, because different tests will have different psychometric properties, and will have been standardized on different populations, making it difficult to directly compare outcomes on different tests. Nevertheless, such profiles can be useful in providing a broad picture of language and communication functioning.

Establishing baseline function may require that we look at the child's communicative behavior in several settings (that is, we may want to know more than how the child uses language in an unfamiliar place, such as the diagnostic clinic, and with an unfamiliar person, such as the SLP). Numerous authors have discussed the importance of context in observing communicative behaviour (e.g., Coggins, 1991; Losardo & Notari-Severson, 2001; Oetting & McDonald, 2002; Nelson, 2010; Westby, Stevens, Dominguez, & Oetter, 1996). This suggests that we cannot assume that one sample of behavior, gathered in the relatively strange clinical situation, tells us everything we need to know about the child's capacities for communicating. Let's see what this might mean in practice.

Katie was an 8-year-old girl who had been identified as language/learning disabled by her school learning disabilities specialist and SLP. Her teacher noted that she had a great deal of trouble learning to read and write and that her oral language often seemed disorganized and hard to follow. Although the school personnel did an in-depth assessment, her parents felt they wanted to know more about Katie's problem and took her to a diagnostic clinic at the state university's research hospital, about 60 miles from their hometown, for a multidisciplinary assessment. At her first appointment, Katie was
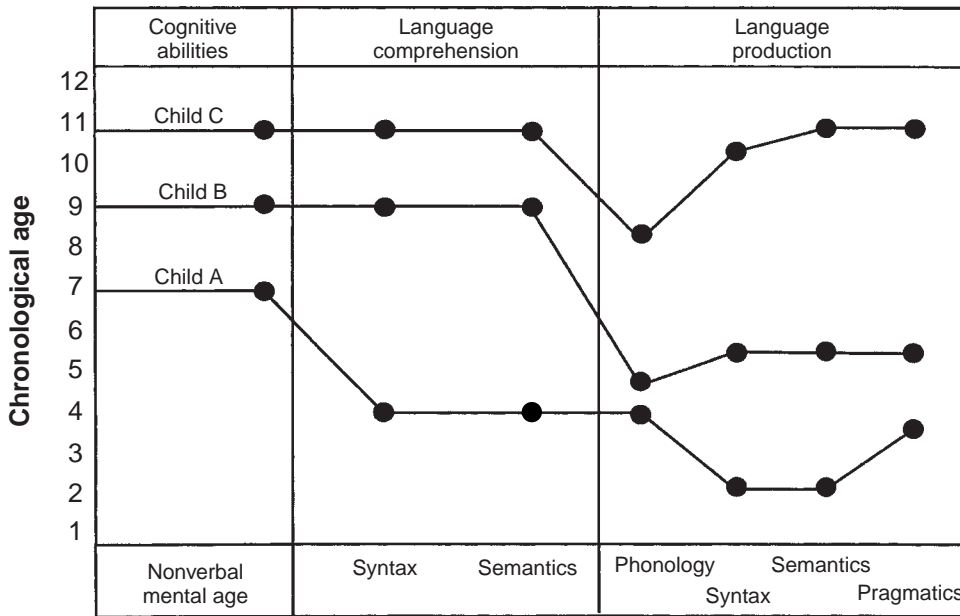
FIGURE 2-2   Intralinguistic profile.   (Adapted from Miller, J. [1981]. *Assessing language production in children*. Needham Heights, MA: Allyn and Bacon.)

given a hearing test, some blood was taken for genetic testing, and extensive cognitive and psychoeducational testing was completed. In the last 2-hour-period of the day, Katie went to the communication disorders section for language testing.

Ms. Michaels was the SLP assigned to the case. She offered Katie a large dollhouse with a variety of furniture and characters and invited her to play with her mother and the toys. She made a video recording of Katie and her mother and prepared to take notes on Katie's language and communication behaviors. Katie played in a desultory way with the toys, then began to whine that she was hungry. When told she could have some crackers in a few minutes, she simply sat quietly and placed all the furniture in the appropriate rooms in the house without further comment.

Should Ms. Michaels conclude that Katie is minimally verbal? Clearly many factors made the day at the diagnostic center a long and difficult one. Would you like being stuck with needles for blood tests? Would you like to answer a lot of hard questions from someone you had never met before? Would you like knowing that your parents brought you all the way to this big, scary place because they think you are not doing well at school?

The point is not that clinic-gathered information is invalid. In some situations with some children it may be perfectly valid. But we do need to be aware that the context of place, person, materials, and what else has happened to the child that day can all influence performance. Whenever possible, it is to our advantage to sample a child's communicative behavior in more than one setting or with more than one person.

Just as we may want to establish baseline function by getting samples in more than one setting, we may want to get an idea of different aspects of the client's functioning. For example, we may want to know what the child's best performance is under the most ideal conditions, such as interacting with a familiar adult and engaging with novel toys in a free-play situation. But we may also want to know something about how the child performs in more stressful situations, such as a formal testing procedure with an unfamiliar examiner, less appealing materials, and less opportunity for the child to decide how to use them. Both of these environments, the ideal and the more stressful, are "real-life" situations. The ideal situation may be more like the one encountered in the child's home, whereas the stressful one may be like what the child has to cope with at school.

When conducting an assessment, we need to be careful that we don't ignore variation in the child's functioning; knowing how a child fares under pressure will be a valuable piece of information to gather. Furthermore, it would be important to know whether there is a large gap between the child's best performance and the way he or she behaves under less than ideal conditions. So again, assessing the child in more than one situation is a key part of the assessment process.

It can, however, be painful for families to experience. When assessing the child in a formal, stressful context, the clinician may find that the child's parents are tense and anxious, and they may even complain that the testing is unfair. Parents in this situation need reassurance from the clinician that the formal testing procedure is only one piece of the information needed to understand the child's strengths and needs. Explaining that you are trying to see how the child does in this somewhat odd, unnatural situation can help to allay the parents' fears. Seeing the informal aspects of the evaluation can reassure them that their child's best performance will also be taken into account. In any case, it is always wise to explain the purpose of each phase of the assessment process to parents and to make them feel that they are partners in learning as much as can be learned about their child.

Establishing Goals for Intervention

A third purpose for assessment is to identify appropriate targets and procedures for intervention. To do this, it is necessary to reference the child's current language skills against the typical developmental sequence. Only when the child's level of functioning in each relevant area of language has been described and when all the

important collateral areas, such as hearing, cognitive level, and oral-motor functioning have been assessed, can the clinician make decisions about targets for intervention.

These decisions involve identifying the areas in which the child is functioning below expectations for developmental level. Identified areas—whether they are the comprehension of syntax or vocabulary; the expression of words, sounds or sentences, or the use of a range of different communicative functions—would then be targeted for intervention. Using the profile in Figure 2-2, the clinician is likely to target the most delayed areas of language first. When these areas of deficit are remediated to the child's highest level of communicative performance, then the target would be to improve overall language functioning so that it more closely approximates the level of language expected for the child's chronological age, or general cognitive abilities, whichever reference point is being used. Let's see how we might implement this model for a child like the one profiled in Figure 2-3.

Davey is a 6-year-old boy being evaluated for language deficits after failing a kindergarten screening. Comprehensive evaluation indicated that Davey was functioning at age-appropriate levels on measures of nonverbal cognitive ability. His receptive syntax and vocabulary scores were below the 10th percentile for his age, with age-equivalent scores of around 4 years. Expressive language was below the second percentile on all standardized measures. In addition, language sampling showed infrequent expression of communicative intentions and sentences were limited to telegraphic utterances with few grammatical morphemes. Most expressive skills were on the 2-year level. Davey's parents were initially unconcerned, as they were able to anticipate what he was trying to say and he didn't seem frustrated by his limited language skills. However, as he was now in school they were increasingly noticing that he was not as talkative as his classmates. Davey's teacher confirmed this and reported that his limited language often meant he was isolated and did not have as many playmates as the other children.

This information led the speech-language pathologist, Mr. Harper, to target expressive language skills as the top-priority objective. Goals included increasing sentence length, developing use of grammatical morphemes, increasing vocabulary through shared stories and words appropriate to classroom activities, improving articulation, and increasing the range of expressed communicative intentions. After 1 year of intervention, Davey's expressive skills were reassessed and found to approach the 4-year level in terms of semantics and sentence length. Articulation skills were at the 3-year level, but expression of communicative intentions had increased significantly. It was decided to continue working on articulation and to target some receptive skills to move these closer to Davey's chronological age level. Once receptive skills showed improvement, expression would be targeted again, to ensure expressive language skills were in line with language comprehension, providing expression had not improved spontaneously by that time.

In choosing goals for intervention, it is important to consider the priorities of the child's parents and teachers, and the communication barriers to social and academic success, but understanding the typical sequence of the acquisition of language skills is essential to making intelligent decisions about which goals to target. There is little point in working on a target that relies on foundational skills that the child has yet to acquire. For instance, it may be very important in the school context to relay a coherent narrative around "what the child did over the school vacation." But if the child has a paucity of verbs and limited expressive grammar, targeting narrative skill would be inappropriate. For that reason, gathering comprehensive and accurate assessment data is the *sine qua non* of establishing intervention goals. These data also form the basis for the next phase of the assessment process: documenting improvement during the course of intervention.

Measuring Change in Intervention

Assessment is an ongoing process. It does not end when the formal diagnostic evaluation has been completed. The SLP has an obligation to continue to evaluate the client's progress throughout the course of an intervention program.
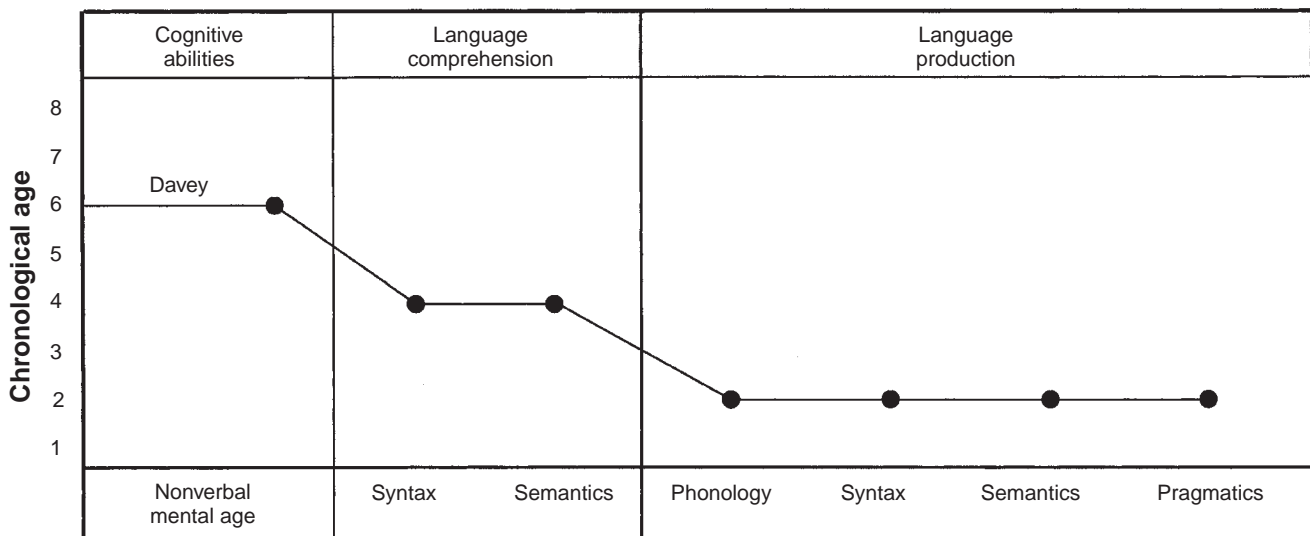
FIGURE 2-3 Intralinguistic profile for "Davey."

First, assessment is necessary to determine whether the goals of the program have been met. How will you know when to move on to the next target of intervention without knowing whether the client has yet learned what you've been teaching? If the assessment shows that the client has mastered one of the goals of the program, the next step can be initiated. If not, perhaps the procedures or materials or the therapeutic modality needs to be changed. Programs that are not effective within a reasonable time need to be modified.

Second, ongoing assessment is necessary to decide when to dismiss a client from intervention. Just as we need to decide ahead of time on our criteria for identifying a child with a language disorder, it is important to decide ahead of time what criterion will be used for dismissal (Roulstone & Enderby, 2010). As with so many other issues in our field, there are no clear mandates for discharging clients from speech-language services. Nelson (1998) suggested posing the following questions to determine whether a client is ready to be discharged from intervention:

- Is more change needed?
- Is more change possible?
- Can more change be achieved without costs that outweigh its benefits?

To answer that last question, it will be necessary to understand what our clients and their families feel about the intervention process. Although a child may not have age-appropriate language skills, there may come a time when therapy sessions interfere with other activities (sports, dating) to the extent that the child would prefer to be discharged from therapy. Other reasons to discontinue intervention have been proposed by Fey (1986) and include:

1. The child has reached all the goals identified in the diagnostic phase of the program and is no longer viewed as having a developmental language disorder.
2. The child has reached a plateau and efforts to modify the intervention program do not achieve more progress.
3. The child is making progress, but this progress cannot be attributed to the intervention program.

Whatever criteria we use, ongoing assessment will be central to determining whether or not a child has met those criteria. It is important to remember, though, that assessment is not the only activity in which the clinician should be engaged. Most of the time we spend with clients in an intervention program ought to be devoted to teaching them to communicate better, not to test their current skills. Although the client's progress must be evaluated continually throughout the intervention program, ongoing assessment should involve only a minority of the contact time.

One other point needs to be made about assessment for evaluating progress in intervention. When looking for changes in the client's language behavior, we need to know more than whether the child can use or understand a structure or function in the clinical context, in which rules are explicit and the clinician is in control of the interaction. We also need to know whether the child can use newly acquired language and communication skills in more natural, less-structured situations. It would be unwise to discharge a client from intervention because he or she achieved 80% correct performance of the use of "is (verb)-ing" in a delayed imitation format without probing to see whether the child can use the "is (verb)-ing" structure when talking about what he or she is doing in a play context. To be valid, assessment for any purpose must show how the child functions in naturalistic as well as structured settings. This requirement is especially important when assessing whether a child has learned what we have been attempting to teach in an intervention program. To have learned a form or function, the child must be able to use it in real communicative situations. If the child cannot do this, we have not finished our job.

What to Assess

The answer to the question "what shall we assess?" may seem simple. We assess language. But you will remember from Chapter 1 that there is a bit more to it than that. We want to ensure that our assessments will include measures of language *form, content,* and *use*. We will also want to consider these domains of language in at least two different modalities: *comprehension* and *production*. In typical development language comprehension and production develop in tandem, but they can sometimes come apart in DLD. We therefore cannot make assumptions about one on the basis of the other. Once we've established that the child has language difficulties, we need to assess other aspects of development that may affect language functioning or that may need to be taken into consideration when planning intervention. These *collateral areas* include, at a minimum, hearing, oral-motor functioning, general cognitive abilities, and social functioning. Let's consider these assessment challenges in turn.

Domains of Language: Form, Content, and Use

Assessment should ideally cover each of these language domains, including both understanding and production:

1. Form (syntax, morphology, phonology): Inflectional marking of words (plural –s; past tense –ed; third person singular –s); basic sentence components such as noun, verb, prepositional, adverbial phrases; sentence types, such as negatives, interrogatives, embedded clauses, and conjoined utterances. Form also includes the ability to produce sounds accurately, the consistency of sound production, and the use of phonological simplification processes.
2. Content (semantics): Knowledge of vocabulary; the ability to express and understand concepts about objects and events; the use and comprehension of semantic relations among these objects and events; understanding of lexical ambiguity and multiple meanings (e.g., that "cold" can refer to temperature, illness, or a personal quality).
3. Use (pragmatics): The range of communicative functions (reasons for talking); the frequency of communication; discourse skills (turn-taking, topic maintenance and change, requests for clarification); the flexibility to modify language for different listeners and social situations; the ability to convey a coherent and informative narrative.

Sounds like a tall order? It is. Your first response may be, "It's impossible to do all that!" But don't panic. Remember that not every aspect of language needs to be assessed using a standardized measure. Standardized testing may be used simply to establish that the child's language is deficient relative to same-aged peers. This can easily be done in a 2-hour testing session, using referral and case history information to select the areas of language most crucial to evaluate with standardized measures. And within these domains of language selected for assessment, it is important to establish the child's level of both expression and comprehension in each.

Modalities of Language: Comprehension and Production

Chapman (1978), Miller and Paul (1995), and Milosky and Skarakis-Doyle (2006) discussed the differences between children's performance on comprehension tasks that are contextualized, in the presence of familiar routines and nonlinguistic cues, and those that are decontextualized. They pointed out that children function quite differently in terms of their comprehension performance in these two settings. For example, a child with DLD may be able to follow a 3-part verbal instruction such as, "put your books away, get your coat, and line up by the door" in the classroom, because they can observe what their peers are doing and follow their actions. That same child may struggle to follow a similar instruction in a standardized test (e.g., "touch the ball, then touch the star before you touch the house"). Standardized tests measure decontextualized language comprehension, and reflect the child's language abilities under the most challenging circumstances. As an adjunct to formal comprehension testing, it can be useful to assess the child's responses in more familiar, contextualized situations. Miller and Paul (1995) suggested pairing traditional comprehension assessment with assessment of language comprehension in more naturalistic settings with nonlinguistic supports such as gesture, gaze, and other contextual cues. Comparing performance in these two settings can produce a fuller picture of the child's understanding.

Regardless of the assessment setting, it is always important to remember that comprehension is, as Miller and Paul (1995) put it, a private event, something that happens within the child's mind. We can only make inferences about the child's comprehension based on the behavioral responses to our questions and probes. If a child responds as expected, we can infer that he or she has understood the construct we are assessing. If he or she gives an incorrect response, we cannot be sure that they have not understood us; children may fail a comprehension item for many different reasons. For instance, they may have forgotten the verbal instruction, they may not have been paying attention to what we said, they may not be able to hear what is being said, or they may choose not to comply with our assessment. We therefore need to understand the additional demands of different language assessments and choose our measures wisely, so that our inferences about comprehension are as valid as possible. We'll talk more about this in the "How to assess" section.

Unlike assessment of comprehension, assessment of language production gives us direct access to how children express themselves with language. Tests that require children to repeat sentences of increasing length and complexity can be very sensitive markers of language impairment (Conti-Ramsden, Botting, & Faraher, 2001). But just as children perform differently on comprehension tests in different contexts, they may also produce language differently in different contexts. We therefore need to ensure that in addition to our standardized measures, we sample spontaneous speech in naturalistic settings in order to determine functional and ecologically valid targets for intervention.

Assessing Collateral Areas

As big as the job of assessing language function may seem, it is not the whole task of conducting an assessment. In addition to analyzing all these aspects of language, a thorough assessment also involves investigating collateral areas that relate to the child's communicative function. The SLP may not gather all this information single-handedly. In a multidisciplinary team, other professionals may provide some of the necessary data. But even if the evaluation is conceived of as a circumscribed language assessment, it will be necessary to get this information. Upon completing the speech, language, and communication portion of the assessment, the SLP may need to request additional information from other professionals. This can be done by referring the child for further testing (Appendix 2-2).

Hearing

No language assessment is complete without an investigation of the child's hearing status. Many SLPs screen children for hearing impairment, using small, portable audiometers specifically designed for this purpose. The American-Speech-Language Hearing Association (1997) has set guidelines for this screening. More recently, otoacoustic emissions testing has been introduced as a screening method (Hof, van Dijk, Chenault, & Atenuis, 2005). Children who fail either of these screenings need to be referred for comprehensive audiometric assessment.

Oral-Motor Assessment

Another area that needs to be assessed for any child with a language disorder is the integrity of the oral-motor system. Whenever a child presents with difficulty in expression of spoken language, it is imperative to determine whether there are physical barriers to expressive language.

Assessing the speech-motor system consists of examining facial symmetry; dentition; the structure and function of the lips; tongue, jaw, and velopharynx; and respiratory, phonatory, and resonance functions as they are used for speech. Bukendorf, Gordon, and Goodwyn-Crane (2007) and Shipley and McAfee (2008) provide some guidance in interpreting the oral-facial examination. McCauley and Strand (2008) provide a review of standardized measures for assessing oral-motor functions. Figure 2-4 provides a form that can be used to guide this assessment, derived from Meitus and Weinberg (1983) and Spriestersbach, Morris, and Darley (1991). The form is used by observing each element outlined on the checklist and marking either *yes* or *no* for each observation on the form. At the end of each section, a judgement of the adequacy of the structures and functions for speech is made. The overall ratings to be made are:

1. Normal
2. Slight deviation; probably no detrimental effects on speech
3. Moderate deviation; possible effect on speech, especially if other structures are also deviant
4. Extreme deviation; sufficient to interfere with normal production of speech, modification of structure required

To prevent the spread of infection, clinicians should always wash their hands thoroughly with soap and water, and wear surgical gloves for this examination. Hands should be washed again when the gloves are removed.

Examination of the External Face and Head

The face can be examined from a frontal view to determine alignment; spacing of the eyes; proportions of the face; and symmetry of the nares, philtrum, and Cupid's bow. The clinician can observe whether the lips approximate at rest, whether they retract symmetrically when the client smiles or produces /i/, and whether they contract symmetrically when he or she produces /u/. Details for making these observations are provided in Figure 2-4. Normal appearance and terminology for this examination are given in Figure 2-5. Observing the face in lateral or profile view, the clinician examines the alignment of the facial features again, using the guidelines in Figure 2-4. This observation can be conducted on a client of any age, including an infant.

EXTERNAL FEATURES OF FACE AND HEAD

Frontal view

_____ Midline of nose, philtrum, space between central incisors, midline of chin should be aligned at rest when lower jaw is opened and closed.

_____ Eyes should be aligned along horizontal plane, properly spaced (face should be five eyes wide, with one eye width between bony structure that separates eyes).

_____ Lower facial height (base of nose to base of chin) is greater than upper (bridge of nose to base of nose). (Use index finger on bridge of nose, thumb on base. Rotate index finger 180 degrees. Index finger should be on chin with some facial tissue below finger.) Absence of septal deviations of nose.

_____ Relative size and symmetry of nares, absence of deviations in columella (use inferior view as well).

_____ Deep red color of inferior nasal turbinates.

_____ Nares open, unobstructed breathing (for both one and two nares).

_____ Philtrum.

_____ Cupid's bow.

_____ Lips approximate at rest.

_____ Bilateral symmetry in /i/,/u/, smile.

Lateral view

_____ Bridge of nose, base of nose, point of chin should be in straight or slightly protruded line (class I, normal profile; if upper jaw protrudes relative to lower, class II; if lower protrudes in relation to upper, class III).

Rating: 1   2   3   4   (circle)

FUNCTIONAL INTEGRITY

_____ Raise eyebrows.

_____ Close eyelids against resistance.

_____ Facial expression (smile, frown).

_____ Resting posture of face.

Rating: 1   2   3   4   (circle)

Mandible

_____ Should lower widely without deviation from midline (place index fingers in mandibular condyles; ask client to open mouth widely; fingers should fall in fossa of temporal-mandibular joint when mandible is opened; feel for symmetry).

_____ Ramus should be one third shorter than body. (Place thumbs on angles of mandible, index fingers on top of condyles. Rotate index fingers to planes of mandible. One third of the body of mandible should be in front of index fingers.)

Rating: 1   2   3   4   (circle)

INTRAORAL EXAMINATION

Dentition (instructions to client: bite on back teeth and show gums)

_____ Lower molar (or canine for children without molars) is one half tooth ahead of upper (normal, class I occlusion; if lower is one half tooth or more behind upper, class II malocclusion [maxilla is protruded in relation to mandible]; lower more than one half tooth ahead of upper, class III malocclusion [mandible protruded in relation to maxilla]).

_____ One half to one third of crown of lower central incisors should be covered by upper incisor (normal overbite).

_____ Upper incisors should be 1 to 3 mm ahead of lower (normal overjet).

_____ Absence of missing teeth.

_____ Absence of deviant spacing.

_____ Absence of disturbances in axial orientation, rotations.

Rating: 1   2   3   4   (circle)

Pharynx

_____ Absence of blockage of faucial isthmus.

_____ Absence of tonsillary enlargement.

Rating: 1   2   3   4   (circle)

Tongue

_____ Absence of structural abnormalities (lessions, scars, fissures).

_____ Proportional in size in relation to oral cavity.

_____ Nonspeech activities (stick out tongue, lateralize, rapid lateralization, touch nose, touch chin) to evaluate strength, range, symmetry, tone, accuracy of movement.

_____ Absence of resting deviations, fasciculations.

_____ Absence of restrictions by lingual frenum.

_____ Functions normally during swallowing.

Rating: 1   2   3   4   (circle)

Palate

_____ Vault.

_____ Width.

_____ Midline raphe apparent.

_____ Absence of fistulas.

_____ Posterior boundary of hard palate scalloped in appearance.

_____ Boundary continuous.

_____ Pink-white color.

_____ Adequate midline of soft palate.

_____ Single uvula.

Rating: 1   2   3   4   (circle)

Velopharyngeal (VP) port function

_____ Absence of history of VP impairment (nasal regurgitation, family history of clefting, speech disturbance after tonsillectomy or adenoidectomy, history of speech disturbance compatible with VP problems, history of oral-facial myoneural disorder).

_____ Absence of movement during prolongation of /a/.

FIGURE 2-4 Form for examination of speech mechanism.   (Adapted from Meitus, I., and Weinberg, B. [1983]. _Diagnosis in speech-language pathology._ Baltimore, MD: University Park Press; Spriestersbach, D., Morris, H., and Darley, F. [1991]. Examination of the speech mechanism. In F. Darley and D. Spriestersbach [Eds.], _Diagnostic methods in speech pathology_ [2nd ed.] [pp. 111-132]. Prospect Heights, IL: Waveland Press.)   _Continued_

Velopharyngeal (VP) port function—cont'd

_____ Presence of movement during short, repeated phonations of /a/, /a/.
_____ Absence of glottal stops.
_____ Absence of pharyngeal fricatives.
_____ Absence of nasal emissions.
_____ Absence of perceived hypernasality on VanDemark sentences.
_____ Absence of need for further instrumental evaluation.

Rating: 1   2   3   4   (circle)

Volitional oral movements

_____ Stick out your tongue.
_____ Blow.
_____ Show me your teeth.
_____ Pucker your lips.
_____ Touch your nose with tip of tongue.
_____ Bite your lower lip.
_____ Whistle.
_____ Lick your lips.
_____ Clear your throat.
_____ Move your tongue in and out.
_____ Click your teeth together once.
_____ Smile.
_____ Click your tongue.
_____ Chatter your teeth as if cold.
_____ Touch your chin with tip of tongue.
_____ Cough.

_____ Puff out your cheeks.
_____ Wiggle your tongue from side to side.
_____ Show how you kiss someone.
_____ Pucker, then smile (demonstrate).

Rating: 1   2   3   4   (circle)

Diadochokinetic function

_____ Produces /pa/, /ba/ smoothly, accurately.
_____ Produces /ta/, /da/ smoothly, accurately.
_____ Produces /ka/, /ga/ smoothly, accurately.
_____ Produces /pata/ smoothly, accurately.
_____ Produces /pataka/ smoothly, accurately.

Respiratory functions

_____ Sustains vowel for 5 seconds.
Rating: 1   2   3   4   (circle)

Phonatory functions

_____ Produces soft speech.
_____ Produces loud speech.
_____ Produces high-pitched sounds.
_____ Produces low-pitched sounds.
_____ Vocal quality normal. If not, is it:

          _____ Harsh?
          _____ Breathy?
          _____ Hoarse?

Rating: 1   2   3   4   (circle)

Key: 1=Normal   3=Moderate deviation
        2=Slight deviation   4=Extreme deviation

FIGURE 2-4, cont'd
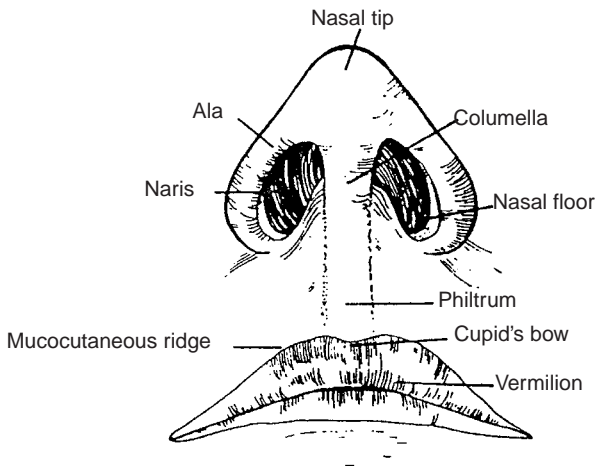
FIGURE 2-5 Surface view of lips and nose. (Reprinted with permission from Meitus, I., and Weinberg, B. [1983]. _Diagnosis in speech-language pathology_ [p. 41]. Baltimore, MD: University Park Press.)

The functional integrity of the facial musculature can be observed by asking the client to raise the eyebrows, to close the eyelids against the resistance of the clinician's finger holding them open, and to smile and frown. Resting posture of the face can be observed for symmetry. Movement and proportions of the mandible also can be evaluated, as outlined in the form in Figure 2-4. A developmental level of 24 months is necessary for the child to perform these assessments. Even a 2- or 3-year-old child may have difficulty with some of these activities, though. Young children will probably need to imitate these movements rather than produce them on verbal request. Asking the child's mother or father to imitate the clinician first and then have the child do so may be useful. Suggesting that the child pretend to be a clown making funny faces can help; so can using a mirror so that the child can see the funny faces being made. Face painting may also facilitate this assessment, but check with parents first.

Intraoral Examination

When conducting an intraoral examination, surgical gloves must be worn for the safety of the clinician as well as the child. Alignment of the teeth (normal appearance and terminology are given in Figure 2-6) and the occlusion of the mandible can be assessed using the guidelines in Figure 2-4. The eruption, spacing, and orientation of the teeth and the structure and proportion of the tongue also can be observed. Movement of the tongue can be encouraged by using a lollipop and asking the child to lick it as you place it above, below, and on either side of the child's mouth. Be sure to let the child have the lollipop when you complete the assessment, though!

The structure of the hard palate can be examined using a small penlight, noting the features in Figure 2-4 with reference to the model given in Figure 2-7. The clinician should be especially alert for signs of a submucosal cleft of the palate (Figure 2-8) and the
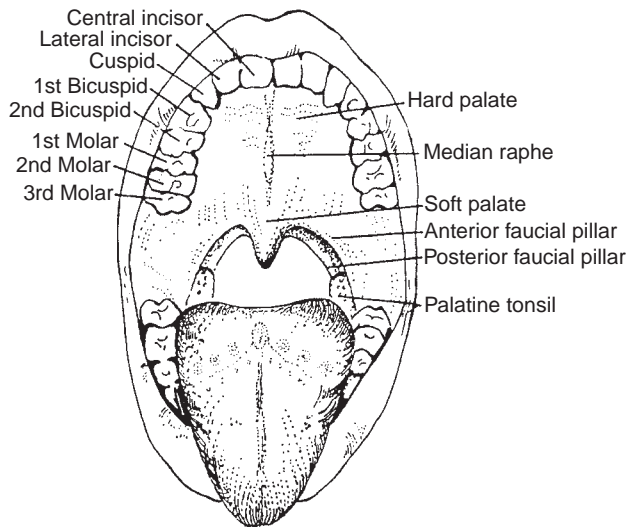
FIGURE 2-6 View of intraoral structures. (Reprinted with permission from Meitus, I., and Weinberg, B. [1983]. *Diagnosis in speech-language pathology* [p. 43]. Baltimore, MD: University Park Press.)

presence of a bifid uvula (Figure 2-9). These signs include a whitish appearance of the soft palate and a depression in that area that can be felt on palpating the velum. To palpate the velum, stand behind the child with his or her head resting against you as you move a gloved finger along the midline of the palate from the alveolar ridge to the velum. These findings would indicate the need for further evaluation of the velopharyngeal structures. The function of the velum can be observed by asking the child to sustain /a/ and then to produce short repetitions of /a/-/a/, as indicated in Figure 2-4.

These assessments will be hard to carry out on children younger than 3 years because of their difficulty in tolerating an intraoral examination, as well as their difficulty in imitating sounds on command. To help young children with the intraoral examination, the clinician can let the child use the light to look in the parent's mouth first, then shine the light on is or her own hand to see that it does not hurt. You can ask children to open their mouths so that you can see what they had for breakfast or to see whether there are any elephants (hippos, dinosaurs, ogres) in there. Using puppets can also be helpful; the child and puppet can take turns opening their mouths, with the child playing SLP to the puppet. If the child still refuses to allow the intraoral examination, it might be best to carry on with something else, and try again once the child gets to know you better during the course of intervention.

Examination of Velopharyngeal Function and Resonance

Even if the velopharyngeal structures appear normal on inspection, it is wise to assess the child's ability to use the velopharyngeal port in speech activities. This can be accomplished quite easily with two quick and efficient instruments. The *Iowa Pressure Articulation Test (IPAT*; Morris, Spreistersbach, & Darley, 1961) was developed to assess speech errors often associated with velopharyngeal insufficiency. This procedure can be used with children at developmental levels as low as 24 to 30 months. The words used for this test are shown in Figure 2-10; the phonemes within these words that are most important for assessing velopharyngeal function are underlined in the box. The clinician merely asks the client
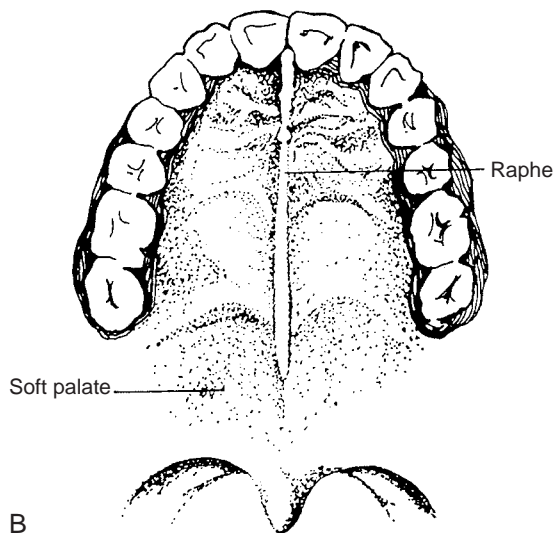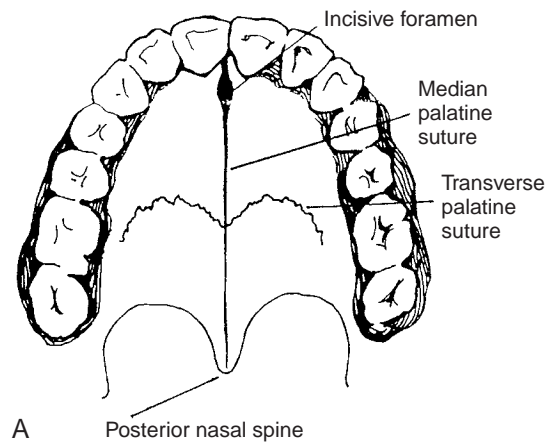
FIGURE 2-7 **A,** The hard palate. **B,** Surface view of the soft palate. (Reprinted with permission from Meitus, I., and Weinberg, B. [1983]. *Diagnosis in speech-language pathology* [p. 45]. Baltimore, MD: University Park Press.)

to repeat the words and notes whether the underlined segments are produced correctly. If so, a check is placed on the line for each word. If not, the type of error is recorded, using the key at the bottom of the box. If nasal emissions, glottal stops, pharyngeal fricatives, or nasal snorts are heard, the function of the velopharyngeal port is likely to be compromised. In this case, further investigation as to the cause of this problem should be undertaken with medical consultation. Even if no structural defects can be found, a child producing errors indicating velopharyngeal insufficiency will need treatment for these errors, as well as any necessary language programming.

The degree of perceived hypernasality of speech and the absence or alteration of "pressure" consonants can be evaluated using procedures included in the Great Ormond Street Speech Assessment (GOS.SP.ASS; Sell, Harding, & Grunwell, 1999), an assessment specifically designed to assess velopharyngeal integrity. The sentence elicitation procedure involves asking the child to repeat sentences with a controlled number of nasal sounds. Sentences introduced by Van De Mark (1979) that can be used for this purpose
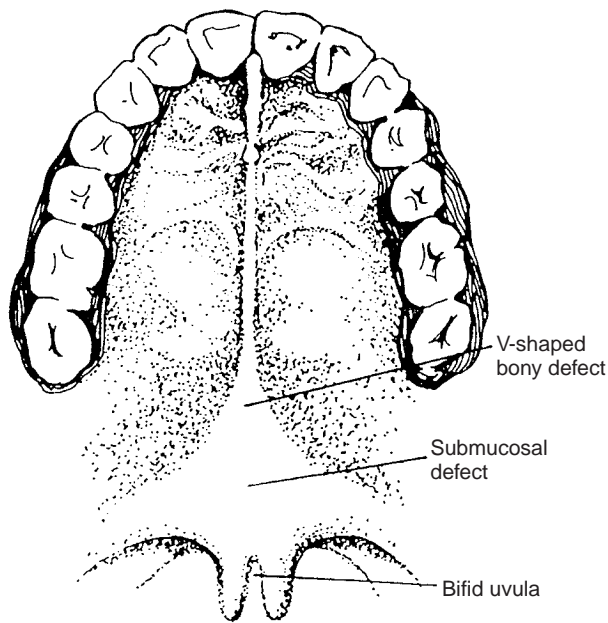
FIGURE 2-8 Intraoral view of submucous cleft palate. (Reprinted with permission from Meitus, I., and Weinberg, B. [1983]. *Diagnosis in speech-language pathology* [p. 46]. Baltimore, MD: University Park Press.)

are given in Box 2-2. The sentences vary in the number of nasal sounds included and can be used to determine whether the nasality of these sounds "spills over" to other words in the sentences. Sentences also include plosive stops that require closure of the palate for successful articulation. Atypical distortions of these consonants can be an indication of velopharyngeal insufficiency. A developmental level of about 36 months is required to perform this task. Errors are transcribed and any qualitatively atypical speech errors should prompt structural examination. If no structural abnormalities are found, speech targets for intervention could include making oral-nasal distinctions and producing plosives in connected speech.

Examination of Volitional Oral Movements

Looking at oral-motor performance in nonspeech activities can be helpful in deciding whether poor speech is related to poor tone or voluntary control of the oral musculature. Activities that can be used in this assessment appear in Box 2-3. Most children should be able to imitate most of these movements by a developmental level

of 36 months. A comparison of spontaneous and imitative oral-motor movements can be helpful in considering different diagnoses and clinicians should be alert to potential differences.

Diadochokinetic Assessment

Diadochokinetic activities can be used to observe the rate, pattern, and consistency of production of syllables. The smoothness and accuracy of the syllables produced during diadochokinetic productions can be noted by the clinician on the form in Figure 2-4. In addition, diadochokinetic rates can be tested in preschool children using the procedure by Williams and Stackhouse (2000) presented in Table 2-1. In this procedure the clinician instructs the child to "see how fast you can say these sounds." After a demonstration and practice producing some syllables rapidly, the child is asked to rapidly repeat single syllables, such as /pʌ//pʌ//pʌ/, syllable sequences /pʌ/ /tʌ/ /kʌ/ or multi-syllabic words such as "buttercup" or "patacake." For young children, accuracy (the number of phonemes correct) and consistency of productions across repeated items may be more informative measures of competence (Williams & Stackhouse, 2000). For older children, rate is the most frequent measurement of DDK performance (Williams & Stackhouse, 2000), in this case the time taken to produce five repetitions of the target sequence. For older children, Fletcher (1978) provided average repetition rates per second, with standard deviations, for ages 6 through 13 years. These appear in Table 2-1.

Preschoolers who have a great deal of difficulty with these tasks *may* be showing evidence of immaturity or apraxic features, but it is best not to jump to conclusions. With this age group, willingness and motivation can have an especially great effect on performance. To increase this motivation, you can try asking the child to pretend to be a "choo-choo" train by making /pʌpʌpʌpʌ/ sounds, a race car by making /tʌtʌtʌtʌ/ sounds, and so on. Remember, if a child performs these tasks as expected, we can conclude that other expressive language difficulties cannot be attributed to limitations in oral-motor structure or function. However, if children do not perform well on this task, we need to be careful about making causal connections; a child can fail for any number of reasons that may have little to do with oral-motor structure and function. In these cases, ongoing assessment should be conducted as the clinician gets to know the child better.

Evaluating Respiratory and Phonatory Function

In doing this assessment the clinician is again interested in determining simply whether respiratory and phonatory functions are minimally adequate to support basic speech and language. Respiratory function can be evaluated by asking the child to produce any prolonged vowel. Young children may have difficulty persisting in

FIGURE 2-9 Examples of bifid uvula. (Reprinted with permission from Meitus, I., and Weinberg, B. [1983]. *Diagnosis in speech-language pathology* [p. 47]. Baltimore, MD: University Park Press.)
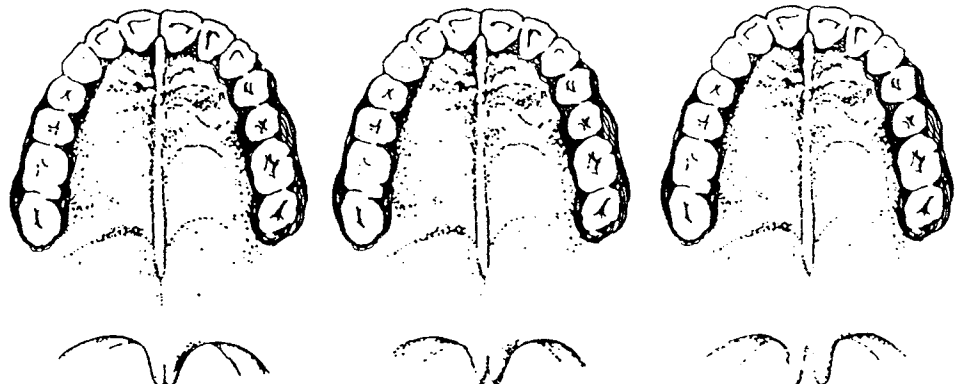
Name: _____ DOB: _____ Age: ____
Date of test: _____
SCORE: number correct: _____ percentage correct: _____

tongue _____	sheep_____	fork _____
kiss _____	dishes _____	planting _____
pocket _____	fish _____	clown _____
duck _____	jar _____	glass _____
girl _____	bread _____	block _____
wagon _____	tree _____	wolf _____
dog _____	dress _____	smoke _____
telephone _____	crayons _____	snake_____
knife _____	grass _____	spider _____
soap _____	paper _____	opossum _____
bicycle _____	cracker _____	stairs _____
mouse _____	tiger _____	sky _____
scissors _____	washer _____	books _____
twins _____	stamps _____	stopped _____
		string _____

Key: √ = OK   G = Glottal stop substitution
     NS = Nasal snort   ø = Omission
     NE = Nasal emission D = Oral distortion
     P = Pharyngeal fricative

FIGURE 2-10 Iowa Pressure Articulation Test (IPAT). (Reprinted with permission from Morris, H., Spriestersbach, D., and Darley, F. [1961]. An articulation test for assessing competency of velopharyngeal closure. *Journal of Speech and Hearing Research, 4*, 48.)

BOX 2-2 VanDemark Test Sentences

Most boys like to play football.
Do you have a brother or sister?
Ted had a dog with white feet.
Can you count to nine?
Do you want to take my new cap?
Do you know the name of my doll?

Reprinted with permission from VanDemark, D., Morris, H., and VandeHaar, C. (1979). Patterns of articulation ability in speakers with cleft palate. *Cleft Palate Journal, 16*, 230.

BOX 2-3 Eliciting Volitional Oral-Motor Movements

AGE EXPECTED	ORAL MOTOR SKILL
6 months	Blow raspberries
18 months	Make animal sounds
24 months	Blow bubbles through straw or wand
24 months	Stick tongue out on request
24 months	Stick tongue out in imitation
24 months	Puff cheeks on request
24 months	Puff cheeks in imitation
24 months	Blow nose into tissue on request

Based on Gernsbacher et al. (2008). Infant and toddler oral- and manual-motor skills predict later speech fluency in autism. *Journal of Child Psychology and Psychiatry, 49*, 43-50.

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this task for developmental reasons, rather than because they do not have adequate respiratory support for speech. If the child seems unable to sustain vowel production, he or she can be asked to pretend to be a singer and hold a long note in a familiar song or pretend to be the whistle of a train going through a long tunnel. A child who can sustain any phonation for a minimum of 5 seconds can be judged to have adequate respiratory capacity for speech.

Assessment of phonatory function has three components: volume, pitch, and quality. The ability to control volume can be evaluated by asking the child to produce speech that is very soft and then very loud. Having the child pretend to be in a church or library can help for quiet speech. Asking him or her to pretend to yell to a friend across the street or cheer for a favorite sports team will elicit loud speech. Children can be asked to demonstrate their range of pitch by imitating the clinician pretending to be a squeaky mouse and a growly bear or by pretending to be a siren with the clinician, who demonstrates the pitch variations in a siren's wail. Vocal quality can be judged in any speech activity, including in free play/conversation.

Summarizing the Oral-Motor Assessment

For the vast majority of children who are seen for limited expressive language abilities, the results of the oral-motor structure and function assessment are "unremarkable," meaning that there is no indication that any aspect of the speech mechanism is interfering with language production. Still, the SLP should be aware that such problems do arise occasionally, and when they do, they must be addressed medically, surgically, or behaviorally for the child to achieve his or her maximum communicative potential.

For some children, oral-motor deficits preclude the development of speech. In these cases, an alternative mode of communication, such as a portable computerized speech synthesizer or a letter, symbol, or picture communication board may be recommended. Most of these children have physical limitations that are associated with conditions such as cerebral palsy or severe dysarthria. For children with milder oral-motor impairments, the speech-motor assessment can help identify oral-motor strengths and needs that can be addressed in an intervention program.

It also is important to remember that the SLP is usually the only professional who will examine the oral mechanism. We cannot assume that the pediatrician, for instance, will have done so before referring a child. Pediatricians and other medical professionals note gross structural defects but may not have looked for signs of a submucosal cleft or for the functional integrity of the mechanism. That examination is the job of the SLP, and unless the child is known to have some orofacial defect or syndrome, it is unlikely that anyone else will have done an examination. Even if only 1 out of every 1000 children who present with language deficits is found to have oral-motor problems, it is our responsibility to be the clinician to identify that one child.

Nonverbal Cognition

Another piece of essential information is a measure of nonverbal cognition. A model similar to that used to assess hearing also can be followed for evaluating cognition. Although the SLP is not qualified to do IQ testing, there are informal measures of cognitive function based on play assessment, Piagetian tasks, and drawing performance. In our view, the clinician would be justified in using these informal cognitive screening measures if formal cognitive testing were not available. The clinician could simply assess whether the child is functioning at or near age level on nonverbal cognitive tasks, like those listed in Table 2-2. If a child does function

TABLE 2-1 The Fletcher Time-by-Count Test of Diadochokinetic Syllable Rate

Name: _____ Date:_____

B.D.:_____ Age:_____ Examiner:_____

Syllable	Repetitions	#Seconds	Norms By Age (In Seconds)							
			6	7	8	9	10	11	12	13
PΛ	20	_____	4.8	4.8	4.2	4.0	3.7	3.6	3.4	3.3
tΛ	20	_____	4.9	4.9	4.4	4.1	3.8	3.6	3.5	3.3
kΛ	20	_____	5.5	5.3	4.8	4.6	4.3	4.Q	3.9	3.7
fΛ	20	_____	5.5	5.4	4.9	4.6	4.2	4.Q	3.7	3.6
lΛ	20	_____	5.2	5.3	4.6	4.5	4.2	3.8	3.7	3.5
STANDARD DEVIATIONS ACROSS SYLLABLES			1.0	1.0	0.7	0.7	0.7	0.6	0.6	0.7
pΛtΛ	15	_____	7.3	7.6	6.2	5.9	5.5	4.8	4.7	4.2
pΛkΛ	15	_____	7.9	7.6	6.2	5.9	5.5	4.8	4.7	4.2
tΛkΛ	15	_____	7.8	8.0	7.2	6.6	6.4	5.5	5.5	5.1
STANDARD DEVIATIONS ACROSS SYLLABLES			2.0	2.0	1.6	1.6	1.6	1.3	1.3	1.3
pΛtΛkΛ	10	_____	10.3	10.0	8.3	7.7	7.1	6.5	6.4	5.7
STANDARD DEVIATIONS ACROSS SYLLABLES			2.8	2.8	2.0	2.0	2.0	1.5	1.5	1.5

Williams, P. and Stackhouse, J. (2000). Rate, accuracy and consistency: diadochokinetic performance of young, normally developing children. *Clinical Linguistics and Phonetics, 14,* 267-293.

close to age level on these measures, further information might not be needed. If the child does not, though, the clinician would have a responsibility to make a referral to an appropriate professional for formal developmental testing. An example of a letter of referral for such information is given in Appendix 2-2. Table 2-3 lists formal IQ tests that can be requested to provide this standardized measure of nonverbal cognition for various age groups.

Social Functioning

Since communication is an interactive enterprise, we need to know something about the child's social skills and about the social environment in which children function in order to understand their language needs. We want to emphasize strongly that this does not mean that we are looking for someone to blame for the child's language disorder. Clinicians are often too quick to conclude that if a family's parent–child interaction patterns are somewhat different from those seen in a typical middle-class family, the child's problems were caused by those interactive patterns. However, it is equally important to realize that parents adapt to meet the communication needs of their children; so that changes in parent interaction styles with children who have developmental disorders may be the *result* of the child's language impairment, rather than a cause of it. Except in cases of extreme abuse or neglect, parents are almost never the primary source of their child's communication difficulty.

This part of the assessment follows from our initial observations of parents and children interacting together, and from our conversations with parents as part of the case history interview. In putting all of this information together, we need to be sure we have established:

1. How the child uses whatever communicative skills he or she has and how communication problems influence the child's development of daily living skills.
2. The child's emotional and behavioral adjustment.
3. The family's perceptions of the child's needs and their priorities for meeting them.
4. The family's strengths and needs in terms of support from peers and professionals in the difficult task of raising a child with special needs.
5. The cultural and language differences present in the home that may influence the child's communication skills or the family's perceptions of them.

Other aspects of the assessment of social environment may be carried out by a social worker in a multidisciplinary evaluation, either by using published scales or through interviews. If social-work services are not available, the SLP may simply talk with family members about their perceptions, concerns, needs, and hopes for the child. The main purpose of gathering this information is to let the family know that they are crucial members of the team in helping their child achieve the maximum level of functioning possible. It is not only the professionals who decide what the child needs to learn and how to learn it; the family has vital information about these issues that needs to be a part of the management plan. The family also has a right to help determine what goals and methods of intervention most closely meet their needs, as well as the child's, because for the child to function well, the family must be functioning well, too. And if the family are actively involved in the intervention process, there is more scope for generalization of therapy targets to everyday environments. Recent federal mandates, such those embodied in IDEA (2004) legislation, emphasize the need for family-centered intervention for young children. But all families deserve the same consideration, regardless of the age of their child. The SLP has a responsibility to establish an atmosphere in which the family feels that they are partners in the child's progress. Some questionnaire and interview instruments have been developed to assist in the assessment of social environment. These include the *Home and Community Environment Instrument* (Keysor, Jett, & Haley, 2005), the *Homelife Interview* (Leventhal, Selner-O'Hagan, Brookes-Gunn, Bingenheimer, & Earls, 2004), the *Family Strengths Profile* (Trivette, Dunst, & Deal, 1988), the *Measurement of Family Functioning* (Fewell, 1986), and the *Family Environment Scale* (Moos, 1974).

TABLE 2-2   Informal Assessments Used for Screening Nonverbal Cognition

Instrument	Age Range	Area Assessed	Comments
Cognitive Assessment Battery for Young Children with Physical Impairments (Guerette, Tefft, Furumasu, & Moy, 1999)	18–36 mo	Piagetian skills	Used for children with motor impairments
Cognitive Abilities Scale—Second Edition (Bradley-Johnson & Johnson, 2001)	3–47 mo	Infant form: exploration, communication, and initiation and imitation Preschool form: language, reading, mathematics, handwriting, and enabling behaviors	Assesses current level of functioning and identifies children who would benefit from special instruction in order to improve their abilities
Developmental Activities Screening Inventory—Second Edition (DASI-II; Fewell & Langley, 1984)	Birth–5 yr	Memory, seriation, reasoning, and sensory intactness	Nonverbal format for use with preschool children with disabilities; measures memory, reasoning, sensory intactness
Draw-A-Person Intellectual Ability Test for Children, Adolescents, and Adults (DAP:IQ; Reynolds & Hickman, 2004)	4–90 yr	Intellectual ability	10–12 min admin time. Can be administered individually or in groups
Piagetian Concrete Operational Concepts (Goldschmid & Bentler, 1968)	6–12 yr	Concept formation	Used for determining whether child is functioning at school-age level
Piagetian Preoperational Measures (Hohmann, Banet, & Weikart, 1979)	2–5 yr	Classification, drawing	Used for determining whether the child is functioning above a 2-yr level
Play Assessment (McCune, 1995)	8–30 mo	Symbolic behavior	Used for establishing level of representational thought
Reynolds Intellectual Screening Test (RIST; Reynolds & Kamphaus, 2003b)	3–94 yr	Consists of two RIAS subtests: Guess What (a verbal subtest) and Odd-Item Out (a nonverbal subtest)	Helps identify people who need a more comprehensive intellectual assessment or to document the continuing presence of intellectual deficits. 8–12 min admin time
Stoelting Brief Intelligence Test (S–BIT; Roid & Miller, 1999)	6–21 yr	Variety of problem-solving tasks increasing in complexity and difficulty	The examiner pantomimes the instructions and the individual responds by pointing or placing a card in the appropriate position. Provides both norm-referenced and criterion-referenced scores for IQ, fluid reasoning, and academically important subtests. 15 min admin time
Symbolic Play Test (Lowe & Costello, 1988)	12–36 mo	Play and symbolic ability	Used for establishing level of representational thought
Uzgiris-Hunt Scales of Infant Development (Dunst, 1980)	Birth–24 mo	Sensorimotor skills: object permanence, means-end abilities, imitation, causality, spatial relations, schemes for objects	Used for establishing the presence of basic intentionality and other cognitive skills related to early language

In addition, it may be useful to get some indication of the child's every day social interactions and social experiences. Several standardized instruments are available for gathering this kind of information. The *Vineland Adaptive Behavior Scales—II* (Sparrow, Cicchetti, & Balla, 2005) is a particularly well-constructed instrument that uses a structured interview format and provides norms for age groups from infants to adolescents and from mainstream as well as handicapped populations. The clinician can administer this assessment, with training provided in the test manual. In a multidisciplinary evaluation, a social worker, special educator, or mental health professional may administer it. Some additional instruments have been developed recently to assist with assessment of social

communicative skills, including the *Childhood Communication Checklist—2* US (CCC-2US; Bishop, 2006b), the *Social Responsiveness Scale* (SRS; Constantino, 2003), the *Strengths and Difficulties Questionnaire* (SDQ; Goodman, 1997), and the *Social Communication Questionnaire* (Rutter, Bailey, & Lord, 2003). Some of these instruments consider normal variation in social behavior (SDQ, SRS) while others ask specifically about atypical social behaviors that may be indicative of an autism spectrum disorder (CCC-2US, SCQ).

Assessment of emotional status may require the involvement of a social worker, psychologist, or psychiatrist. The SLP can make a referral to these professionals when the child's behavior and

TABLE 2-3   Nonverbal Intelligence Assessment

Instrument	Age Range	Comments
Comprehensive Test of Nonverbal Intelligence— Second Edition (CTONI-II; Hammill, Pearson, & Weiderhold, 2008)	6–90 yr	Has computer-assisted scoring package; designed to reduce bias in intelligence assessment
Hammill Multiability Achievement Test (HAMAT; Hammill, Hresko, Ammer, Cronin, & Quinby, 1998)	6–17 yr	Uses eight subtests to assess verbal intelligence, overall intelligence, and yields IQ scores
Hiskey-Nebraska Test of Learning Aptitude (Hiskey, 1999)	3–17 yr	Developed for children with hearing impairments
Kaufman Brief Intelligence Test—Second Edition (Kaufman & Kaufman, 2005)	4–90 yr	Contains vocabulary subtest and matrices subtest; can compare verbal and nonverbal scores
Leiter International Performance Scale—Revised (Roid & Miller, 1997)	2–18 yr	Uses pantomime for instructions
Merrill-Palmer Scale of Mental Tests (Stutsman, 1948)	18 mo–4 yr	Useful with youngest children
Naglieri Nonverbal Ability Test—Individual Administration (NNAT–Individual Administration; Naglieri, 2003)	5–17 yr	Assess general ability in children nonverbally; a companion to the NNAT-Multilevel Form and is the revision of the Matrix Analogies Test-Expanded Form (MAT-Expanded Form); 25 to 30 min admin time
Performance Scale—Wechsler Preschool & Primary Scale of Intelligence—Third Edition (WPPSI-3; Wechsler, 2002)	2:6–7:3 yr	Part of a full intelligence scale; can compare verbal with performance scores
Performance Scale of Wechsler Intelligence Scale for Children—Fourth Edition (WISC-4; Wechsler, 2003)	7–16:11 yr	Part of a full intelligence scale; can compare verbal with performance scores
Raven's Progressive Matrices Scale—Colored (Raven, Raven, and Court, 2003)	5–89 yr (color version)	Requires only pointing response
Reynolds Intellectual Assessment Scales (RIAS; Reynolds & Kamphaus, 2003a)	3–94 yr	Includes a two-subtest Verbal Intelligence Index (VIX) and a two-subtest Nonverbal Intelligence Index (NIX) that taken together form the Composite Intelligence Index (CIX); 20 to 25 min admin time
Swanson Cognitive Abilities Scale (Swanson, 1996)	5 yr–older	Uses high interest materials to engage nonverbal children
Test of Nonverbal Intelligence—Fourth Edition (TONI-4; Brown, Sherbenou, & Johnsen, 2010)	5–85 yr	A language-free measure of cognitive ability; requires only a pointing response
Test of Pretend Play (ToPP; Lewis, & Boucher, 1999)	1–6 yr	Assesses level of conceptual development in verbal and nonverbal children
Universal Nonverbal Intelligence Test (UNIT; Bracken & McCallum, 1998)	K–12th grade	Memory and reasoning abilities

emotional adjustment, as observed during performance on the assessment tasks, appear to be causing problems or standing in the way of successful communication. In making these observations it is always wise to remember that the inability to communicate is a very frustrating condition. The development of maladaptive behaviors often results from being unable to express wants and needs, as we saw in the student with autism we discussed in Chapter 1. Although evaluating emotional and behavioral aspects of a language disorder is important in planning remedial programming and developing a service plan for the family, we again need to be careful about jumping to conclusions and confusing cause and effect. A child's language disorder may be a result of an emotional disturbance. This is particularly true in cases of selective mutism, when children refuse to speak in certain situations, even though they do speak in others. But it is at least as likely that difficulties in communication caused the behavioral or emotional disturbance observed in a language-impaired child.

Assessing the role of cultural and language differences again involves interviewing the parents about their expectations for communication and their own communicative styles. In some cases, an interpreter who speaks the language of the family may be needed.

This issue is discussed further when we talk about culturally and linguistically different children in Chapter 5.

How Will We Assess?

There are several methods for examining language function: standardized tests, developmental scales, interviews and questionnaires, nonstandardized or criterion-referenced procedures, and behavioral observations, including curriculum-based and dynamic procedures. Each has a place in the assessment process; each fulfills certain functions, but each also has certain limitations. The clinician's aim is to learn to recognize the right instrument to do the job at hand.

Standardized Tests

Standardized or *norm-referenced* tests are the most formal, decontextualized format for assessing language function. They are developed by devising a series of items that are given to (ideally) large groups of children with normal language development and then computing the acceptable range of variation in scores for the age range covered by the test. The advantage of standardized tests,

when they are well-constructed, is that they allow a meaningful comparison of performance among children (see Charman, Hood, & Howlin, 2008, for discussion). They do so because (ideally) they have the following properties:

1. *Clear administration and scoring criteria*. What makes a standardized test "standard" is that it is always given the same way, no matter who administers it, and it is always scored the same way, no matter who scores it or takes it. When evaluating a standardized test, it is wise to read the instructions in the manual and ask yourself whether you understand *exactly* what to do when giving and scoring the test. If questions in your mind cannot be resolved by a careful rereading of the manual, the test procedures may not be stated clearly enough to justify its use.

2. *Validity*. This refers to the extent to which a test measures what it purports to measure. A test is considered valid if its systematic error, or bias, is small. Various types of validity can be reported. *Face validity* refers to the common-sense match between the test's intended purpose and its actual content. For example, the *Peabody Picture Vocabulary Test—IV* (Dunn & Dunn, 2006) has face validity because it asks subjects to point to pictures that an examiner names, which seems, on the face of it, to be a reasonable way to determine whether a person knows what those words mean. *Content validity* concerns whether the instrument has items that are representative of the content domain sampled by the test (Friberg, 2010). This is usually evaluated by having experts in the field judge the instrument as a whole. *Construct validity* has to do with whether the instrument measures the theoretical construct it was designed to measure. This may be evaluated either qualitatively or quantitatively and is, again, generally accomplished by soliciting expert opinion (Friberg, 2010). *Criterion-related validity* concerns whether the instrument shows strong correlations with other instruments thought to measure the same thing. There are two types of criterion-related validity: *concurrent* and *predictive.* A test has *concurrent validity* when evidence is provided that the test agrees with other valid instruments in categorizing children as normal or disordered. A test has *predictive validity* when there is evidence that this test predicts how the child will perform later on another valid measure of speech or language. These types of validity are generally considered the ones for which mathematical evidence must be presented in the test manual. Tests that do not report some quantitative data on criterion-related validity should not be considered well-constructed instruments (Friberg, 2010).

Standardized testing is one method of language assessment.

3. *Reliability*. An instrument is reliable if its measurements are consistent and accurate, or near to the "true" value. Another way to say this is that the amount of random error in the measurement is small. Reliability also can be assessed in several ways. *Test-retest reliability* involves giving the test two different times to the same person and computing the relationship of the two scores. Tests that measure high on this computation are considered *stable. Inter-rater reliability* involves having two different examiners either give a test to the same person or score the same person's test. Measuring high on this attribute indicates that a test is not overly influenced by the characteristics of the examiner. Salvia and Ysseldyke (2000) suggested that both these types of validity need to be reported and that for a test to be considered reliable, both must exceed a correlation coefficient of 0.90 with a 95% confidence interval. *Internal consistency reliability* means that the subtests of the instrument rank subjects similarly, or that the parts of the test are measuring something similar to what is measured by the whole. *Split-half reliability,* where scores on the first half of a test are compared with those on the second half, and *odd-even reliability,* where scores on the odd-numbered items are compared with scores on the even-numbered items, are variants of internal consistency measures. *Equivalent forms reliability* means that two forms of an instrument (such as Form A and Form B of the *Peabody Picture Vocabulary Test—IV,* Dunn & Dunn, 2006) measure essentially the same thing.

4. *Diagnostic accuracy*. Dollaghan (2004) discussed the requirement that tests demonstrate how accurately they assign clients to diagnostic categories. When a test or other instrument is being used for the purpose of deciding whether or not a child has a particular disorder, measures of diagnostic accuracy are crucial for deciding how confident we can be about the results. This issue is often referred to as *evidence-based assessment practice.* Measures that report these statistics in their manuals provide us with the information we need to make decisions about their accuracy. Dollaghan described several measures of diagnostic accuracy, which are summarized in Table 2-4.

5. *Standardization*. This refers to a set of studies carried out to determine how the instrument works in a known population or norming sample. The characteristics of the norming sample are very important when evaluating a standardized test. The sample must be big enough, with enough individuals at each age level being tested, to permit statistical conclusions to be drawn. Most authorities on test construction (Salvia & Ysseldyke, 2000) set a minimum of 100 subjects per age group as a lower limit on adequate sample size. The sample also must be representative or contain individuals who are like the subject who will be given the test. This means that the norming sample must (ideally) be drawn from more than one geographic region, both genders, and a range of socioeconomic and ethnic backgrounds. Tests standardized in just one region or on children from a narrow range of economic or racial backgrounds will be less representative. This will mean that they serve as a fair comparison only for children who are like the ones in the norming sample. Pena, Spaulding, and Plante (2006) discussed the implications of including not only typical children, but also children with the full range of language abilities in norming samples, suggesting that if the purpose of the assessment is to identify impaired language abilities, including children with

TABLE 2-4 Measures of Diagnostic Accuracy

Term	Definition	Formula
Sensitivity (Se)	The degree to which a test accurately identifies that a child has the disorder in question; proportion of agreement between a "gold standard" of diagnosis and the test's outcome score	Se = # "true positives" (those testing positive who have the disorder), divided by all those with the disorder.
Specificity (Sp)	Degree to which a test accurately identifies a child as NOT having the disorder; proportion of agreement between a "gold standard" of normality or absence of the disorder and the test's outcome score	Sp = # of "true negatives" (those testing negative who do not have the disorder), divided by all those without the disorder.
Positive likelihood ratio (LR+)	The degree of confidence that a person who scores in the affected or disordered range on the diagnostic measure truly does have the disorder, or is a true positive. The higher the LR+, the more informative the measure for diagnosing the disorder.	LR+ = sensitivity/(1 − specificity)
Negative likelihood ratio (LR−)	The degree of confidence that a person scoring in the negative (normal) range on the diagnostic measure truly does not have the disorder, or is a true negative. The lower the LR−, the more informative the measure for ruling out the presence of disorder.	LR− = (1 − sensitivity)/specificity
Positive predictive value (PPV)	The probability that the child with a positive test result actually has the disorder. Answers the question, "How likely is it that I will be right when I classify an individual as disordered based on performance on this test?"	PPV = true positives/(true positives + false positives)* *This sum equals all subjects who tested positive.
Negative predictive value (LPV)	The probability that a child with a negative test result actually does not have the disorder. Answers the question, "How likely is it that I will be right when I classify an individual as nondisordered based on performance on this test?"	NPV = true negatives/(true negatives + false negatives)* *This sum equals all subjects who tested negative.

Dollaghan, CA (2004). Evidence-based practice in communication disorders: what do we know, and when do we know it? *Journal of Communication Disorders, 37,* 391-400.

language impairment in the normative sample can decrease identification accuracy. Clinicians should examine standardized tests carefully, looking for evidence of adequate size, representativeness, and the composition of the normative sample when considering the validity of a standardized test.

6. *Measures of central tendency and variability.* If a population taking a test is large enough, the scores of the people taking it will form a normal distribution, or bell-shaped curve, like the one in Figure 2-11. This is one reason why it is important for standardized tests to have large norming samples. If they don't, the distribution of scores won't necessarily approximate the normal curve, and they will be more difficult to interpret. When using standardized tests, we usually assume, though, that the scores in the norming population were normally distributed. When they are, most of the scores will fall close to the mean, or arithmetic average of scores for the test. This is the score that is obtained by adding up all the scores and dividing by the number of people who took the test. The further we move away from the mean in either direction, the fewer people in the population will receive that score. That's why the area under the bell curve, representing the percentage of the population who got each score, gets smaller as we move away from the center. The mean is a measure of central tendency, or the tendency of most scores to fall near the middle of the distribution, rather than farther out toward its

tails, or ends. If we give a test to one hundred 4-year-olds with normal language function, most of them will score close to the score that is the average for the 100 scores. But how close is close and how far is far? Just knowing the central tendency measure, or mean score, doesn't tell us when a score becomes really different from a typical score. That's why we need a measure of variability of the test's score, also.

Most standardized tests report, in addition to mean scores for each age group, a *standard deviation.* The standard deviation (SD) represents the average difference of scores from the mean score. It indicates how far from the mean score a typical score falls. In a normal curve, we would expect 68% of scores to fall within 1 SD on either side of the mean for the test. Half of these scores would be higher than the mean, and half would be lower. Ninety-six percent of scores will fall within 2 SDs of the mean. Combining information from the mean and SD of a test allows us to make decisions about when a child's score falls far enough from the mean to warrant deciding that it is really significantly different from normal.

7. *Standard error of measurement.* Any score that we obtain from a client on a test is really only an *estimate* of that client's "true" score. Unfortunately, we can never know the true score with 100% confidence because whenever we measure anything in the real world there is always some *measurement error* involved. For example, if you weigh yourself three times in
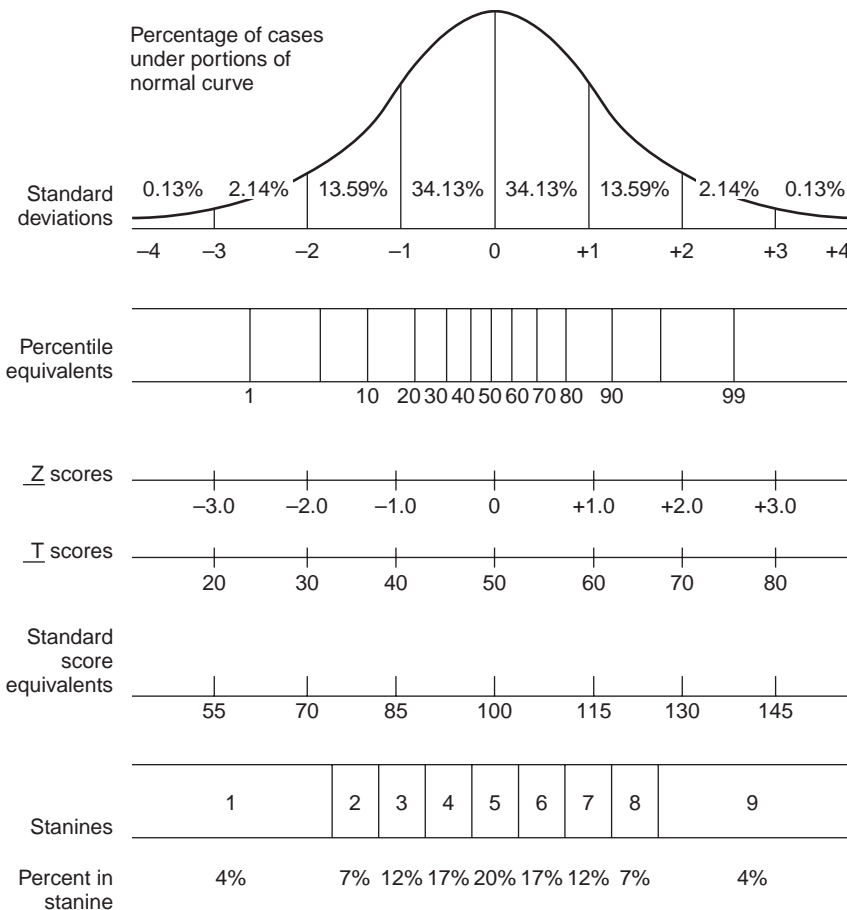
FIGURE 2-11   Relationships among derived scores and the normal curve.

one day, even on the same scale, the measurements will be slightly different. Which one of them is your "true" weight? If you're like us, you'll say the lowest one! But in fact, none is true. They are all estimates because of the error inherent to the act of measurement.

Measurement error happens because human behavior is never constant. Say you take a typing test. If you did so three times, again, you would get three slightly different scores. None is your true score, but all three are estimates of it. A well-constructed test takes this inevitable human variability into account by reporting a *standard error of measurement,* or SEM. The SEM represents the standard deviation that would be obtained if a person of average ability took the test a large number of times and the distribution of his or her scores were plotted. They would, theoretically, form a normal curve, like the one in Figure 2-11, with the mean being the "true" score. Sixty-eight percent of the time, the subject's observed score would fall within 1 SD or 1 SEM of this theoretical true score. Ninety-six percent of the time, the observed score would fall within 2 SDs or 2 SEMs of this true score. In reality, SEM is computed from the reliability coefficients reported for the test. Because we can never, in practice, know a person's true score, we use the SEM to determine a *confidence band* or *confidence interval* around the observed score. We use this band to esti-mate the location of the true score. The mathematical formula for this estimate is as follows:

Confidence band for true score = Observed score ± SEM

Well-constructed standardized tests provide information about SEM in their manuals and discuss the way to use it to compute a confidence interval for a subject's true score. These tests allow us to say with a certain degree of confidence that, based on the observed score, the subject's "true" score falls within a certain interval. Often, tests that provide SEM information supply a graph on the test form on which this interval can be plotted as a confidence band. Figure 2-12 provides an example of the confidence band computed for a standard score of 86 on the *PPVT-IV* (Dunn & Dunn, 2006).

SEM and confidence intervals are important because they remind us that a client's score really represents a range of probable performance, rather than a single point. They also are important for comparing performance across time. Suppose a client gets a standard score of 86 on the *PPVT-IV.* If the test manual tells us that the SEM around this score is 7 points, then with 90% confidence, or 9 times out of 10, we can say that the subject's true score was between 79 and 93. What if we give the test after a course of intervention and find that the client's score increased to 92? Did the inter-vention provide a true gain? Well, if we take the SEM into account, we cannot truly claim that it did, since the second score fell within the confidence interval for the first. To really believe progress was made, we would need to see the post-test score move above the confidence interval for the pretest. In general, because of their construction and the inevitability of measurement error, standardized tests are *not* the best way to measure change in an intervention program

PPVT 4™

Peabody Picture Vocabulary Test, Fourth Edition
Lloyd M. Dunn, PhD
Douglas M. Dunn, PhD

FORM B

	Year	Month	Day
Test date	12	7	28
Birth date	06	6	24
Age*	6	1	

*Do not round up.

Name: D. A.
Sex: ☐ F ☑ M   ID #: _____

Address: 102 Harbor Rd.
Current grade: _____
or level of education completed: _____

City: Newtown

State: _____ Zip: _____
School/Agency: Roosevelt

Home phone: _____
Teacher/Counselor: M. K.

Language spoken at home: English
Examiner: _____

Reason for testing: Reported difficulty understanding directions

NORMS USED: ☑ Age
☐ Grade: Fall
☐ Grade: Spring

Graphical profile
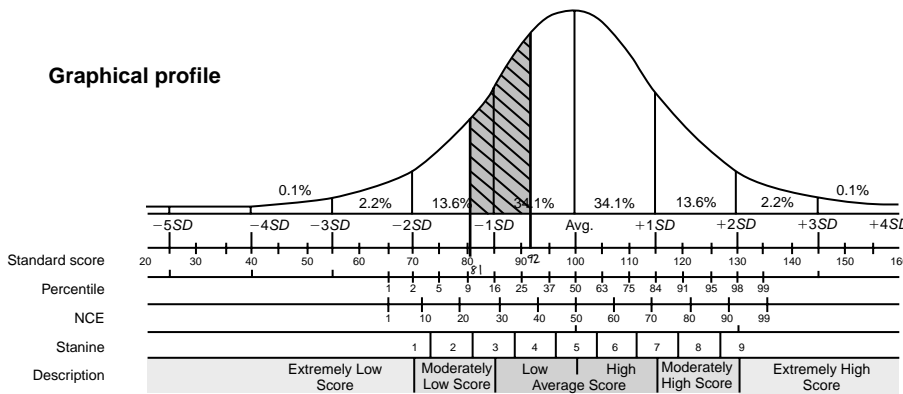
Score summary

RAW SCORE (From box on page 2): 81

Standard score (Table B.1, B.2, or B.3): 86

Confidence interval ☑90% ☐95%
(Table B.1, B.2, or B.3): 81 - 92

Percentile (Table B.4): 18

Normal curve equivalent (NCE) (Table B.4): 30

Stanine (Table B.4): 3

Growth scale value (GSV) (Table B.5 or B.6): 131

☐ Age equivalent (Table B.5): 5-3
☐ Grade equivalent (Table B.6): _____

Product Number
30707 (25)
30709 (100)

FIGURE 2-12   *Peabody Picture Vocabulary Test,* 4th edition.

(McCauley & Swisher, 1984), although they can be used if SEM information is available. We will discuss some better methods for assessing progress in intervention when we talk about other approaches to assessment.

8. *Norm-referenced scores*. Raw scores, the number of items a client got correct on a standardized test, cannot be interpreted without reference to the *norms* given in the test manual. Only by comparing the client's raw score to scores of other subjects in the norming sample does the test score acquire meaning. Three kinds of comparisons can be made: *standard scores, percentile ranks,* and *equivalent scores*.

   a. *Standard comparisons*. These involve comparing a child's raw score with scores of children in the same population, that is, of the same age, mental age, or grade. The main advantage of these scores is that they represent equal units across the range of scores. A standard score of 85 is just as different from 100 as a standard score of 115 is from 130. This property makes these scores easy to manipulate statistically, so they are best for research purposes. They also are useful for deciding how far apart two scores (such as pre-intervention and post-intervention scores) really are. There are several types of standard comparisons:

   (1). *Z-scores*. Z-scores are simply the number of SD units that a client's score falls from the mean score for that population. Remember that an SD unit reflects the average deviation from the mean in the norming population. In Figure 2-11 you can see that about 34% of children taking a test would, theoretically, earn scores between the mean and 1 SD above it, and 34% would get scores between the mean and 1 SD below it. So about 68% of the population, theoretically, will score within 1 SD on either side of the mean, or average, score for the test. Z-scores have a mean of 0 and an SD of 1, so a Z-score of $+1$ means a child scores 1 SD above the mean for his or her reference population. A Z-score of -2 means the score falls 2 SDs below the mean.

   (2). *T-scores*. T-scores are very much like Z-scores. The mean is set arbitrarily at 50 and the SD at 10. So a client with a T-score of 35 would be performing 1.5 SDs below the mean, equivalent to a Z-score of -1.5.

   (3). *Scaled scores.* Very often, a test assigns the mean score to a particular value, such as 100, and the SD to a value, such as 15 points. Many IQ tests are constructed this way, with a standard score of 100 representing the mean score and 15 points representing the SD. This form of scaled scoring is sometimes called a *deviation IQ* or *developmental quotient (DQ).* (Recall

that IQ stands for "intelligence quotient" and is calcu-
lated by dividing mental age by chronological age and
multiplying the result by 100.) That's why a child with
a mental age the same as his chronological age would
have an IQ or DQ of 100: if mental age [MA] and
chronological age [CA] are the same, then:

$$MA/CA = 1$$

$$1 \times 100 = 100$$

Many language tests yield DQ scores as well. On
a test with this form of standard scoring, a score
between 85 and 115 would be within 1 SD of the
mean, clearly within the normal range. A standard
score between 70 and 84 would fall more than 1 but
less than 2 SDs below the mean, and so on.

(4). *Stanines*. Stanines, or standard nines, are normalized
standard scores with a mean of 5 and standard devia-
tion of 2. Except for the two extremes (1 and 9), each
stanine represents a range of ½ of an SD. Stanines
1 and 9 include all the scores that are 1¾ SDs or more
from the mean. The fifth stanine comprises the middle
20% of the distribution. The sixth and fourth stanines
each contain 17% of the population, and so on out
to the first and ninth, which each contain 4% (see
Figure 2-11). Stanine scores are a good way to
summarize a child's performance very broadly, but
they work best when a child's score falls near the
middle of a stanine. Dunn and Dunn (2006) discussed
the various uses of these scores further.

(5). *Normal curve equivalents*. These scores are often used
by state educational programs as a method of reporting.
Normal curve equivalents (NCEs) range from 1 to 99,
with a mean of 50 and an SD of 21.06. NCEs of 1, 50,
and 99 correspond to percentile ranks of 1, 50, and 99,
but other NCE values do not line up directly with
percentile ranks (Williams, 2006).

b. *Percentile ranks*. A percentile rank tells what proportion of
the normative population scored lower than the subject tak-
ing the test. The mean score for a test should be the score
at the 50th percentile. A score at the 10th percentile would
mean that only 10% of the normative sample population
scored below the client's score. Figure 2-11 demonstrates
how percentile scores line up with other standard scores,
by showing how the percentile scores relate to the theoreti-
cal distribution of scores in a normal curve. Percentile rank
scores are easy to understand and interpret and are often
very useful for discussing a child's performance with
parents and teachers. But they do not represent an equal
interval scale, as standard scores do. As such, the distance
between ranks cannot be assumed to be equal.

c. *Equivalent scores*. The third kind of comparison a standard-
ized test can make is based on equivalent scores. These
classify raw scores according to a level, such as age (age-
equivalent scores) or grade (grade-equivalent scores). An
equivalent score represents the raw score that was the median
or middle score earned by subjects in the normative sample
who were of a particular age or grade. It is important to
note that in equivalent score comparisons, the child is not
compared with others in a similar population, that is, to
children the same age or in the same grade. Instead, the

child's score is assigned to the level representing the age or
grade at which the raw score was typical. So a child who got
a raw score of 55 on the *PPVT-IV,* for example, would receive
an age-equivalent score of 4 years, 4 months. If this child is
actually 7 years old, he is not being compared with other
7-year-olds when the age-equivalent score is reported.

The most important difference between equivalent scores
and standard scores is that only standard scores include
some measure of normal variation. If we need to decide
whether a child's score is *significantly* below expectations
for age or nonverbal mental age, we need to know what nor-
mal variation around the test mean involves. Otherwise, we
don't know how low a score needs to go for it to represent a
significant deficit. Let's see how this might work in practice.

Suppose a child received a raw score of 29 on the
PPVT-IV (Dunn & Dunn, 2006). This score corresponds to
an age-equivalent of 2 years, 4 months. What if our client
who took the *PPVT-IV* was 3 years, 6 months old? Clearly
his score is below age level. Does that mean the child has
a deficit in receptive vocabulary? We really can't tell,
because the age-equivalent score doesn't give any measure
of the normal variability seen in children in the client's
population, that is, of the same age. Perhaps that degree of
variability is typical of 3½ -year-olds taking this test. Only
a standard score can tell us if the child's performance is
significantly different from scores of others that age. In
fact, the standard score corresponding to a raw score of
29 for a 3½-year-old is 87, with a percentile rank of
19. This score, then, would fall within the normal range,
within 1 SD of the mean for the child's age and above the
10th percentile, and would not justify labeling the child as
having a deficit in receptive vocabulary.

Remember, too, that equivalent scores, unlike standard
scores, do not represent equal intervals on the scale. A
1-year delay in a 3-year-old is not the same as a 1-year delay
in a 9-year-old. For these reasons, age-equivalent scores are
simply *not appropriate for deciding whether a child has a
significant deficit.* Only a standard comparison allows us to
make the judgment that a child's performance is signifi-
cantly below the normal range. Once this significant deficit
has been established, we can use the age-equivalent score as
an easily understood metric to discuss a child's functioning
with parents and teachers and as a means of profiling abili-
ties across language domains. But this is acceptable *only*
when the child's standard score can be shown to be signifi-
cantly below normal. If the standard comparison measure
falls within the normal range, there is no justification for
using or discussing the age-equivalent score. The child is
functioning within the normal range of variability on this
test, and nothing further ought to be said about it. Reporting
an age equivalent in this instance would be misleading.

Standardized tests, as we have seen, need to be evaluated to decide
whether they meet accepted criteria to justify their use. If they do not
provide clear and unambiguous instructions and information on reli-
ability, validity, standard error of measurement, and standardized
comparison scores, we are really not justified in using them since
they do not fulfill the role they are purported to serve. Although
some years ago it would have been difficult to find tests in our field
that met these criteria, the situation is improving as we become more
informed consumers of testing materials. Only if clinicians demand
well-standardized instruments will the market provide them. It is our

Clinicians must carefully evaluate the standardized tests they use.

responsibility to review the tests available and choose only the best constructed. Friberg (2010); Pena, Spaulding, and Plante (2006); and Salvia and Ysseldyke (2000) provide helpful guidance for clinicians in evaluating standardized tests.

But even if a test is well constructed, can standardized tests ever provide a fair assessment? Much has been written (Bishop & MacDonald, 2009; Friberg, 2010; Spaulding, Plante, & Farinella, 2006) about the inherent dangers of using standardized tests to measure language performance. Should standardized testing be abolished entirely? Anyone who has ever had to qualify a child for services by documenting a deficit will know that standardized testing is essential for this purpose. In fact, standardized testing is the *only* valid, reliable, and fair way to establish that a child is significantly different from other children.

We can do three things to help ensure the fairness of standardized testing with our clients. The first involves choosing tests that meet accepted criteria to be considered psychometrically sound. The second entails interpreting test results properly and judiciously. If we understand the concepts involved in standardized testing outlined in this section, we will be in a position to address both these issues. The third has to do with the uses to which standardized test results are put.

Standardized tests were designed to show whether a child differs significantly from a normal population. To decide whether there is a meaningful discrepancy between the client's score and those of peers, a standardized test is the preferred method. But once that significant discrepancy has been established, other forms of assessment are necessary to establish baseline function, to identify goals for intervention, and to measure progress in an intervention program. Standardized tests were not designed for any of these purposes and they are not valid or efficient approaches for gathering this type of information. Once a significant deficit in communicative performance has been established through use of a limited number of standardized tests, other tools should be used. We'll talk about some of these other tools now.

Interviews and Questionnaires

Parents, teachers, and other adults who know a child well can provide a wealth of information to supplement our direct clinical assessment. In addition to the clinician-developed interviews and questionnaires we discussed earlier, there are a variety of instruments designed to collect information from adults in a child's life.

| BOX 2-4 | Examples of Standard Interview and Questionnaire Instruments |

MacArthur-Bates Communication Development Inventories (Fensen et al., 2007)
Child Behavior Checklist (Achenbach & Edelbrook, 2000)
Children's Communication Checklist—2 (Bishop, 2003)
Communication and Symbolic Behavior Scales Infant-Toddler Checklist (Wetherby & Prizant, 2003)
Language Development Survey (Rescorla, 1989)
Social Communication Questionnaire (Rutter, Bailey, & Lord, 1999)
Social Responsiveness Scale (Constantino, 2003)
Vineland Adaptive Behavior Scales—II (Sparrow, Cicchetti, & Balla, 2005)

Many have the same psychometric properties of a well-standardized test, including established reliability, validity, sensitivity, and specificity. Instruments with these properties can be very helpful in the evaluation portion of the appraisal, in helping to fill out the picture of the child's level of functioning beyond what can be gathered in a clinical "snapshot." Information obtained from standard interviews and questionnaires can also be helpful in the assessment portion of the appraisal, by giving a more detailed portrait of baseline functioning than we may be able to attain in our limited time with the child. Box 2-4 provides just a few examples of these standard instruments. Additional examples are provided in subsequent chapters, for each developmental level.

Developmental Scales

Developmental scales are interview or observational instruments that sample behaviors from a particular developmental period. Usually they are not fully standardized in that they do not provide standard comparison scores, so they are not appropriate for making the initial decision about whether a child has a significant deficit in communication. But they are formal procedures in the sense that they provide some clearly stated guides for administration and usually provide some sort of equivalent score. Developmental scales such as the *Sequenced Inventory of Communicative Development—Revised* (Hedrick, Prather, & Tobin, 1995), the *Denver II* (Frankenburg, Dodds, & Archer, 1990), and the *Receptive-Expressive Emergent Language Scale—3* (Bzoch, League, & Brown, 2003) are often used by language pathologists. It would be a misuse of these instruments to mistake them for standardized tests. Because they only provide equivalent score information, they cannot be used to document the existence of a significant deficit. Once that deficit has been identified, however, these scales can be helpful for establishing baseline function by showing the general age-equivalent level at which the child is operating in the areas the scales assess.

Criterion-Referenced Procedures

Procedures devised to examine a particular form of communicative behavior, not with reference to other children's achievement but only to determine whether the child can attain a certain level of performance, are called *criterion-referenced* assessments. These are not designed to determine whether a child is different from other children. Once it is established that the child has a significant deficit, they are used to establish baseline function and identify targets for intervention by finding out precisely what the child can and cannot do with language. These procedures also are ideal for

evaluating whether intervention goals have been met. By using the intervention targets as the criteria for assessment, it can be established whether these criteria are being met in both structured and naturalistic situations. These procedures are often created by the clinician to suit the individual needs of a client, although some criterion-referenced procedures are available in commercial form. Criterion-referenced procedures can be informal and naturalistic because, unlike standardized tests, they do not have to be administered according to rigid rules. But some criterion-referenced procedures are formal and clinician-directed, as well. What distinguishes criterion-referenced approaches to assessment from the other methods we discussed is that the criterion-referenced procedures allow us to look at specific communicative behaviors in depth and to individualize the assessment for a particular child. In this way they lend themselves most effectively to remedial planning and evaluating progress in intervention. McCauley (1996) discussed in detail the characteristics and uses of criterion-referenced procedures and provided guidelines for their evaluation. Let's look at the kinds of criterion-referenced procedures that might be used for each of the two modalities of language: comprehension and production.

Comprehension

There are several reasons for developing criterion-referenced procedures to assess comprehension. We talked before about the importance of looking at comprehension skills not only in formal, decontextualized settings, but also in more contextualized situations. We also discussed looking at differences in performance between these two conditions. Criterion-referenced procedures are ideally suited to examining contextualized comprehension performance and comparing the response with the same structure in both contextualized and noncontextualized conditions. Let's look at some of the considerations we need to keep in mind when designing criterion-referenced comprehension assessments.

Avoiding Overinterpretation

When we use criterion-referenced procedures to assess comprehension, it is important to remember that we are always inferring something about a private event and we are not observing comprehension directly. That means we must be very careful not to overinterpret what we observe, particularly in the contextualized situation. If a child responds appropriately to an instruction such as, "Put the spoon in the cup," we need to remember that there is a bias toward putting things in containers such as cups. To know whether the child really comprehends the preposition "in," we will need to ask the child to put the spoon "in," for example, a shoe, or something that would be less conventionally expected.

Controlling Linguistic Stimuli

When looking at a child's understanding of language, we need to know exactly what we are testing. If we want to look at comprehension of early developing spatial terms, such as the prepositions "in," "on," and "under," it is important to be certain that any other vocabulary items used in the utterance are well-known to the child. We wouldn't ask a 3-year-old to "Put the spoon in the left-hand drawer," for example. When testing vocabulary comprehension, we need to have established that all the other words in the utterance, besides the one being assessed, are familiar. This can be accomplished either by pretesting or by carefully interviewing the parents about words the child knows.

In the same vein, we need to control the length of sentences used in criterion-referenced comprehension assessment. If we know a child uses only three to four words in his or her own sentences, we had better limit the sentences used in the assessment to near that length. Furthermore, we need to be careful to test all structures in sentences of equal length. We shouldn't conclude, for example, that a child has difficulty understanding passive sentences if we give him "The car was pushed by the truck" and "The truck pushes the car." The passive sentence is not only more complex but also longer. If the child does not demonstrate comprehension of it, we don't know whether length or complexity is the problem. The main point is that when devising criterion-referenced comprehension assessments, the linguistic stimuli need to be thought about very carefully to make sure we are assessing what we mean to assess.

Specifying an Appropriate Response

When developing criterion-referenced comprehension assessments, the response is as important as the stimulus. As we've said, we are always inferring comprehension rather than observing it directly, so what we observe needs to be thought about carefully. Criterion-referenced comprehension assessments can use either naturalistic or contrived responses. Either way, though, it is important to specify what response will count as a success so that we clearly understand what we are looking for in the assessment.

Naturalistic responses include behavioral compliance and answers to questions. *Behavioral compliance* is an appropriate response to observe in children with developmental levels as young as 12 months. It can include touching, moving, picking up, pointing to, or giving objects and can be focused on the assessment of single words ("Give me the *shoe.*" "Put it *under* the cup."); morphemes ("This is mommy's cookie."); sentence types ("I *don't* want the spoon."); or speech act intentions ("Can you open the box?"). Specifying a naturalistic response does not have to mean that the assessment involves contextualized language. Both contextualized and decontextualized comprehension can be tested in this format. In fact, it is quite important to distinguish between these two conditions when using a naturalistic response. Remember that a developmentally young child can comply with a request stated as a long, complex sentence such as, "Why don't you open this nice box for me?" But compliance does not necessarily mean the child comprehends every aspect of the form. Instead, a child might only recognize the words "open" and "box" and comply because the child expects adults to ask children to do things. Unless contextualized and decontextualized variants of a form are contrasted, it will be hard to know whether a child complies with the linguistic stimulus itself or with normal expectations for an interactive situation.

Answers to questions are another naturalistic response that can be used. Usually children will not be reliable in answering questions until they have reached a developmental level of 24 months. Answers to questions can be scored for either semantic or syntactic accuracy. Syntactic accuracy simply involves an answer in the appropriate category. If you ask a child what color an apple is and he says, "Blue," this answer is syntactically appropriate but semantically incorrect. Semantic accuracy involves an answer that would be considered meaningfully accurate by adult standards. Often children can respond with syntactic accuracy before they are entirely semantically correct. Questions, too, can be presented in contextualized conditions, as when picture referents are used or questions concern familiar daily activities. Alternatively, questions can be asked in more decontextualized forms, as with questions about events removed from the immediate situation or about objects and concepts with which the child has limited direct experience.

Contrived responses resemble those used in standardized testing. The most common contrived response for a comprehension

assessment is picture pointing. Children at developmental levels of 24 months or older can generally respond successfully to picture-pointing tasks. Single-word comprehension ("Point to the shoe."); understanding of sentences ("Point to, 'There are many shoes.'"); or inferential comprehension ("Which picture shows what happened next in the story?") can easily be assessed with this format. Object manipulation is another contrived response, in which children are asked to do something to a set of objects the clinician presents. A developmental level of 20 months or so is generally required for a response in this format. Object manipulation procedures can be used to assess understanding of words ("Find the shoe") or sentences ("Show me, 'The boy is pushed by the girl.'"). They also can be used to assess understanding of connected discourse and inferencing ability by asking children to act out what happened in a story or what will happen next.

An additional contrived response that can be used in criterion-referenced assessment is a *best-fit* or judgment response. These types of responses involve some meta-linguistic abilities in that they require the child to evaluate language rather than merely use it. As such, they are not appropriate for children with developmental levels below 5 years. But for school-aged children they can be very effective and are easier to construct than picture pointing or object manipulation tasks. Rather than requiring a picture or set of objects to represent each aspect of the stimulus, judgment tasks can involve only two pictures, which the child uses to represent right or wrong, OK or silly, or some other dichotomy. For example, to assess understanding of passive sentences, the child might be given a picture of an "OK" ordinary-looking lady and a "silly" lady (Figure 2-13). The child can be told to point to the picture of the lady who would say each sentence. After several demonstrations of what each lady might say (OK lady: "An apple is eaten by a boy." Silly lady: "A boy is eaten by an apple."), the child can be asked to judge subsequent sentences. A similar procedure could be used to assess understanding of connected discourse ("Is it an OK story or a silly story?"), inferencing ("And then he ate the cake. Is that

FIGURE 2-13   **A,** Silly lady. **B,** OK lady.

an OK ending or a silly ending?"), speech act intention ("I said, 'Can you pass the salt?' and he said, 'Yes.' Is that an OK answer or a silly answer?"), speech style variation ("He said to the teacher, 'Give me a pencil.' Is that an OK way to ask?"), and other skills.

Whatever type of response we elicit, we need to elicit an adequate number of them. An important advantage of criterion-referenced procedures over standardized tests for establishing remedial goals is that standardized tests usually have only one or two items to test each structure. It can be hard to tell whether the child's performance results from chance, particularly in a picture-pointing format in which the child can be right even if he or she is pointing randomly. Criterion-referenced procedures can include more instances for each form being tested. A good rule of thumb is to include at least four examples for each form and to require the child to get three of the four correct to succeed on that particular form. Another technique is to use contrasting sentence pairs ("A boy eats a fish." "A fish eats a boy.") and require that the child perform correctly on both elements in the pair. Both of these approaches can minimize the effects of random guessing.

Production

There are three major approaches to criterion-referenced assessment of productive language: elicited imitation, elicited production, and structural analysis. Because language production does allow us to observe the actual phenomena in which we are interested, issues of inferring information from what the child does are not as crucial as they are in comprehension assessment. Instead, the difficulty in assessing production is to make sure that we get a representative sample of the child's abilities. That's why combining these three techniques, rather than choosing among them, may be the best approach. Let's talk about each one, then see how they might work together.

Elicited Imitation

Asking a child to "say what I say" is probably the easiest way to elicit language. We use this approach in intervention as well as in assessment to provide a model of the speech we want the child to attempt. As we saw earlier, the dangers of elicited imitation are that it may result in different kinds of errors than the child would make in spontaneous speech, and it is a pragmatically odd task; rarely in real conversations are we asked to repeat what another person says. This is true for syntactic (Merrell & Plante, 1997), phonological (Morrison & Shriberg, 1992), and pragmatic language feature imitations (Adams & Lloyd, 2005), in which case children may make changes in the imitated form, not because they could not repeat it but to render it more pragmatically appropriate. If told, for example to repeat, "The red ball is mine," a child might say, "The red ball [or even "It" since "The red ball" would be redundant in context] is yours." Similarly, a child might be able to repeat a sentence that he or she could not produce spontaneously. For all these reasons, elicited imitation should probably be our last resort as an assessment tool.

Elicited Production

In eliciting production we are tempting the child to say a particular thing by setting up a context in which the target form would be an appropriate remark. Rather than telling the child exactly what to say, as we do in elicited imitation, we give the child a nudge to try to get him or her to say what we would like to hear. There are a variety of ways the child can be nudged into an elicited production.

Patterned Elicitations   Patterned elicitations (Lund & Duchan, 1993) involve modeling a set of similar speech productions, then asking the child to produce a new, analogous production. For example, the clinician might say, "You eat with a fork; you dig with a shovel; you write with a ____ ?" Patterned elicitations also can involve dolls or puppets (Paul, 1992b). For example, the clinician

might say, "Here's a grouchy puppet. Whatever we say, he says the opposite. If I say 'It's big,' he'll say 'It's little.' If I say 'It's good,' he'll say, 'It's bad.' Now you be the puppet. If I say, 'It's old,' what does the puppet say?"

Role-Play and Games   Role-play is another way to elicit particular forms from a child. For example, a child can be asked to pretend to be a shy doll's parent. The doll is too shy to answer anyone's questions but the parent's. To elicit question production the client "parent" is told to "Ask him if he likes cookies." The child's ability to produce a variety of question types can then be assessed. Games of various kinds can be used to elicit specific productions. For example, a game of "I spy" can be played to elicit use of adjectives or relative clauses. In this game, the client and clinician each look at a large, complex picture. The game involves taking turns, with one player (initially, the clinician) describing one element of the picture and the other player pointing to the element described. The clinician models the desired form ("I spy a monkey with a yellow hat." or "I spy a monkey who has a yellow hat.") and notes whether the child can produce it in turn.

Narrative   Narrative elicitations have been shown to be a sensitive means of assessing a child's ability to produce connected discourse (Heilmann, Miller, Nockerts, & Dunaway, 2010) and is applicable to children from diverse linguistic backgrounds (Cleave, Girolametto, Chen, & Johnson, 2010). The child can be told a simple story from a picture book and asked to retell it. Some authors have cautioned that story retelling assessments may be more valuable for their prognostic value than their diagnostic specificity (Pankratz, Plante, Vance, & Insalaco, 2007). Using an alternative procedure, a book with vivid pictures that tell a story on their own is given to the child who constructs the story from the pictures (several wordless picture books by Mercer Mayer are ideal for this purpose). Standard scoring procedures are described by Heilmann et al. (2010).

Structural Analysis

Structural analysis is the attempt to discover regularities in a spontaneous sample of communicative behavior. In structural analysis, we try to make sense of the communication the child produces spontaneously to find out what structures, forms, and functions a child uses and what contexts influence their use. There are a variety of formats for structural analysis of syntactic production (Crystal, Fletcher, & Garman, 1976; Hewitta, Hammer, Yont, & Tomblin, 2005; Lund & Duchan, 1993; Paul, Tetnowski, & Reuler, 2007), semantic production (Condouris, Meyer, & Tager-Flusberg, 2003; Lund & Duchan, 1993), pragmatics (Adams, 2002; Bishop et al., 2000; Lund & Duchan, 1993), and phonology (Carson, Klee, Carson, & Hime, 2003; Lund & Duchan, 1993; Morris, 2009; Shriberg & Kwiatkowski, 1980). Some of these are discussed in Heilmann, Miller, and Nockerts (2010). We'll talk in more detail about structural analysis in some of the later chapters.

Structural analysis involves eliciting a representative sample of communicative behavior, as described in Table 2-5. Some additional suggestions for "good talking" to young children, include the following:

1. *Be patient*: Don't overpower the child with questions or requests. Give space and time for the child to talk. Don't be afraid of pauses.
2. *Follow the child's lead*: Listen to what the child is saying and maintain the child's topic and pace. Don't rush on to the next topic or activity.
3. *Don't ask silly questions*: A good conversational partner has something worthwhile to say. Don't ask questions to which that the child knows you already know the answer.
4. *Consider the child's perspective*: Try to see things, such as the assessment situation, from the child's point of view. Take cognitive level and awareness of time, space, and motivation into account. Give the child's comments your undivided attention and respond positively to them. Be warm and friendly.

As the sample is being collected, we will want to record it. Recording the sample allows us to examine it in more detail than we could if we had to get all the information from it in real time. Video recordings are the recordings of choice these days, as the quality is good enough to focus solely on speech, if desired, but can also be used when a nonverbal context is necessary to decipher meanings, to explore nonverbal aspects of communication, or to observe other behaviors that accompany speech or language difficulties. The recorded sample is then transcribed at whatever level is appropriate for the analysis being done. Semantic and syntactic analyses require word-by-word transcriptions of the client's speech, probably with the linguistic context of the other speaker's remarks included. Phonological analysis requires phonemic transcriptions and in some cases phonetic level information, as well. Pragmatic analysis

TABLE 2-5 Suggestions for Eliciting a Representative Speech Sample from Children

Developmental Level	Materials	Sample Type
12–30 months	Familiar and unfamiliar toys; several examples of balls, dolls, eating utensils, cars, etc.	Child-centered conversation on here-and-now topics
30–48 months	Pretend play materials, such as dollhouse with people, furniture, etc.; introduce some topics about absent objects, people, and events removed from the immediate context in space and time, such as holidays, vacations, etc.	Child-centered conversation on both here-and-now and there-and-then topics
4 years and older	Pretend play with miniatures, unusual objects to describe, photographs of events/places	Object description, picture description, narration of personal experience
5–10 years	Wordless picture books, pictures of different "topics" (dentist, school, sports)	Personal narratives, story retelling, or story generation from picture book
10 years and older	Favorite Game or Sport task: child asked to tell the clinician about a favorite game/sport and how to play it	Expository discourse

Adapted from Miller, J. (1981). *Assessing language production in children: Experimental procedures.* Needham Heights, MA: Allyn and Bacon; Nippold, M. and Scott, C. (2009). *Expository Discourse in Children, Adolescents and Adults.* Hove, East Sussex: Psychology Press.

Language sampling ensures validity of expressive language assessment.

necessitates some information about the nonlinguistic context and perhaps about paralinguistic cues that accompany the speech. The sample is then analyzed not only for errors but also for evidence of patterns or regularities that can be used to identify the child's level of communication and to describe the rules and contexts that influence production. We'll talk in more detail about the methods for analyzing language samples in subsequent chapters on assessment at a variety of developmental levels.

Integrating Approaches

Structural analysis is no doubt the most valid way to look at a child's productive language, since we are observing the very thing we are interested in assessing: spontaneous speech for communicative purposes. One drawback of this approach, though, is that the child may not spontaneously produce all the aspects of language that interest us. When talking to an unfamiliar adult, for example, a child may be unlikely to produce questions and negative forms, for pragmatic reasons. If these forms simply do not appear in spontaneous speech, how can we know the child's skills in these areas? The advantage of criterion-referenced assessment is that we can combine approaches as needed to give us access to additional information. One strategy for doing a criterion-referenced production assessment would be to collect a sample of spontaneous communication; record, transcribe, and analyze it; and identify any structures or functions of interest that did not appear in the sample. We could then use an elicited production procedure to try to get some evidence about these forms. If the child still failed to "take the bait," a direct elicited imitation might be tried.

Behavioral Observations

Criterion-referenced assessment and structural analysis allow the clinician to examine a child's communicative performance in detail without the restrictions and limitations imposed by standardized testing. With criterion-referenced procedures, however, we are still comparing the child's performance with a predetermined criterion to decide whether the child is meeting this criterion or whether the child needs intervention to accomplish this goal. Behavioral observations differ from this approach in that they are not concerned with comparing a child's performance with a criterion, but only with describing performance in a particular area. Behavioral

observations are used to sample whether a particular behavior of interest occurs, the frequency with which it occurs, and the context or antecedents likely to be associated with it. Behavioral observations commonly are designed by clinicians and involve checklists or rating forms that are used to examine or count particular behaviors. Figure 2-14 gives an example of a behavioral observation form that might be used to examine communicative competence in a child suspected of language disorder. This form was adapted from one developed by Erickson (1987).

The most important aspect of behavioral observation is carefully defining the behavior or behaviors that we want to observe. This means that we must target areas for behavioral observation before we begin the assessment by determining which aspects of the client's communication will be difficult to assess through any of the other methods we've discussed. While standardized and criterion-referenced procedures are useful for looking at language behaviors for which there are well-established norms or comparison data, behavioral observations are suited to those behaviors for which less normative data exist, for which somewhat subjective judgments must be made, or for which standard comparisons are not usually done. For example, computing a mean length of utterance in morphemes in a criterion-referenced structural analysis is a relatively objective, straightforward procedure, one for which some normative data are available. If we want to examine the structural complexity of a child's speech, computing a mean length of utterance in morphemes is a reasonable approach. But what if we want to know how frequently a child responds inappropriately to questions, using either verbal or nonverbal responses, rather than how complex a child's utterances are? The answer to this question might be important if it were part of the initial referral, for example. In this case, a behavioral observation could be done, in which we ask the child questions in a naturalistic format, such as having him or her describe to the examiner illustrations in a picture book and then counting the number of appropriate and inappropriate responses. The observation would give some quantitative information about a communicative behavior and could serve as a baseline for evaluating intervention directed at reducing inappropriate responses.

A second important consideration in devising behavioral observations is to use a recording system designed for the purpose. Performing a behavioral observation does not mean just sitting and watching a client behave. A recording document that contains a way to collect quantitative data about the behavior of interest must be used. The form may allow the clinician to rate the frequency of a particular behavior, as the form in Figure 2-14 does, or it may allow the clinician to rank a behavior on a scale. The rating used in the oral mechanism assessment in Figure 2-4 is an example of this type of observation. The form also could be simply a checklist in which the existence of a particular behavior is noted. For example, the list of articulation errors associated with velopharyngeal insufficiency in Figure 2-4 could serve as a checklist. A child's spontaneous speech also could be rated for these types of errors. The errors could simply be listed on a sheet and a check placed by each if it were heard in the sample. An assessment like this might be important if we need to determine whether the child is using errors in naturalistic conversation that have been eliminated in structured settings by intervention. The main thing to remember about behavioral observations is that we are never justified in doing them unless we know exactly what we will be looking for and have developed a form or document to serve as a record for the observation. Such a document is important not only for organizing our observations, but for being sure that another

I. Discourse skills

	Frequently Observed	Occasionally Observed	Not Observed	Examples
Starts a conversation	_____	_____	_____	_____
Shows listening behavior	_____	_____	_____	_____
Responds with appropriate content	_____	_____	_____	_____
Interrupts appropriately	_____	_____	_____	_____
Stays on topic	_____	_____	_____	_____
Changes topic	_____	_____	_____	_____
Appropriately ends a conversation	_____	_____	_____	_____
Recognizes listener's viewpoint	_____	_____	_____	_____
Demonstrates topic relevancy	_____	_____	_____	_____
Uses appropriate response length	_____	_____	_____	_____
	_____	_____	_____	_____

II. Speech acts and communication functions

	Frequently Observed	Occasionally Observed	Not Observed	Examples
Labels things or actions	_____	_____	_____	_____
Asks for things or actions	_____	_____	_____	_____
Describes things or actions	_____	_____	_____	_____
Asks for information	_____	_____	_____	_____
Gives information	_____	_____	_____	_____
Asks permission	_____	_____	_____	_____
Requests	_____	_____	_____	_____
Promises	_____	_____	_____	_____
Agrees	_____	_____	_____	_____
Threatens or warns	_____	_____	_____	_____
Apologizes	_____	_____	_____	_____
Protests, argues, or disagrees	_____	_____	_____	_____
Shows humor, teases	_____	_____	_____	_____
Uses greetings	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

FIGURE 2-14 A worksheet for analyzing communicative skills. (Adapted from Erickson, J. [1987]. Analysis of communicative competence. In L. Cole, V. Deal, and V. Rodriguez [Eds.], *Communication disorders in multicultural populations*. Rockville, MD: American Speech-Language Hearing Association.)

clinician could readily observe the same behavior in the same way. This ensures that progress over the course of an intervention program can be reliably charted. Let's talk about several specific types of behavioral observations that can fill particular "niches" in our overall appraisal.

Dynamic Assessment

All the assessments we have discussed so far fall under the heading of "static" procedures. Such static assessments describe current level of performance by holding contextual support to a minimum. In contrast, dynamic assessment is designed to manipulate context in order to support the child's performance so that an optimal level of achievement can be identified (Olswang & Bain, 1996). Lidz and Peña (2009) characterize dynamic assessment as a "pretest-intervene-posttest" format, and similarities between dynamic assessment and response to intervention approaches have been discussed (Griogorenko, 2009; Lidz & Pena, 2009). In dynamic assessment, the clinician actively engages a child in a learning situation that allows observation of the client's learning process and then attempts to promote change. Children are encouraged to think out loud throughout the session and to analyze their learning processes. The outcome of a dynamic assessment is not a score. Instead, it can be described with the following three kinds of information used in assessment planning:

• How the child approaches tasks; error patterns and self-monitoring abilities

• The degree to which the client's behavior is modifiable in response to interventions
• Intervention styles and methods that will have the greatest potential to promote change

Functional Assessment

In Chapter 1 we discussed a framework devised by the World Health Organization to consider not only the child's impairment, but the impact of that impairment on the child's ability to participate in activities or experiences. Functional assessments are designed to measure those impacts in a structured way, and may also gather information about the contextual factors that support or hinder the child's communicative progress (see Table 1-2). Several tools are available for this enterprise, such as the Communication Supports Checklist (McCarthy et al., 1997). These measures are discussed in more detail in subsequent chapters.

A second form of functional assessment was presented by Campbell (1998). He argued that we need to go beyond our traditional assessment of positive change in the specific communication behaviors addressed in the intervention program. *Functional assessment* here refers to the evaluation of the ways in which these newly learned communicative behaviors increase a client's level of autonomy in real-life situations. To accomplish this assessment, he advocated rating a child's use of communication in everyday life on six basic parameters. These parameters were identified by reviewing treatment summaries of children in intervention to identify the most

common goals and most frequent parental expectations. Campbell developed a form, similar to the one in Figure 2-15, to be filled out by both the clinician and the parent at the first and last intervention sessions. Using a form like this, it is possible to establish not only that specific communication behaviors have changed as a result of intervention, but also how these changes impact the perceived communicative competence of the child.

Curriculum-Based Assessment

Curriculum-based assessments (CBAs) are frequently used in school settings. They may be constructed by teachers, SLPs, and other professionals to reflect the content of the curriculum. CBAs can be used effectively to assess curriculum-based language use and may be more sensitive to tracking the progress of students from culturally and linguistically diverse backgrounds than traditional standardized testing (Hosp, Hosp, & Howell, 2007; Losardo, Notari-Syverson, Coleman, & Botts, 2008). You may hear various terms used in reference to these methods, including *authentic assessment* and *performance assessment* (Damico, 1993), *artifact* or *portfolio assessment*, because data collected about a client's performance often include various artifacts (examples of written work, projects, language samples, etc.) organized into a portfolio. Scoring rubrics are frequently used to make judgments about the degree to which the performance demonstrates the desired behavior or skill (Kennedy, 2007). We'll talk in more detail about these kinds of assessment in Section III, on school language and learning disabilities.

Formative versus Summative Assessment

As we noted earlier in the chapter, assessment is integral to our work as SLPs and the process of hypothesis testing with our clients. We've also noted that assessment can serve many different purposes. It may be helpful to think of assessment activities as falling into two broad categories: formative and summative. A formative assessment is defined by Norcini et al. (2011) as "low stakes, often informal and opportunistic in nature, and is intended to stimulate learning" (p. 211). This is the type of assessment we'll be doing throughout our intervention program, enabling us to track progress and provide the child with scaffolded feedback designed to increase learning of speech, language, and communication targets.

As such, Norcini et al. suggest that formative assessment works best when it (1) is embedded in the learning process, (2) provides specific feedback that leads to explicit behavioral change, (3) is ongoing, and (4) is timely.

Summative assessment, on the other hand, is defined by Norcini et al. (2011) as being "high stakes and is primarily intended to respond to the need for accountability" (p. 211). This is the type of assessment we will be doing for diagnostic purposes, to measure baseline performance and change in performance after a period of intervention. As such, summative assessment often requires more structured or standardized assessment material, and a systematic administration procedure. Although feedback to the child and/or family is desirable after any assessment, the goal of the feedback in this case is not to affect immediate communication change, but to summarize the child's strengths and needs, and the progress made during intervention.

THE HARD-TO-ASSESS CHILD

Many children can cooperate with a clinician for an extended period so that assessment goes smoothly and quickly, but some cannot. In the course of a diagnostic career, every clinician encounters children who are hard to assess. Some clinicians call these children "untestable." Their clinical report on these youngsters may simply state that the child was unable to cooperate with any testing, so diagnostic information could not be gathered. Our position is that no child is untestable and that, using a variety of clinical tools, it is possible to get at least some useful diagnostic information about every child, regardless of how hard he or she may be to assess.

When clinicians say a child is untestable, they usually mean that the child does not respond to standardized tests. But remember that standardized tests are only necessary to establish that a child is significantly different from other children. This is usually easy enough to do in a hard-to-assess child. Even if the clinician feels that the standardized test results underestimate the child's true ability, the fact that the child falls below the cutoff is enough to qualify the client for further assessment. From then on,

---

Please answer the following questions about your child's communication. Please check the box of the number that best describes your child's current abilities.

	1 (Never)	2 (Rarely)	3 (Sometimes)	4 (Almost Always)	5 (Always)
Your child attempts to say words	____	____	____	____	____
Your child understands what is said to him/her	____	____	____	____	____
Your child successfully communicates wants and needs to others by speaking	____	____	____	____	____
Your child successfully communicates wants and needs to others without speaking (e.g., using gestures, signs, facial expressions, communication devices)	____	____	____	____	____
Your child communicates successfully with peers	____	____	____	____	____
Your child's speech can be understood by unfamiliar listeners	____	____	____	____	____

FIGURE 2-15 Functional assessment of children's communication. (Adapted from Campbell, T.F. [1988]. Measurement of functional outcome in preschool children with neurogenic communication disorders. *Seminars in Speech and Language, 19*[3], 223-233.)

criterion-referenced and behavioral observation procedures can be used. These are less formal and can be adapted to the needs and interests of the child. In addition, if the child refuses to participate in standardized testing at all, standardized interview and question-naire procedures, such as the *Vineland Adaptive Behavior Scale—II* (Sparrow, Cicchetti, & Balla, 2005), can be used to get a norm-referenced score based on parent report. Again, this can confirm the child's significant difference from peers, and less formal meth-ods can be used to establish baseline function and identify goals for intervention.

Nelson (1991) discussed four kinds of children who may be hard to assess: children who are extremely shy and quiet, those who are noncompliant, those who are hyperactive and impulsive, and those with physical handicaps. For *shy* children, slowing down the pace of the assessment, giving more time to warm up, and starting with comprehension procedures that require little speech on their part can be helpful. A clinician can use misnam-ing of common objects and playful violations of routine to get these children to engage in criterion-referenced and behavioral observations.

For both *noncompliant* and *hyperactive* or impulsive children, setting a tone of firm control on the part of the clinician and per-haps asking the parent to wait in an observation room rather than within the child's view may be useful. Nelson (1991) suggested using time-out procedures to gain the cooperation of the noncom-pliant child. This may require making the assessment longer than planned, but it often results in the ability to get some valid informa-tion about the child instead of having to give up in defeat. Avoiding language that gives the child power over the clinician—such as asking the child, "Do you want to do X?" or following a command with "OK?"—can prevent awkward situations in which the child takes the clinician up on the apparent opportunity to reject what the clinician has proposed. Removing extraneous stimulation from the environment can help the hyperactive child focus on the assess-ment materials. Being flexible about where to do the assessment also can help with this type of child. Instead of insisting that he or she sit at the table, the clinician can do some of the assessment on the floor, in the hall, or under the table. Nelson also suggested tak-ing frequent breaks and doing the assessment in small chunks of time rather than in one extended period.

The child with visual or other *physical disabilities* also presents special problems because of the inability to respond to the usual assessment stimuli in the usual way. Children with physical dis-abilities who cannot point may be asked to look at the stimulus that best matches what the clinician says. Those with no speech can be given several different alternative communication modes, such as pictures, Blissymbols, signs, or written words, in a dynamic assess-ment approach to determine what helps them to communicate best. Blind children may be asked to name or describe objects that they feel or to tell about events that they have experienced.

Nelson (1991) provided additional suggestions for working with the hard-to-assess child. The important point is for the clini-cian to know that something can be learned about every child with a communication problem, even if standardized testing does not seem the most fruitful source of information. In our opinion, we are never justified in writing off a child as "untestable." By making use of our complete repertoire of assessment tools, it is possible to decide for every child whether there is a communication problem, to establish baseline function, and to determine what the child needs to communicate better. This is our mission and, difficult though it may be, it is never impossible.

INTEGRATING AND INTERPRETING ASSESSMENT DATA

Once the interviewing, testing, and observations have been com-pleted, our next task is to interpret the meaning of the assessment data. If a significant deficit is identified by standardized testing, the standard score comparisons may be converted to age equiva-lents. These can then be combined with information from devel-opmental scales to create a profile of strengths and weaknesses, such as the one in Figure 2-2. The profile can be used to plan what kinds of additional criterion-referenced assessments and behavioral observations may be needed to complete our picture of the child's current level of functioning. This information may be gathered in subsequent assessment sessions or during the early phases of the intervention program. What we do *not* want to de-cide on the basis of the standardized testing is that we need more standardized testing. Once we have determined that the child has a significant deficit in communicative performance, the im-portant task is to establish baseline functioning in the various areas of language. Interviews, questionnaires, criterion-referenced pro-cedures, and behavioral observations, including functional, dy-namic, and curriculum-based methods are better suited to this purpose.

When the child's communicative profile has been established and the baseline level of functioning has been outlined, this infor-mation is used to complete the final three parts of the appraisal process: determining the severity of the disorder, making a prog-nostic statement, and making recommendations for an intervention program.

Severity Statement

Based on the assessment data, a decision is made by the clinician as to the degree of severity of the child's communication disorder. Generally, severity is labeled as mild, moderate, severe, or pro-found. The World Health Organization has provided guidelines to the use of each of these terms, which are summarized in Table 2-6.

Severity ratings are important for two reasons. First, they help to establish priorities for intervention. If communicative deficits are severe, whereas deficits in other areas assessed by the multi-disciplinary evaluation are less severely affected, then priorities for intervention should include speech and language services. Conversely, if communication is less severely affected than other areas, such as social-emotional development or behavior regula-tion, these areas might take precedence for intervention re-sources. The second purpose of the severity rating is to have a benchmark for evaluating the effectiveness of intervention. If communicative skills are initially assessed as severely impaired and after several years of intervention the severity rating im-proves to moderate, this is one way to establish the effectiveness of the intervention, even though fully normal functioning has not been achieved.

Prognostic Statement

The prognostic statement contains the clinician's prediction about what communicative outcome can reasonably be expected at some future time, in light of the current level of functioning. Prognostic statements are similar to severity statements in that they help us to economize intervention resources and aid in accountability. If a

TABLE 2-6   Severity Classifications

Classification	Description
Mild	Some impact on performance but does not preclude participation in age-appropriate activities in school and community
	Able to function independently with minimal assistance
Moderate	Significant degree of impairment that requires accommodations to function in mainstream settings
	Able to function in a supervised setting
Severe	Extensive support required to function in mainstream settings
	May demonstrate some functional skills with supervision
Profound	Few functional skills
	Requires maximum assistance with basic activities

(Data from Accardo, P., Whitman, M. (2004). *Dictionary of developmental disabilities terminology* [2nd ed.]. Baltimore, MD: Paul H. Brookes; World Health Organization. [2004]. International statistical classification of diseases and related health problems [10th ed.]. Geneva: Author.)

clinician states in the prognosis that a child has the potential to achieve normal communicative function, this statement can serve, again, as a benchmark against which to measure progress in intervention. If the child fails to achieve the level of function predicted in the prognostic statement after a reasonable time in intervention, either the prognosis was wrong or the intervention has not been as effective as it should have been. In either case, an accounting of the discrepancy is necessary.

For this reason, we need to be cautious when making prognostic statements, taking all relevant factors into account. Age is usually important in prognosis. The younger a child is when a communication disorder is identified, the less certain the outcome. A teenager with no functional speech has a much clearer and poorer prognosis than a 2- or 3-year-old who has not begun to talk. The social environment can affect prognosis as well. A client from a well-functioning family that has the resources and energy to work with and advocate for the child has a brighter prognosis than a child from a family in which the parents are ill, addicted to drugs or alcohol, or overwhelmed by a struggle for economic survival. The client's personality and temperament, too, have an effect. A careful, reflective child who has well-developed attentional capacities is in a better position to take advantage of intervention than a hyperactive, impulsive child, who must acquire basic attending behavior before much learning can take place. Similarly, a child who is highly motivated to improve because he or she has a lot to communicate and is willing to take some risks and make some mistakes has a better prognosis than an extremely cautious, shy child who is relatively self-sufficient and does not feel strongly impelled to overcome the communicative deficit. The involvement of other areas of functioning beyond communication also affects prognosis. A 3-year-old with mental retardation and autism who does not talk generally has a worse prognosis than does a sociable nonspeaking 3-year-old with normal cognitive function. Issues of prognosis for various conditions associated with language disorders are discussed in more detail in Chapter 4. Again, the clinician must evaluate each aspect of the prognosis throughout the course of the

appraisal, making use of data from interview and observational sources. The clinician's impressions of these elements will be factored into the prognostic statement.

Despite using the best and most extensive data available, though, when we state a prognosis we are always making an educated guess. Whether we make a prognostic statement in writing, in a clinical report, or in conversation with the client's family, this fact has to be respected. It is usually best, then, to make a short-term rather than long-term prognosis and to talk about what it is the child *will* likely be able to do over a specified period, rather than what he or she won't be able to do. For example, a prognosis might contain a statement that with intensive intervention the client will move within 1 year from single-word utterances to the production of some two- and three-word sentences. This prognosis can be evaluated, since it states a specific time period and a measurable outcome. This prognosis also is preferable to one that states that a client will not achieve normal expressive language development, for example. This contains no time period over which an evaluation can be made and states only a negative outcome, not what *can* be expected to happen.

Clinicians who adhere to the rule of making short-term prognoses and stating them in positive terms usually encounter less resistance and hostility from families than those who make blanket long-term projections of which, in truth, no one can really be sure. Even when pressed by a family to predict what the child will be like as an adult, the wise clinician can remind the parents that the important task is to help the child do the best he or she can *now* and for the next few months or years. An honest admission that human beings are too complicated and unpredictable for us to foretell their future can be coupled with encouragement for the family to work with the child as he or she is now and to advocate for the services he or she needs to achieve the next appropriate developmental step. An assurance that diagnosis and prognosis will be ongoing can help the family to cope with the uncomfortable uncertainties of raising a child with disabilities.

Recommendations

The last, but certainly not the least, task of the diagnostic process is making recommendations for intervention. These recommendations draw directly on the assessment data. When we talked about the "why" of assessment, we discussed the establishment of goals for intervention as one of the central purposes of the appraisal. In making recommendations, we incorporate the establishment of goals for intervention into a more general statement about the need, directions, and approach to intervention that would be most appropriate for this particular client. The statement of recommendations, then, in either the clinical report or in conference with the family contains three parts:

1. Our recommendation as to whether some intervention by an SLP is appropriate at all. This recommendation is based on whether the child has a significant communication disorder and whether we believe, as a result of the severity and prognostic statements, that intervention would be helpful.
2. The goals we have established for intervention, based on the assessment data and intralinguistic profile.
3. Suggestions for methods, approaches, activities, reinforcers, or any other aspects of the intervention program that the clinician believes would be informed by the data gathered during the assessment. This is the clinician's chance to share the observations and insights gained from working with the child that would help to maximize chances for success in intervention.

Putting It All Together: The Clinical Report

A clinical report is simply a summary containing all the information we have discussed in this chapter. Generally, the clinical report follows a more or less standard format, such as the one given in outline form in Box 2-5. Appendix 2-3 provides a sample of a clinical report. The report starts by stating basic identifying information, such as client name, age, date of birth, address, phone number, parents' names, referral agency, and so on. The next section contains a short statement of the presenting problem or complaint. This is followed by a brief review of the historical data. The next section of the report is usually labeled "Assessment" or "Examination Findings" and contains the standardized tests given and the standard score comparisons. Other assessments also are summarized briefly. The next section, entitled "Impressions" or "Behavioral Observations" is where the clinician states some of the insights that come out of working with the child, such as the clinician's opinion about factors in the child's social environment or temperament that may influence current functioning or success in an intervention program. In the "Summary" section, the clinician interprets the findings, saying what, in aggregate, the appraisal data mean. This section also generally contains the severity and prognostic statements. The "Recommendations" section should contain the three points we discussed previously.

The language in the clinical report should be clear and simple, but professional. It is not necessary to use every technical term we know or to repeat every confidence expressed in the interview. The purpose of the clinical report is to convey as succinctly as possible the information gleaned from the assessment and to do so in a way that both parents and other professionals will find easy to understand. Toward this end, the use of some personal pronouns (I, we, etc.) is acceptable and would generally be preferred to awkward usages, such as "this clinician found. . . . " In general we want to avoid qualifiers, such as "rather" and "very." We need to distinguish between information we gathered or observed ourselves from information reported to us by parents or others, so it is appropriate to use phrases such as, "according to parent report," or "the mother recalls." It's best to avoid judgmental terms such as "good," "poor," "nicely," etc. in describing a child's performance. Usually sentences in active voice are better than passives, although passive sentences can be used occasionally. Short sentences are usually better than long ones. Each new thought should have its own sentence. Keeping the noun and verb in each sentence close together is a good rule. This helps to keep the sentence from getting too strung out and complicated. Jerger (1962, p. 104) provides good advice when he tells us to "write it the way you would say it." We can think of the report as a conversation, in which we try to tell another person who is not an SLP what we saw in this child. This image can help us to choose the words and sentences that work hardest to get our meaning across.

CONCLUSIONS

The assessment process provides the backbone of our intervention program. It tells us whether we need to intervene and what the targets of intervention need to be, and it allows us to decide whether intervention has been effective. The clinician should be familiar with a variety of tools, both formal and informal, for gathering assessment information and must choose these tools carefully to make the most of the time spent assessing the child's skills. The speech, language, and communication assessment is usually part of a larger process that may require the clinician to communicate findings to other professionals and to request further information. The assessment is best considered as a process of hypothesis testing: formulating a hypothesis about the nature of the child's difficulties and testing that hypothesis using both assessment data and response to intervention. In this way, clinical decision making involves asking a number of questions and ruling out alternative explanations based on the answers we find to those questions. This decision making process has been illustrated by Bishop (2001) and is schematized in Figure 2-16. In communicating our decisions to other people, a clinician needs to develop special writing skills for clinical communication. In writing clinical reports, we convey information to others concerned about the child and want to get across to them not only what we learned from our testing, but what we inferred from our interactions with the child and the family. In acquiring skills as diagnosticians, then, we also are developing some new communication skills of our own.

BOX 2-5   Outline for a Clinical Report

   I. Identifying Information
      Name:
      Sex:
      Address:
      Date of birth:
      Parents:
      Date of evaluation:
      Phone:
      Age:
      Referred by:
      Examiner:
  II. Presenting Problem
 III. Historical Information
 IV. Examination Findings
      Collateral areas
      Norm-referenced language measures
      Criterion-referenced measures
      Behavioral observations
   V. Impressions
  VI. Summary
      Examination findings
      Severity statement
      Prognosis
 VIII. Recommendations
      Is intervention needed?
      Goals
      Suggestions for methods, approaches, activities, and reinforcers

---

STUDY GUIDE

  I. General Principles of Assessment for Suspected DLD
    A. Discuss the aspects of an assessment that should be included in an assessment plan. What should not be included?
    B. What goes into a case history? From where does the information come?
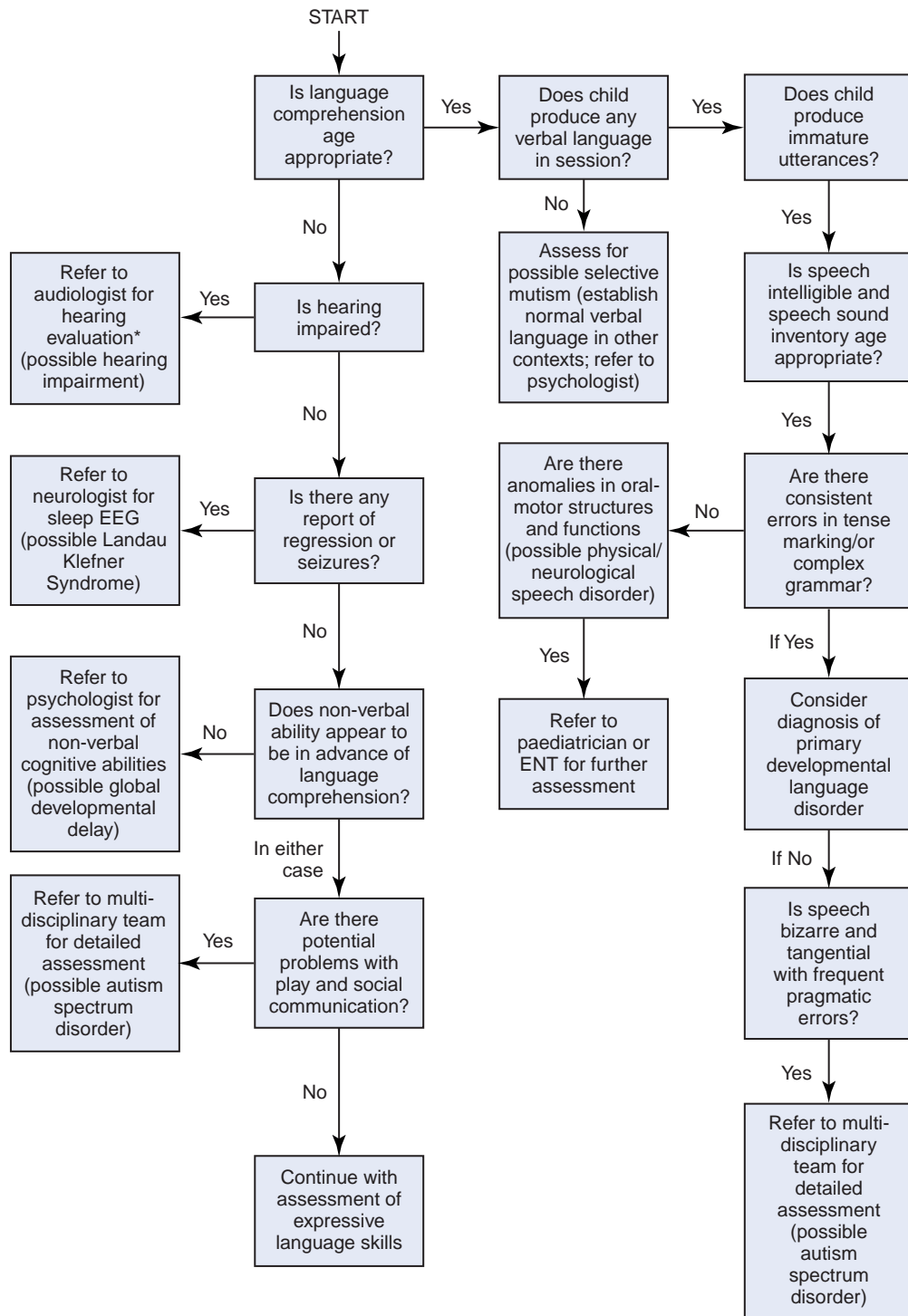
FIGURE 2-16   A decision tree for assessment of DLD.   (Adapted from Bishop, D.V.M. [2002]. Speech and language difficulties. In M. Rutter and E. Taylor [Eds.], *Child and Adolescent Psychiatry* [4th ed.] [pp. 664-679]. Oxford: Blackwell Publishing.)

C. In what ways is the assessment process like hypothesis testing?

II. Making an Assessment Plan

A. What does "screening" mean in a speech-language assessment?

B. Why do we need to establish baseline function as part of an assessment for a communication disorder?

C. How do clinicians choose intervention targets?

D. Give two reasons for doing ongoing assessment as part of an intervention program.

E. Give the rationale for doing a hearing assessment and a speech-motor assessment for every child suspected of communication disorder.

F. What is the role of the speech-language clinician in assessing intelligence?

G. How can the child's social environment be assessed?

H. Discuss the areas of communication included in a language assessment.

I. Discuss some of the difficulties of assessing language comprehension.

J. Discuss the advantages and disadvantages of using speech sampling as an assessment of productive language.

K. Describe the qualities a clinician should look for in a good standardized test.

L. Define and give examples of measures of central tendency on standardized tests. Do the same for measures of variability.

M. Discuss the differences between standard and equivalent scores. What are the uses of each?

N. Define the standard error of measurement, and tell why it is important.

O. Discuss the difference between developmental scales and criterion-referenced measures. When would each be used?

P. Explain how standardized testing and other assessments provide complementary information in the assessment process.

Q. Explain why behavioral observations are included in an assessment.

R. Define and discuss *dynamic* and *functional* assessment. What is the purpose of each?

S. What is the difference between *formative* and *summative* assessment? What do we need to do both?

III. Integrating and Interpreting Assessment Data

A. State the seven major sections of a clinical report, and describe what would be placed in each.

B. Give the three components of the recommendations section of a clinical report.

C. Discuss desirable traits of clinical report writing.

Sample Intake Questionnaire

Name :_____

     First   Middle   Last

Birthdate : _____
Age _____ years _____ months _____
Parents' names :_____
Address:_____
                        Street

_____
      City   State   Zip Code
Phone:_____
Date :_____
Name of person completing this form

_____
Relationship to Child _____
Please answer the following items as completely as you can.

I. REFERRAL SOURCE

Who recommended you to this clinic?
Name _____ Phone _____
Address_____ Agency_____

II. ACADEMIC INFORMATION

A. School

_____
Name   Phone

_____
Address   Teacher-Grade

B. Briefly indicate how well your child functions in
    school _____
    _____

III. MEDICAL INFORMATION

Indicate the physician who is best acquainted with the client.

_____
Name   Phone

_____
Address

Indicate the physician who has treated the client most recently.

_____
Name   Phone

_____
Address
Is there a physical handicap such as : Cleft palate _____
Paralysis_____ Mouth or teeth deformity _____
Hearing loss_____ Other _____

Comments _____
Has there been a psychological evaluation? _____
When?_____ Where? _____
Is medical treatment being received at the present time?

_____
If so, indicate for what condition treatment is being received.

_____

IV. SPEECH AND LANGUAGE INFORMATION

A. Description
1. Speech
Is Child's speech understandable?_____
Are sounds omitted?_____
Is one sound substituted for another?_____
Is the voice unpleasant or different?_____
Explain _____
2. Rhythm
Is there stuttering?_____ Stammering? _____
Rapid speech? _____
Other comments _____
3. Language
Does the Child understand more than he or she can say?

_____
Is the language delayed?_____ Immature? _____
Absent? _____ Lost? _____
Are sentences too short? _____
Incomplete?_____ Vocabulary too small? _____
Does the child consistently use specific sounds to designate cer-
tain objects, people, or things? _____

_____
4. History
Is the child aware of his or her speech problem? _____

_____
Does it bother him or her?_____
Has the child had speech training? _____
Where, by whom, and how long? _____

_____
Is more than one language spoken in the home? _____

_____
Have others outside the family commented regarding the
probem? _____
Please explain _____

V. HEARING INFORMATION

A. Is there a mild hearing problem?_____
Moderate?_____ Severe? _____
B. Has there been preschool intervention? _____
Number of years?_____ Where? _____

_____

C. Describe time spent in other training programs for the hearing impaired _____

_____

D. Describe medical assistance for hearing problem, including dates of surgery, etc._____

_____

E. Is a hearing aid worn? _____ Type _____
Where purchased? _____
Is the aid satisfactory? _____ Left ear _____
Right ear_____ Both ears _____

VI. RELEASE OF INFORMATION

Information that may help us plan a treatment program may be needed from physicians, schools, and other agencies who have assisted in your child's care. Please sign the following release so that we can obtain this information.

REQUEST FOR RELEASE OF CONFIDENTIAL INFORMATION

I hereby authorize you and/or your agency to release any and all information that is available on

_____

First   Middle   Last

Birth date _____

           Month   Day   Year

which may be requested by the staff of the Speech and Hearing Clinic. Additionally, I offer my permission for this "release of in-formation" form to be duplicated and used at the discretion of the administrator of the clinic. I understand this information will be kept confidential and will be used by professional personnel for the sole purpose of diagnosis and treatment.

Signed _____
Address _____
Date _____
City/State/Zip Code _____
_____

Sample Referral Letter

February 17, 2011

Donald McCormack, MS, School Psychologist
Albany Public Schools
Albany, NY

Re: JAMES, Christina
DOB: 11-20-2004

Dear Mr. McCormack,

Tina James is a 6-year-old girl being referred to you for a cognitive assessment, following my speech and language evaluation on January 23. Ms. James brought Tina to the diagnostic center on the recommendation of her first-grade teacher, Ms. Taylor. The primary concern was poor articulation and short, immature sentences. Ms. James reports that Tina has always been slow in her development.

The results of my speech and language assessment reveal adequate oral-motor function for speech. Tina makes many substitutions in producing speech sounds and often leaves off the final sounds in words. These processes combine to make her speech difficult to understand. Her comprehension of language is significantly below normal. Receptive vocabulary is at a 3-year level. Understanding of sentence structures is lower, at about a 30-month level. Her production of language is characterized by two- to-three word sentences and frequent omissions of inflectional endings.

As part of my evaluation, I did an informal assessment of cognitive skills, using developmental tasks such as copying figures and sorting. It is my impression that Tina's performance on these tasks is below age level. I have recommended that a cognitive assessment be performed to investigate these skills more formally. Because of Tina's problems with language, an assessment of nonlinguistic cognition would be most helpful. Please call me if there is any need to discuss this request further. Thank you for your help.

Yours,

Speech-Language Pathologist

Sample Clinical Report

I. Identifying Information
Name: Mark XXXXXX
Sex: Male
Address: 220 Mercer St., NYC
Date of Birth: 11/21/05
Parents: Carol and Jay XXXXXX
Date of Evaluation: 3/3/12

Phone: 673-3788
Age: 6:4
Referred by: Ms. Naughton, kindergarten teacher
Name of Examiner: Ellen Witherson

II. Presenting Problem
Mark's teacher told his parents at the parent–teacher conference that Mark is very hard to understand. When he talks, few of the children know what he means. Ms. Naughton, too, has great difficulty in understanding Mark's speech. The parents were aware that Mark had trouble making himself understood because they sometimes had difficulty understanding him themselves. Mark also seems to be unhappy about going to school and frequently complains that he is too sick to go.

III. Historical Information
Mark was the product of an unremarkable full-term pregnancy. He weighed 7 pounds 10 ounces at birth and had no newborn difficulties that the parents recall. Mark achieved motor milestones at the normal times, sitting up at 6 months, walking at 14 months, and feeding himself at 1 year. Parents report that speech was late to begin, with few words at 2 and no word combinations until 3. Mark's speech has always been hard to understand, even for members of the family, although by now they can usually figure out what he means. Mother reports that Mark had two or three ear infections before the age of 2, but none after that age. No feeding problems were noted by parents. Medical history is unremarkable. Mark had regular checkups and received all immunizations on schedule.

IV. Examination Findings
Collateral areas: Hearing threshold testing revealed normal hearing in both ears. Examination of the oral mechanism revealed no gross structural abnormalities, but Mark had difficulty producing rapid, smooth repetitions of syllables such as /pə/, /tə/, and /kə/. This difficulty was even more pronounced in utterances with more than one consonant, such as /pətə/. Cognitive skills were assessed informally with sorting and drawing tasks. Mark appeared to perform at age level on these tasks.

Mark achieved the following standardized test scores:

Area Assessed	Test Used	Score	Normal Range
Articulation (pronunciation)	Goldman-Fristoe Test of Articulation	5th percentile	Above 10th percentile
Naming	Expressive Vocabulary Test	60th percentile	Above 10th percentile
Producing sentences	Structured Photographic Expressive Language Test	3rd percentile	Above 10th percentile
Understanding words and sentences	Test of Auditory Comprehension of Language—Revised	40th percentile	Above 10th percentile

Nonstandardized assessments of Mark's speech and expressive language skills included an analysis of spontaneous speech and several tasks designed to elicit the production of questions and grammatical morphemes. These analyses revealed that Mark makes numerous changes in his production of speech sounds that are similar to those used by younger children with normal speech patterns. These include leaving off final sounds in words (/da/ for "dog"), making all the sounds in a word more alike (/dadi/ for "doggy"), and substituting earlier-developing sounds for more difficult ones (/top/ for "soap"). When all these changes are put together in connected speech, the speech becomes difficult to understand. Mark's average sentence length in spontaneous speech was shorter than would be expected for his age. He used fewer helping verbs and other forms of sentence elaboration than would normally be seen in a 6-year-old. The ideas he expressed were age appropriate, however, in that he talked about past and future events, talked about imaginary topics, and was able to exhibit role-playing. His conversational abilities appeared age appropriate. He attempted to respond to requests for clarification when his speech was not understood, maintained topics for several turns, and changed his speech style when playing a baby and a daddy in the pretend situation.

In the question elicitation task, Mark was unable to change the order of words in a sentence to form a question. In a grammatical morpheme task, Mark consistently left off most morphemes, including ones that are generally easy to pronounce, such as "-ing."

V. Impressions

Mark worked hard during the assessment and seemed to be trying to do his best. During the expressive test, he was often unable to remember the whole sentence and could only repeat a few words of it. He became frustrated during the free-play session when the examiner was unable to understand him and turned to his mother to provide a "translation."

The parents seem very concerned about Mark's difficulty, but at the same time, they see many positive aspects of his growth. They point out that he is talking more than ever now, that they and his brother can understand him most of the time, and that he tries to imitate them when they correct his speech. They also are pleased that he is very interested in letters and numbers and likes to look at picture books and point out letters he recognizes. They feel he is a bright, capable little boy and think that with some time to mature he will outgrow his speech problems.

VI. Summary

Mark is an apparently bright 6-year-old boy with no significant medical history, but a history of delayed expressive language development. Current assessment reveals normal hearing and language comprehension. His ability to express meanings and engage in conversation appear age appropriate. Mark shows moderate to severe deficits in phonological development and a moderate deficit in expressive language, particularly in the areas of syntax and morphology. His ability to engage with others, his motivation to succeed, and the active support of his family suggest that progress in an intervention program should be significant. Given intensive intervention in phonology and expressive language over the next year, Mark's prognosis for significant improvement in intelligibility and for significant increases in sentence length and complexity is very favorable.

VII. Recommendations

Mark could benefit from speech-language intervention. Individual instruction for working on phonological targets could be combined with group instruction or in-class work with the teacher in consultation with the SLP to improve intelligibility in conversation and increase the complexity of expressive language.

The following specific goals are recommended:

1. Decrease omission of final consonants.
2. Increase production of age-appropriate consonant sounds.
3. Increase self-monitoring of intelligibility in connected speech.
4. Increase use of helping verbs, such as "can," "will," and "be" in sentences.
5. Increase use of grammatical morphemes, at first those that are easy to pronounce, such as "-ing."

Mark enjoys pretend play, and this setting may be useful for working on self-monitoring intelligibility. The parents are very committed to helping him and could be engaged in some homework activities to carry over what is being worked on in the intervention program.

Clinician's Signature

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Supervisor's Signature

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Principles of Intervention

Readers of this chapter will be able to do the following:

1. Discuss the various purposes of intervention.
2. List ways in which intervention can change communicative behavior.
3. Discuss way of identifying appropriate goals for communication intervention.
4. Describe interventions at various points on the continuum of naturalness.
5. List and discuss various contexts for providing intervention.
6. Describe methods of evaluating treatment outcomes.
7. Discuss principles of evidence-based practice.

The result of a successful language intervention program is not simply that a child responds correctly to more items on a test or accurately imitates the language stimuli given by the clinician. Successful intervention results in the child's being able use the forms and functions targeted in the intervention to effect real communication. The goal of our intervention, then, is not only to teach language behaviors but also to make the child a better communicator. To be ethical (American Speech-Language and Hearing Association, 2010) we also must be able to show that intervention has led to changes in language behavior that would not occur if no intervention were provided. Achieving all these goals is quite a challenge, one that requires us to be more than merely technicians. Effective language intervention involves a great deal of thought and a wide range of decision making, and many factors go into the process of choosing what, how, and where we will attempt to improve the client's communication. Let's examine these factors in some detail.

THE PURPOSE OF INTERVENTION

The first question we have to ask is, overall, what is the purpose of the intervention we are proposing? Olswang and Bain (1991) discussed three major purposes of intervention. The first is to *change or eliminate the underlying problem,* rendering the child a normal language learner, one who will not need any further intervention. Of course, all of us would like to achieve this with all our clients. Unfortunately, it is not usually possible. Frequently we do not even know what the underlying deficit is, let alone how to alleviate it. In a few instances, though, this might be a realistic goal. For a child with a hearing impairment, for example, if the loss is discovered during early childhood and

amplification or cochlear implantation can be used to achieve normal or nearly normal hearing, the language pathologist might need only to provide the child with help in getting language skills to approximate the child's developmental level (Geers, 2004; Niparko et al., 2010). Once these developmentally appropriate skills are achieved, normal acquisition could proceed, ideally anyway, without further intervention. Similarly, a young child who suffered a brain injury and developed an acquired aphasia might require intervention to restore language function, but a combination of intervention and the brain's normal plasticity can sometimes result in language learning's proceeding more or less normally, without need for further intervention after a period of time (Hanten et al., 2009).

In the real world of language intervention, though, cases in which the underlying cause of the impairment is both known and fully remediable are the exception. Most children present with language disorders of unknown origin or associated with incurable conditions, such as intellectual disabilities or autism. In these more common cases, we must settle for something less than changing the child into a normal language learner. Olswang and Bain (1991) identified this second choice as *changing the disorder.* In this case we attempt to improve the child's discrete aspects of language function by teaching specific behaviors. We teach the child, for instance, to expand the number of words and grammatical morphemes in sentences, to produce a broader range of semantic relations, or to use language more flexibly and appropriately. This makes the child a better communicator but does not guarantee that he or she will not need further help at a later time. This purpose is the one most commonly invoked when working with children who have developmental language disorders (DLD).

A third option identified by Olswang and Bain is to teach *compensatory strategies,* not specific language behaviors. Rather than, for example, teaching a child with a word-finding problem to produce specific vocabulary items on command, we would attempt to teach the child how to use strategies to aid recall of vocabulary during conversational tasks. We might teach the child to use phonetic features of the target word, as a cue, or to try to think of words that rhyme with the word that the child can't recall. This approach usually requires a good deal of cognitive maturity and is generally used to help older school-aged and adolescent students who have received language intervention for a number of years and will probably always retain some deficits (Wallach, 2005). Rather than trying to make their language normal, the clinician attempts to give them tools to function better with the deficits they have.

There is a fourth option. The goal of language intervention may be focused not on the child at all, but on the child's environment. In some situations it makes sense to try to influence the context in which a child must function instead, or in addition to trying to change the individual. Take Justin, for example.

Justin was born with severe cerebral palsy. After years of intervention he was still not able to produce much intelligible speech. In middle school, his language comprehension and literacy skills were near age level, though. He had been given an augmentative communication device that could speak what he typed out with a headstick. But his parents commonly forgot to bring the device along when they went out, and often forgot to send it to school with him, so he was forced to revert to vocal attempts to communicate, which were usually not very successful. Without an easy way to communicate with him, his classmates usually left him alone with his aide, so he had few peer interactions. His teacher interacted mostly with the aide, rather than Justin, giving her assignments to have Justin complete. His parents requested additional therapy for the oral language since they felt he was trying so hard to communicate that way. Instead, his clinician helped the family obtain a speech-generating program that worked on a smartphone. She also helped Justin devise a signal to use as a request for the phone, in order to remind his parents to send it to school with him. In addition, the clinician showed Justin's classmates how to use the program, so that they could talk to Justin by using it, as well as allowing him to talk to them. The classmates thought that being able to bring his phone to class was pretty cool and started spending more time interacting with Justin. The clinician encouraged the teacher, too, to use the device to give Justin his assignments directly, rather than talking to the aide. Now Justin can usually get someone to talk with him when he wants to say something. He also spends more time interacting with peers and participating, through his device, in class discussions.

Often this fourth option is combined with one of the other three to maximize the child's communicative potential. On occasion, though, modifying the environment alone will be the purpose of the clinician's activities.

Choosing which of these options to pursue as an overarching purpose is an important first step in an intervention plan. This choice enables the clinician to talk realistically with the family about the long-term goals and prognosis for the client. If alleviating the basic deficit is the purpose, the clinician can tell the family how long it will take for this to happen and how much intervention should be needed to achieve it. Since the long-term purpose is normal acquisition, only the short-term goals for intervention need to be specified. If modifying the disorder is the goal, both short- and long-term objectives need to be identified. If teaching compensatory strategies is the purpose of the intervention, then short- and long-term goals are formulated very differently than they would be for modifying language behavior itself.

Identification of the basic purpose of the intervention is based on the age and intervention history of the client, the nature of the disorder, and the way the environment interacts with the child's communicative function, as well as on the data collected from the communication appraisal. Young children with treatable or transient conditions may be restored to normal language learning with limited intervention. Older children with long histories of intervention who are likely to have lifelong deficits may benefit most from a compensatory-strategies approach. Modifying the environment may be the primary purpose for some clients and a secondary purpose

with others. Most commonly, though, the purpose of intervention is to modify the language disorder. Given this purpose, how is the change accomplished?

HOW CAN INTERVENTION CHANGE LANGUAGE BEHAVIOR?

According to Olswang and Bain (1991), when the purpose of intervention is to modify the disorder, language behavior can be changed in several ways. These alternatives are depicted in Figure 3-1.

Facilitation

The first role intervention can play is that of *facilitation.* With facilitation, the rate of growth or learning is accelerated, but the final outcome is not changed. In other words, facilitative language intervention helps children to achieve language milestones sooner than they would have if left to their own devices, but it does not mean that they ultimately achieve higher levels of language function than they would have without intervention.

If all facilitation does is increase the rate of acquisition of a particular behavior without altering the child's eventual language status, why bother to intervene? Gottlieb (1976) argued that facilitation could help a child increase his or her ability to differentiate among perceptions. In other words, facilitation can bring language to a higher level of awareness. This awareness can influence other aspects of development. For example, perhaps a child with a phonological disorder would outgrow his multiple articulation errors without intervention by age 8 or 9.
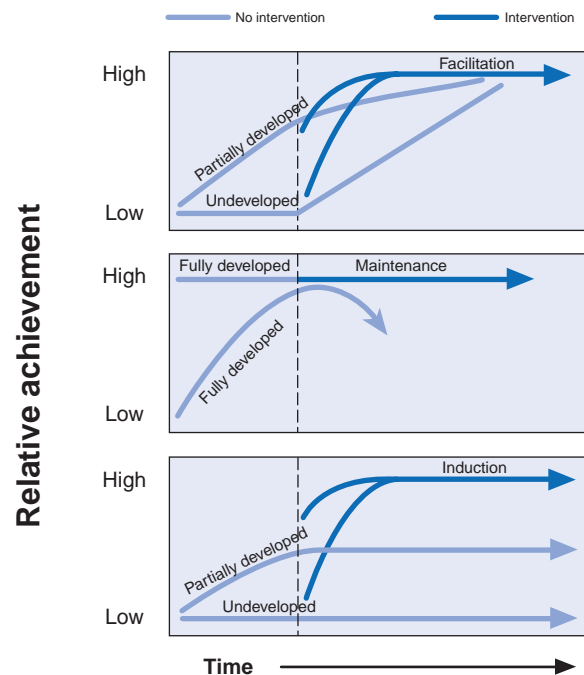
FIGURE 3-1 Purposes of intervention. (Reprinted with permission from Gottlieb, G. [1976]. Roles of early experience in species-specific perceptual development. In R. Aslin, J. Alberts, and M. Peterson [Eds.], *Development of Perception.* Vol. I. Orlando, FL: Academic Press.)

But if intervention to overcome these errors is provided earlier, this intervention may not only improve articulation but also may focus the child's attention on the sound structure of words. This increased awareness may contribute to the child's phonological analysis skills, which, as we shall see later, are important for the development of literacy. Some writers (e.g., Whitehurst et al., 1991) suggest that if therapy is merely facilitative and the child would eventually outgrow the disorder anyway, there is no justification for intervening. But many clinicians (Olswang & Bain, 1991; Paul, 1991a; Robertson & Weismer, 1999) have argued that facilitative intervention is justified because of the other systems in development that accelerating language skills may affect. Take a child like Sammy.

Sammy is a cute, apparently bright 3-year-old who has trouble communicating. His speech is hard to understand, his sentences are limited to two or three words, and he tends to push first and talk later. An appraisal by the local education agency (LEA) revealed that his problems were pretty much limited to expressive language; his cognitive and receptive language skills were at age level. He was having some difficulty with social skills and was showing some behavior problems, though, and seemed to be very frustrated about not getting his ideas across. His parents were quite anxious and concerned, particularly about his difficulties in getting along with other children. The LEA reported that he did not qualify for intervention because his deficits were limited to expression and were in the mild-to-moderate range. His parents were told that he would probably outgrow these deficiencies by the time he got to school. But they didn't want to wait. They were able to arrange for him to see a clinician through a private charitable agency. After 6 months his intelligibility, although still not normal for a child nearly 4 years old, had improved so that at least half of his utterances were comprehensible to peers. Sammy seemed a happier little boy; his aggressive behavior had decreased, neighbors were inviting him over to play more often, and his parents were feeling much more at ease.

This example illustrates how improving communication can affect a child's social skills, behavioral repertoire, self-esteem, and family relations. These outcomes also are considerations in deciding whether to initiate intervention. Communication influences many aspects of a child's life, and increasing its maturity, even if a problem would eventually be outgrown, can often result in changes that go beyond the language behavior itself.

Maintenance

A second way that intervention can change behavior is through *maintenance.* Olswang and Bain (1991) explained that intervention for the purpose of maintenance preserves a behavior that would otherwise decrease or disappear. Gottlieb (1976) argued that maintaining behaviors is important to "keep an immature system intact, going, and functional so that it is able to reach its full development at a later stage" (p. 28). A toddler with a cleft palate, for example, for whom surgery was delayed for medical reasons, might need intervention to maintain babbling and early

vocal behaviors. These behaviors would then be functioning and available for building intelligible language once the palatal vault was closed by surgery.

Induction

Finally, intervention can serve the role of induction. *Induction* of a behavior means that the intervention completely determines whether some endpoint will be reached. Without the intervention, the outcome is not achieved. For example, a hearing-impaired 4-year-old who uses very little spoken language, who comes from a hearing family, and who has no access to the deaf community will not learn Sign language as a form of communication unless intervention takes place. The use of intervention to teach the child Sign language as a form of communication would be an example of induction.

Induction is the most dramatic form of intervention and the one for which we would most like to take credit. Unfortunately, in most real-life situations we do not know ahead of time whether our intervention is accomplishing facilitation or induction. Induction, of course, is the most cost-effective purpose of intervention, and when deciding whether to intervene, we feel more at ease if we can convince ourselves that the effect of the intervention will be induction rather than facilitation. In truth, though, we often do not have enough information to know. In these cases, we would argue that clinicians be familiar with the role of the facilitation in language learning and be prepared to assert the importance of facilitation as a valid outcome of intervention.

DEVELOPING INTERVENTION PLANS

Once a decision to establish an overall purpose for intervention has been made and we specify, or at least think about, how we expect our intervention to change client behavior, the next step is to develop a specific plan. Like assessment, intervention should be carefully considered and planned in detail before it is implemented. One aspect of this planning involves making use of the available scientific evidence in choosing our intervention methods. This aspect of planning is referred to as using *evidence-based practice*. Let's talk about some of the ways we as clinicians can use evidence to decide on what constitutes our best practice for our clients.

Evidence-Based Practice

Let's imagine you are a clinician working with a preverbal 3-year-old named Brendan. One day, Brendan's parents come to you with a newspaper article, which says that exposing children who don't talk to a certain kind of auditory stimulation (through a special set of earphones) leads to speech. There's a Web address in the article, and the parents have looked it up; the program is available for $2000; all they have to do is send for it and have the child wear the earphones for 20 minutes three times a day. They ask you whether you think they should purchase the program, and whether you would include 20 minutes of this treatment within each of Brendan's sessions with you. How will you answer them? These kinds of questions lead us to the need for evidence-based practice (EBP).

Ochsner (2003) defined evidence-based practice as "the conscientious, explicit, and unbiased use of current best research results in making decisions about the care of individual clients" by integrating clinical expertise with the best available external clinical

evidence from systematic research (Sackett et al., 2000). Dollaghan (2007) discussed these issues and reminded us that EBP does not *only* mean solving clinical problems by going to the external evidence, defined primarily as published literature, to find the best available scientific support for the use of specific intervention approaches, although it does mean that, too. Fey and Justice (2007) tell us that EBP includes evaluating internal evidence as well. Internal evidence comes from characteristics of the client and family, their willingness to participate in a treatment approach, and their preference; as well as our own clinician preferences, professional competencies, and values; and the values, policies, and culture of the institutions in which we work. Let's talk about how we can evaluate external evidence first, then we'll consider how internal evidence is included in this decision-making process.

Dollaghan (2004, 2007) suggested we approach external evidence using three principles:

1. The opinions of expert authorities (including expert panels and consensus groups) should be viewed with skepticism.
2. All research is not created equal. Everything that gets published is not necessarily true (or to paraphrase your grandmother, you can't believe everything you read). Some studies are better, and therefore better suited to inform clinical decisions, than others.
3. Clinicians must be critical about the quality of evidence they use to guide clinical decision-making.

Let's see what these principles might mean to us in practice. First, they tell us that we can't take "experts" at their word. If you go to a workshop and a famous clinician tells you about a new approach that can't fail, you have to ask yourself, "How does she know?" If the answer is not based on data presented, but rather on her confidence and experience, we have to consider her endorsement with a few grains of salt. Why? Well, maybe the approach does work for her, but it works because she is an especially talented clinician and another person doing the same thing may not get the same results. Or maybe she works with certain kinds of clients, who are not like the clients in your practice. There could be lots of reasons. The point is, her saying it works is not enough. If you decide to try the approach, you should carefully monitor its effects on your clients, and perhaps compare it to other approaches you are using before deciding that it is really right for your practice and your clients.

Dollaghan's second and third principles tell us that not only must we view experts with skepticism, we must read published research with the same critical attitude. When we say "critical" in this context, though, we don't just mean finding fault. We have a very specific set of criteria in mind that we want to measure the studies we read against. Fey and Justice (2007) outlined a series of questions we can ask ourselves to help determine the type and quality of a study. These are summarized in Figure 3-2. The answers to these questions allow us to classify a report we read in the literature according to the levels of evidence it provides. These levels are summarized in Table 3-1. The higher the level of evidence we can find for a particular approach, the more confident we can be that the approach has strong scientific support. Finn, Bothe, and Bramlett (2005) provide additional guidance for evaluating claims about evidence.

But suppose we find strong scientific support for a particular practice. Is that the end of our decision-making process? Perhaps, but perhaps not. I'll give you an example. As we'll see in Chapter 4, some of the strongest support available for any approach to eliciting initial speech from young children with autism spectrum disorders (ASD) is for behavioral, or operant, methods. These methods have

been carefully investigated for many years, and have the greatest number of studies as well as the highest quality of research evidence behind them. Does this strong scientific evidence mean to us that every preverbal child with ASD must be given operant training? You've probably already thought of some reasons why the answer is "not necessarily." Perhaps the clinician is not well trained or experienced in this approach, or perhaps it conflicts with her values. Maybe the parents don't like it, and think it would make their child too passive. All these are examples of the internal evidence that also needs to go into deciding about an approach to intervention.

What does EPB require of us, then? Do we have to read every published study in order to be EBP practitioners? Of course not—that would be impossible! Should we disregard scientific evidence if our own or a family's values or experiences don't match it? That would not be very responsible, either, since research does provide guidance in making clinical decisions. Fey and Justice (2007), Dollaghan (2007), and Sackett et al. (2000) outlined a reasonable approach to incorporating EBP that includes the following steps:

1. Formulate your clinical question, including the four "PICO" elements:
   P—Patient or Problem
   I—Intervention being considered
   C—Comparison treatment (such as the prevailing approach or no treatment)
   O—desired Outcome
   Example: Would Brendan, a 3-year-old with ASD and no speech (P) show greater improvement with an intervention that targets speech through an operant approach (I), or one that uses an alternative modality, such as a Picture Exchange Communication System (PECS; Bondy & Frost, 1998) as shown by increases in verbal communicative acts (O)?
2. Use internal evidence (such as clinical experience and family preferences) to determine what your typical, "first stab" approach would be.
   Example: Brendan's parents saw a newspaper article about PECS use in a nearby town. The child in the paper started saying a few words after working with PECS for several months. The parents think it makes sense and want to try it. You attended a PECS workshop several months ago, have used it with a few clients, and feel more confident using this technique than an operant approach with which you have little experience. You would opt for trying PECS first, other things being equal.
3. Find the external research evidence base. Use the American Speech-Language and Hearing Association (ASHA) database (www.asha.org) or other databases (such as MEDLINE or PsychInfo) available from libraries to search for information on your question. Start by reading the most recent review articles to find out what has been written lately; read abstracts of papers to decide if reading the whole paper will be worth your time. Choose just a few articles that come closest to answering your question to read in their entirety. If you have to choose just one or two, choose the most recent, since these will review earlier papers on the topic.
4. Grade the studies for (a) relevance to the clinical question, (b) the level of evidence provided by the study based on its design and quality, and (c) the direction, strength, and consistency of the observed outcomes, using the criteria in Table 3-1 and Figure 3-2.
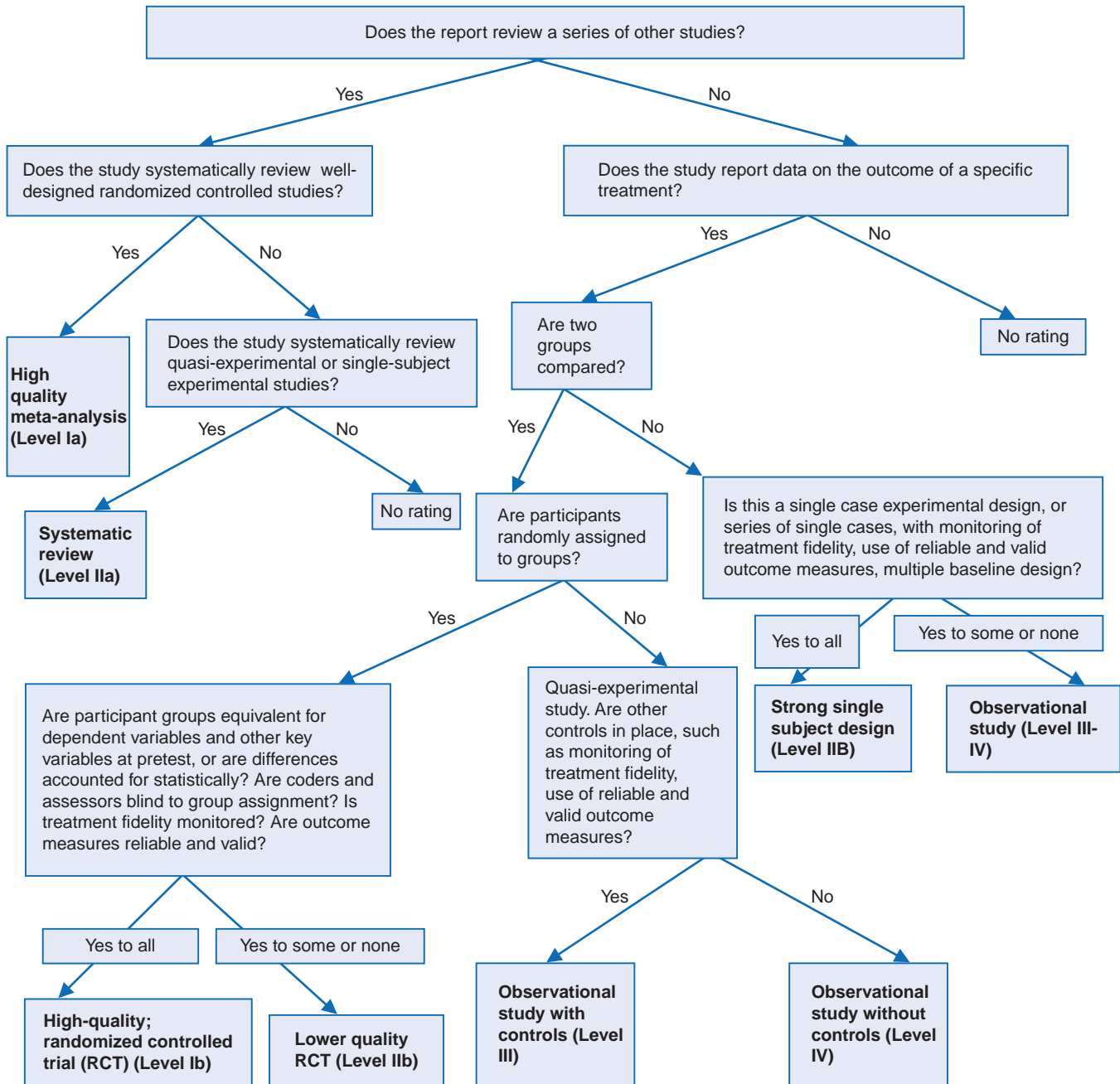
FIGURE 3-2 Flowchart for evaluation of published reports. (Adapted from Fey, M., and Justice, L. [2007]. Evidence-based decision making in communication intervention. In R. Paul and P. Cascella [Eds.]. *Introduction to clinical methods in communication disorders.* Baltimore: Paul H. Brookes.)

5. Integrate internal and external evidence.
   Example: After reading several reviews and recent papers on behaviorist approaches, you are impressed with their high level of scientific support. You have read a few studies supporting PECS, but their quality is not very high. Still, the internal evidence for PECS seems strong, and Brendan has started doing more vocalizing, so he may be ready to use speech, once he learns some communication skills through PECS.
6. Evaluate the decision by documenting outcomes.
   Example: You take a baseline sample of play between Brendan and his mother for communicative acts using verbal and nonverbal means before starting PECS. Brendan is producing fewer than one communicative act/minute; most are vocal but not verbal. After 6 weeks of PECS, you take another sample of communication; Brendan now produces two acts/minute spontaneously, using both PECS and vocal behavior. He produces a one word approximation, with prompting from Mom: /mə/, for *more*, using it three times to request repetition of a tickle game. You conclude that PECS is doing its job, and decide to continue with the program, but to re-evaluate in another 6 weeks to be sure verbal communication continues to emerge. If it does not, you will consider a more direct speech approach, perhaps using more operant methods, at that time.

TABLE 3-1 Levels of Evidence

Level	Type(s) of Evidence
Ia	A systematic meta-analysis of multiple well-designed randomized controlled studies.
Ib	A well-conducted single randomized controlled trail (RCT) with a narrow confidence interval
IIa	A systematic review of nonrandomized quasi-experimental trials or a systematic review of single subject experiments that documents consistent study outcomes.
IIb	A high quality quasi-experimental trial or a lower quality RCT or a single subject experiment with consistent outcomes across replications.
III	Observational studies with control (retrospective studies, interrupted time-series studies, case-control studies, cohort studies with controls)
IV	Observational studies without controls
V	Expert opinions without critical appraisal or theoretical background or basic research

(Adapted from Fey, M., and Justice, L. [2007]. Evidence-based decision making in communication intervention. In R. Paul and P. Cascella [Eds.]. *Introduction to clinical methods in communication disorders.* Baltimore: Paul H. Brookes.)

As you can see from this brief introduction to EBP, it offers a framework to help us make the crucial clinical decisions that go into the planning of an intervention program. Brackenbury, Burroughs, & Hewitt (2008) provide additional guidelines for using EBP in clinical practice. Let's look at some of the other elements that go into this planning process.

Products of Intervention: Setting Goals

McCauley and Fey (2006) and McLean (1989) suggested that there are three aspects of the intervention plan: the intended *products,* or objectives, of the intervention; the *processes* used to achieve these objectives; and the *contexts,* or environments, in which the intervention takes place. Let's see what each of these aspects entails.

A major source of information for goal setting is the assessment data. The appraisal tells us about the child's current level of functioning in the various language areas. McCauley and Fey (2006) describe intervention goals at three levels. These include the following:

Basic goals: Identify areas selected because of their importance for functionality or because of the severity of the deficit; these are general goals and usually correspond to long-term objectives in an educational plan (e.g., new grammatical forms).

Intermediate goals: Provide greater specification within a basic goal; usually there are several levels of intermediate goals associated with each basic goal (e.g., auxiliaries, articles, pronouns).

Specific goals: Specific instances of the language form, content, or use identified as intermediate goals. These are considered steps along the way to the broader and more functional basic goals, and should be based on the child's functional readiness, those which the child uses correctly on occasion or for which the child produces obligatory contexts without producing the target form (e.g., *is, are; a, the, he, she*).

Because many children with DLD have multiple linguistic deficits, it is helpful to have some criteria for setting priorities among the deficits identified in the baseline assessment. Nelson, Camarata, Welsh, Butkovsky, and Camarata (1996) found that both forms that did not appear in the child's speech at all and forms that were used

correctly some of the time were equally amenable to improvement with intervention. This research suggests that both these types of forms make suitable intervention targets. Fey (1986) and Fey, Long, and Finestack (2003) suggested, though, that forms that the child is already using a majority of the time correctly, even if some errors are still being made, should *not* be targeted for intervention. These forms are well on their way to mastery and will probably improve without direct teaching. Their suggestions are summarized in Box 3-1.

This strategy for goal setting can be thought of as targeting the child's *zone of proximal development* (Levykh, 2008; Schneider & Watkins, 1996; Shepard, 2005; Vygotsky, 1978). The zone of proximal development (ZPD) is the distance between a child's current level of independent functioning and potential level of performance. In other words, the ZPD defines what the child is ready to learn with some help from a competent adult. Figure 3-3 gives a schematic representation of the ZPD. Choosing a goal within the child's current knowledge base is wasting the child's time, teaching something that is already known. Unfortunately, this error is sometimes made in intervention out of a misguided desire to ensure that the child succeeds on an intervention task. If a goal, such as production of a plural morpheme, is identified, and a child is found to perform at 80% correct on the first activity involving this morpheme, this indicates that the child does not need to be taught it. To persist in providing intervention on such an objective is to work short of the child's ZPD. The client is not being challenged to assimilate new knowledge and is simply demonstrating what he or she has already learned. This may make the clinician feel good, but it does not help the child acquire new forms and functions of language.

If the child is only 40% correct in the first sessions on a certain morpheme, however, the clinician can feel relatively confident that the form is within the child's ZPD. If continued intervention eventually produces 80% correct responses, the clinician would be justified in continuing to provide opportunities for the child to use this form, to stabilize and generalize its use. After several sessions in which the form is used correctly almost all the time in both structured and conversational contexts, though, the notion of ZPD suggests that it is best to move on to another target, checking back on plural morphemes occasionally to be sure that they are maintained in the child's repertoire. Focusing on targets for longer than necessary to get them stabilized into the child's knowledge base

BOX 3-1 Suggestion for Setting Priorities among Intervention Goals

HIGHEST PRIORITY
Forms and functions clients uses in 10% to 50% of required contexts

HIGH PRIORITY
Forms and functions used in 1% to 10% of required contexts, but understood in receptive task formats

LOWER PRIORITY
Forms and functions used in 50% to 90% of required contexts.
Forms the client does not use at all and does not demonstrate understanding of in receptive task formats.

Adapted from Fey, M. (1986), *Language intervention with young children.* San Diego, CA: College-Hill press; Fey, M. Long, S. And Finestack, L.(2003). Ten principles of grammar facilitation for children with specific language impairments. *American Journal of Speech Language Pathology*, 12, 3-15.
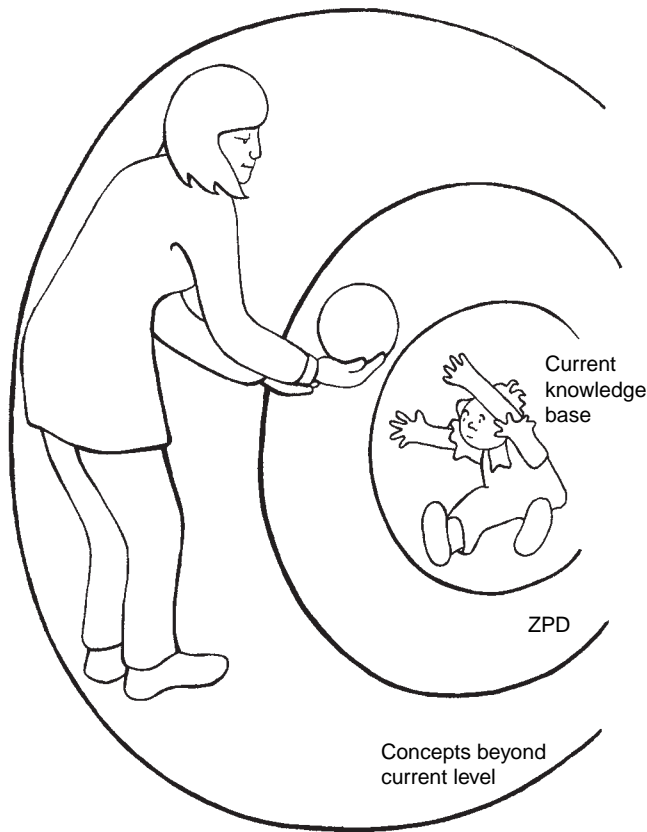
FIGURE 3-3 Zone of proximal development (ZPD).

and generalized into conversational use does not make the most of intervention resources.

Similarly, it is important to choose objectives that are not beyond the client's ZPD. If a goal is too far above the current knowledge base, the child will be unable to acquire it efficiently and may not learn it at all. For a child in the two-word stage of language production, for example, using comparative "-er" forms, which are normally acquired at a developmental level of 5 to 7 years (Carrow-Woolfolk, 1999a), is in most circumstances too far from the child's current level of functioning to be an appropriate goal. Again, the probable range of the ZPD is based on detailed assessment data, which pinpoints where the child is already functioning, and on knowledge of normal development, which allows us to determine the next few pieces of language development to fall into place. Lidz and Gindis (2003) and Schneider and Watkins (1996) point out that using dynamic assessment techniques to establish the ZPD also is helpful. This would mean identifying a particular form that is used infrequently or not at all in the client's spontaneous speech. Diagnostic teaching could be used to determine whether adult scaffolding makes it possible for the child to produce the form more accurately or often. If so, the form is within the child's ZPD and makes an appropriate therapy target.

We will need to take some other considerations—besides the child's current level of functioning and the ZPD—into account when setting long- and short-term goals, though. Let's examine what some of these considerations might be.

Communicative Effectiveness

Fey (1986), Lahey (1988), and McCauley and Fey (2006) all emphasized the importance of choosing objectives not only on developmental grounds, but also on the grounds of how efficient

the targeted behaviors will be in increasing a child's ability to communicate. This suggests that when a variety of communicative problems emerges from assessment, it makes sense to choose skills that most readily accomplish social goals as highest-priority targets for intervention.

For example, suppose a 6-year-old is using primarily four- and five-word utterances. Let's say the child is producing all grammatical morphemes correctly, except appropriate forms of the verb "to be" and is expressing a range of age-appropriate meanings and communicative functions in simple, unelaborated sentences. What should be targeted first? Developmentally appropriate goals could include both forms of "to be" and elaborated sentence types such as passive sentences, sentences with embeddings, and conjoined sentence forms. But which might be most efficient for increasing communicative ability? Although the "be" forms might appear earlier developmentally than elaborated sentence types, use of "be" forms is usually redundant in context. In other words, no new meaning is added by saying, "They are going away," instead of "They going away." The former is correct by adult grammatical standards but not really much more efficient in terms of communication. So it may make sense to target sentence elaboration objectives as a higher priority. Passive sentences, although developmentally appropriate, would again not add much to the child's communicative repertoire, since the same ideas can usually be expressed in active form. Embedded sentences, such as relative clauses, might help the child encode more than one proposition within a sentence, making expression more compact, efficient, and sophisticated. Conjoined sentences also could be used to combine propositions within sentences. A decision as to which of these two forms to target first might be made by looking at what meanings the child is already attempting to combine in his discourse. If the child is producing sentence pairs that attempt to specify objects ("I like that gum. It has stripes."), relative clauses could be targeted to allow the production of more sophisticated versions of what he's already saying ("I like the gum that has stripes."). If temporal or causal meanings are being juxtaposed ("He went home. He got tired."), conjoinings with appropriate conjunctions to specify these relations could be targeted ("He went home because he got tired.").

Decisions about communicative effectiveness of language objectives are particularly important for children who are not likely ever to achieve adult communicative levels, such as those with severe autism or intellectual disability. For these children especially, goals that may come next in the developmental sequence but do not allow the child to function as a more effective communicator take lower priority. These decisions are also important for children who are producing a very limited range of meanings or communicative functions. For these clients, expanding the range of ideas and intentions that can be expressed may be more important than syntactic accuracy, even when syntactic goals would appear to be suggested by the developmental sequence. The key is to remember that the overarching goal of intervention is not only to improve language but also to improve communication. With this goal in mind, developmental considerations can be kept in perspective.

New Forms Express Old Functions; New Functions Are Expressed by Old Forms

This dictum, articulated by Slobin (1973), tells us that when choosing targets for intervention, we must be careful to require that the child do only one new thing at a time. In targeting a new form, such as color vocabulary, we need to ask the child to use this form to serve a communicative function that has already been expressed

with other forms. For example, if a child has used "big" and "little" to express attribution relations in two-word sentences, we could ask him or her to produce color words in these two-word attribution utterances. But if the child is not yet producing any utterances encoding the semantic relation of attribution, color vocabulary might not be a wise choice, or it ought to be taught in a simple labeling context using one-word utterances rather than two-word phrases.

Similarly, if a new communicative function, such as use of idioms for a secondary student with high-functioning autism, is the target, the form used to express this function needs to be within the client's current repertoire. If the student is interested in and talks a lot about weather, teaching idioms that relate to weather ("It's raining cats and dogs") might be a good place to start, so that the new function of using idioms would make use of a semantic category that the student is already using. In these cases, the clinician would have observed the rule of requiring only one new thing at a time in the intervention program.

Client Phonological Abilities

Another consideration in choosing intervention targets for young children in the first stages of language, when mean utterance lengths are less than three morphemes, was pointed out by Fey (1986) and Schwartz and Leonard (1982). This concerns the phonological abilities of the client. Schwartz and Leonard showed that young children are less likely to acquire the production (but not necessarily the comprehension) of new words if the new words contain phonological segments or syllable shapes that the children are not already producing in their other words. So "shoe" would not be a good word to choose as one of the vocabulary goals for a child who was not using any words containing the /ʃ/ sound, even though "shoe" might be a good choice from other perspectives. Similarly, plural morphemes might not be a high-priority goal for clients who did not produce any /s/ or /z/ sounds in their current vocabulary. For developmentally young children, phonological constraints can be quite powerful and should be factored into decisions about targets for language production.

Teachability

Fey (1986) also pointed out that the ease with which a form or function can be taught should be considered in choosing objectives for intervention. He suggested that forms that are more teachable are (1) easily demonstrated or pictured; (2) taught through stimulus materials that are easily accessed and organized; and (3) used frequently in naturally occurring, everyday activities in which the child is engaged.

These certainly are reasonable criteria to add to the list to be used for selecting intervention goals. Objectives that are teachable by these standards will make the intervention process more efficient by minimizing the clinician's preparation time and maximizing the chances that the client will grasp the concepts and have the opportunity to use them in real communicative situations. However, Fey warned of a danger here. Teachability should only be used in conjunction with the other criteria we have discussed, never as the primary criterion. In other words, goals should not be chosen primarily on the basis of the materials the clinician has available or whether it is easy to obtain pictures for the target. Developmental and communicative considerations should take priority, and teachability considerations should be invoked only after these other standards have been considered.

Processes of Intervention

Once the specific objectives of the intervention have been determined, it is time to decide on a general approach or combination of approaches to use in the program and to choose or design particular intervention activities. Let's look at the options available to speech-language pathologists (SLPs) in these areas.

Intervention Approaches

Fey (1986) discussed a continuum of naturalness in intervention approaches. This continuum represents the extent to which the settings and activities in intervention resemble "real life" or the world outside the clinic room (Figure 3-4). We can vary intervention activities along this continuum of naturalness. Activities in language intervention can be a lot like the activities a child engages in during the rest of his or her life, or they can be very different. We can go from very naturalistic settings and activities such as play in the child's home to very contrived activities, such as drill in a setting such as a clinic room, or we can choose settings and activities somewhere midway along this continuum. Three basic approaches to intervention identified by Fey (1986) will be outlined here. We don't mean to suggest that a clinician has to choose just one of them. Our aim should be to make the best match among a particular client, a particular objective, and an intervention approach. Some clients may do better with one approach than another. Other clients may do well with one approach for one objective and a different approach for another. One objective may be well suited to a highly structured approach; another may be better served by a more open-ended approach. Often, several activities are designed to address a particular objective—some highly structured, some with a low level of structure, and others a compromise between the two. The important thing is to be aware of the range of approaches available for planning intervention activities and to be able to take advantage of this range of approaches in setting up a comprehensive, economical, efficient intervention program that meets each client's individual needs. We should also, as we will see later in the chapter, evaluate the available evidence in the research literature for the effectiveness of particular approaches with particular goals for particular kinds of clients.

The Clinician-Directed Approach

In these approaches, the clinician specifies materials to be used, how the client will use them, the type and frequency of reinforcement, the form of the responses to be accepted as correct, and the order of activities—in short, all aspects of the intervention.

Most natural   Least natural

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 <──────────────────────────────────────────────────────────> 
┌──────────────┐          ┌──────────┐          ┌──────────────┐
│   Child-     │          │  Hybrid  │          │  Clinician-  │
│  centered    │          │          │          │  directed    │
└──────────────┘          └──────────┘          └──────────────┘
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Daily activities   Milieu therapy   Drill
Facilitated play   Focused stimulation   Drill play
                          Script therapy   CD modeling

                                    Naturalistic modifications
                                    of CD activities (cohesive
                                    scripts, etc.)
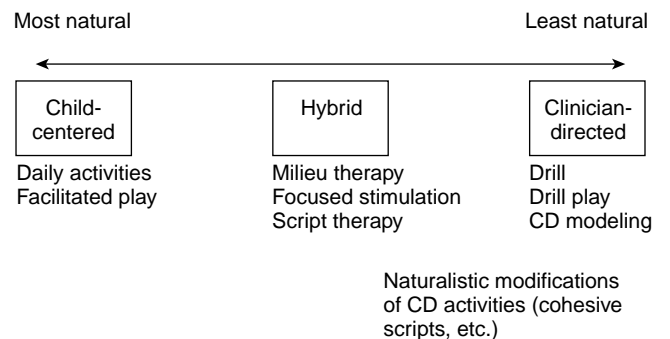
FIGURE 3-4   The continuum of naturalness. (Adapted from Fey, M. [1986]. *Language intervention with young children*. San Diego, CA: College-Hill Press.)

Clinician-directed (CD) approaches, also referred to as drill (Shriberg & Kwiatkowski, 1982a) or discrete trial intervention (DTI), attempt to make the relevant linguistic stimuli highly salient, to reduce or eliminate irrelevant stimuli, to provide clear reinforcement to increase the frequency of desired language behaviors, and to control the clinical environment so that intervention is optimally efficient in changing language behavior. CD approaches tend to be less naturalistic than other approaches we will discuss, since they involve so much control on the part of the clinician and since they purposely eliminate many of the natural contexts and contingencies of the use of language for communication. Peterson (2004) defined these approaches as ones in which the clinician selects the stimulus items, divides the target language skill into a series of steps, presents each step in a series of massed trials until the client meets a criterion level of performance, and then provides an arbitrary reinforcement. Roth and Worthington (2010) provide an excellent introduction to this approach. Their summary of this basic training protocol appears in Box 3-2.

An advantage of CD approaches is that they allow the clinician to maximize the opportunities for a child to produce a new form, producing a higher number of target responses per unit time than other approaches allow. This provides excellent opportunities for the child to get extended practice using a new form or function.

Proponents of this approach (e.g., Connell, 1987; Fey & Proctor-Williams, 2000; Smith, Eikeseth, Sallows, & Graupner, 2009) also point out that its unnaturalness is itself an advantage. They argue that if clients were going to learn language the "natural" way, by listening and interacting with others, they would not need intervention. The fact that the child has, for whatever reason, failed to learn language through natural interactions suggests that something else is needed. The something else, in this view, is the highly structured, clinician-controlled, tangibly reinforced context of the behaviorist's intervention.

There is something to be said for this position. CD approaches have been shown in a large literature of research studies to be consistently effective in eliciting a wide variety of new language forms from children with language disabilities of many types (see Abbeduto & Boudreau, 2004; Fey, 1986; Goldstein, 2002; Paul & Sutherland, 2005; Peterson, 2004; Reichow & Wolery, 2009; Rogers, 2006, for reviews). The proponents of the CD approach appear to be justified in arguing that children who have not learned language the "old-fashioned way," by interacting naturally with their parents, benefit from formal behavior modification procedures. Furthermore, some research (Friedman & Friedman, 1980) suggests that, while children with higher IQs learn better in a more interactive intervention program, those with lower IQs or more severe disabilities perform better when a CD approach is used. Connell (1987) showed, using an invented morpheme, that children with normal language acquisition learned more efficiently when the form was merely modeled for them, whereas children with DLD learned the form better when they were required to imitate the instructor's production of it. These studies tend to support the behaviorist position that CD approaches to language intervention work better than more naturalistic ones for children with DLD. Studies of children with ASD have also shown that CD approaches appear superior to more eclectic approaches for improving language and cognitive skills (e.g., Cohen, Amerine-Dickens, & Smith, 2006; Eikeseth, Smith, Jahr, & Eldevik, 2002; Eikeseth, Smith, Jahr, & Eldevik, 2007).

But, of course, that's not the whole story. Cole and Dale (1986), for example, were not able to replicate the Friedman and Friedman results and found no differences between interactive and CD approaches. Nelson et al. (1996) showed more rapid acquisition of grammatical targets and increased generalization with a conversational intervention treatment than an imitative one. Camarata, Nelson, and Camarata (1994) reported that children with language impairments learned syntactic targets more quickly under naturalistic conditions than with a CD approach. A meta-analysis by Delprato (2001) suggested that naturalistic interventions showed a consistent advantage over CD methods. Howlin, Magiati, Charman, and MacLean (2009) found CD approaches worked well for some children but not others. More fundamentally, perhaps, numerous studies (e.g., Hughes & Carpenter, 1983; Mulac & Tomlinson, 1977; Zwitman & Sonderman, 1979; see Peterson, 2004, for review) show difficulties in generalization to natural contexts of forms taught with a CD approach, even when use reaches high levels of accuracy within the CD framework. Cirrin and Gillam (2008) report, in a review of literature, that imitation (CD), modeling (child-centered, CC), or modeling plus evoked production (hybrid) all are equally but modestly effective in teaching new syntactic and morphological forms. Gillum et al. (2003), while generally favoring more naturalistic approaches, argue that clinicians and

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BOX 3-2   Training Protocol for Clinician-Directed Intervention

- Clinician gives instructions in declarative form ("Say the name for the picture after me.").
- Clinician presents stimulus or antecedent event ("Big ball.").
- Clinician waits for client to respond, allowing sufficient time for client to formulate response.
- Clinician presents consequent event or reinforcement (primary such as food, or secondary, such as social praise ["Good talking"], tokens to accumulate for a prize, or feedback regarding the acceptability of the response).
- Feedback might include biofeedback instrumentation or information on performance ("You said four of the five correctly.")

Adapted from Roth, F.& Worthington, C. (2010). *Treatment resource manual for speech-language pathology* (4th ed.) Clifton Park, NY : Delmar.

Clinician-directed intervention provides a high level of structure.

researchers need to determine which developmental profiles in clients are best matched to particular intervention methods.

It seems, then, that while CD approaches can be highly efficient in getting children to produce new language forms, they are not so effective in getting them to incorporate these forms into real communication outside the structured clinic setting, and that more naturalistic methods can also provide an efficient means of addressing language targets. What shall we make of these findings? Some writers, including Hubbell (1981), Norris and Hoffman (1993), and Owens (2009), have argued that the lack of generalization seen in CD approaches renders them useless and that the only approaches that are right for language intervention are more natural and interactive. This view, in our opinion, involves "throwing the baby out with the bath water." Since CD approaches have proven efficacy in eliciting new language forms, why not take advantage of this efficacy? CD approaches can be used in initial phases of treatment to elicit forms that the child is not using very much spontaneously or at all. Fey, Long, and Finestack (2003) argue that drill formats that emphasize contrasts between two forms (such as past/present or singular/plural) are the most effective use of CD formats. Either simultaneously, or later, once the form or function has been stabilized with a CD approach, some of the more naturalistic approaches we will discuss can be used to help bring the form into the child's conversational repertoire (Smith, 2001). Let's look at three major varieties of CD activities: drill, drill play, and modeling.

Drill

Shriberg and Kwiatkowski (1982a) defined several types of clinical activities in terms of their degree of structure. The most highly structured in their framework is drill, which makes use of the classic DTI format. In a drill activity, the clinician instructs the client concerning what response is expected and provides a training stimulus, such as a word or phrase to be repeated. These training stimuli are carefully planned and controlled by the clinician. Often they contain *prompts* or instructional stimuli that tell the child how to respond correctly, for example by imitating the clinician. If prompts are used, they are gradually eliminated or *faded* on a schedule predetermined by the clinician. When prompts are used, the client provides a response to the clinician's stimulus. If this response is the one the clinician intended, the child is *reinforced* with verbal praise or some tangible reinforcer, such as food or a token. A *motivating event* also may be provided. For example, if the child is to label clothing items, he or she may be asked to place a sticker of the item in a sticker album after it has been named appropriately and the response has been reinforced. If the client's response is not the intended target, the clinician attempts to *shape* the response by reinforcing the production of parts of the complete target and gradually increasing the number of components that must appear correctly to obtain the reinforcement. Drill is the most efficient intervention approach in that it provides the highest rate of stimulus presentations and client responses per unit time.

One problem with drill in Shriberg and Kwiatkowski's study was that neither the clients nor the clinicians liked it very much. The clients did not find it very motivating, and the clinicians were uncomfortable with its high degree of structure and low level of motivation. It is interesting to note that the clinicians in the study did not like drill even though it was obvious that it got the job done and provided an efficient and effective form of intervention.

Drill Play

Drill play is another CD approach, which differs from drill only in that it attempts to provide some motivation into the drill structure. It does this by adding an *antecedent* motivating event, that is, one that occurs not only after the target response is reinforced but also before it is even elicited. Thus there are two motivating events in drill play, one that goes along with the original training stimulus the (*antecedent* motivating event) and one that follows the reinforcement (the *subsequent* motivating event). For example, take the activity mentioned before—using stickers to motivate naming clothing items. As an antecedent motivating event, the client may be allowed to choose any sticker from a sheet of clothing stickers that he or she would like to put in the album. The training stimulus would elicit the name of clothing item represented by the sticker. After reinforcement for correct labeling, the client would be allowed to put the sticker in the album, as a subsequent motivating event.

Shriberg and Kwiatkowski (1982a) found drill and drill play to be equally efficient and effective in eliciting responses in phonological intervention. Furthermore, clinicians in the study liked drill play a lot better than they did drill and believed that their clients did, too. Do these findings about phonological intervention transfer to language? We don't really know, since this question has not been addressed in language intervention research in as clear a manner as Shriberg and Kwiatkowski have addressed it. But it seems reasonable to expect the two modes of intervention to produce similar outcomes with semantic, syntactic, pragmatic, and phonological goals. These findings suggest that many of the advantages of highly structured CD approaches can be retained while client motivation and clinician comfort are increased, by small but well-thought-out modifications of the basic DTI approach.

Does this mean that we should never drill, if drill play is just as effective and more fun? Not necessarily. Some children, in fact, may enjoy the predictability and simplicity of drill. Many computer language-teaching programs are, in fact, drill formats that use their own graphic displays as subsequent motivating events, and many children find these to be quite a treat. The bottom line, in our opinion, is that if drill works for a certain client, we should by all means use it initially to elicit new forms and functions. If it doesn't work, we should use whatever works better. The important thing is to have a range of techniques and approaches on our clinical palate from which to draw, mix, and match to suit the needs of clients.

Modeling

Fey (1986) presented a second CD alternative to straight drill procedures. This arises from social learning theory and involves the use of a third-person model—thus the name, *modeling* approach. Like drill, modeling uses a highly structured format, extrinsic reinforcement, and a formal interactive context. But here, instead of imitating, the child's job is to listen. The client listens as the model provides numerous examples of the structure being taught. Through listening, the child is expected to induce and later produce the target structure. The child never has to imitate a structure immediately after the model. Instead this procedure implicitly requires the child to find a pattern in the model's talk that is similar across all the stimuli presented. In Leonard's (1975a) modeling procedure, a "confederate," such as a parent, is used by the clinician as a model. The clinician, after pretesting the client on the target structure, gives the model a set of pictures not used in the pretest and asks, "What's happening here?" The confederate provides, for example, a *be + (verb)+-ing* utterance that describes each picture presented by the clinician (e.g., "the boy is drinking," "the girl is eating," "the cat is walking"). After 10 or 20 of these descriptions, the client is asked to "talk like" the model and to describe a similar but not identical set of pictures. In this phase the model and client alternate their productions until the child produces three consecutive correct versions. Then, the child is asked to continue until a criterion (say,

8 out of 10 consecutive correct responses) is reached. At this point, the client would be tested on the pretest stimuli without models. This method can easily be adapted when a confederate is not available by using a doll or puppet (with the clinician's voice) as a model.

All three variations we've discussed—drill, drill play, and modeling—share the tightly structured, formal, clinician-controlled features that characterize operant approaches to intervention. They share the advantages these approaches provide: specification of linguistic stimuli, clear instructions and criteria for appropriate responses, reinforcement designed to increase the frequency of correct responding, high levels of efficiency in evoking maximal numbers of responses per unit time, and proven effectiveness in eliciting new language behaviors. They all share certain disadvantages, too. They are relatively "unnatural" and are dissimilar to the pragmatic contexts in which language is used in everyday conversation. Perhaps as a result, their targets are not spontaneously incorporated into everyday language use, even when they reach criterion levels in the structured intervention situation. These facts imply that CD approaches ought to be considered in initial phases of intervention to evoke use of forms the child is not using very often in spontaneous conversation, because of their great efficiency for this purpose. Because of their drawbacks, though, CD aproaches should be combined with other modalities to effect the transition from use in formal intervention contexts to use in everyday interactions. Let's see what some of these alternative approaches might be.

Child-Centered Approaches

You can lead a horse to water, but you can't make it drink. That's the problem with CD approaches. Some children simply refuse to engage in CD activities, no matter how good it is for them. Some clinicians might call these children "behavior problems" and would spend long stretches of intervention time trying to train them to participate in CD formats. These "hard-to-treat" children rebuff any attempt to get them to say what the clinician tells them to say, no matter how tempting the reinforcement.

For these children, an alternative intervention approach seems warranted. That is, even if we believe that CD approaches are the most efficient means of language change, we may need to have another weapon at our command for children who refuse to engage in them, at least until we can establish a better relationship with the client and get him or her to want to cooperate with us. Sometimes we need to win a child's trust.

For another kind of client, too, the CD approach may not be the best first step. This is the child that Fey (1986) called "unassertive." An unassertive child responds to speech, but rarely initiates communication. These children are passive communicators who let others control interactions. In a sense, a CD approach panders to these clients' propensity to sit back and let others do the interactive work. Having these clients respond when and how they are told to is essentially reinforcing them to continue the old, passive communication pattern.

For both these children—the obstinate child and the unassertive communicator—CD approaches may not be the most appropriate first step in an intervention program. That is not to say that CD approaches never work for these clients, only that we may need to do something else first before we ask them to work with us. For the obstinate and unassertive child particularly, the child-centered (CC) approach (Fey, 1986; Girolametto & Weitzman, 2006; Sheldon & Rush, 2001) may be a good introduction to intervention. CC approaches can be appropriate adjuncts to the program for many children with language disorders. CC approaches go by several names, including *indirect language stimulation* (ILS; Fey, 1986),

facilitative play (Hubbell, 1981), *pragmaticism* (Arwood, 1983), and *developmental* or *developmental/pragmatic approaches* (Prizant & Wetherby, 2005a). In using a CC approach, a clinician arranges an activity so that opportunities for the client to provide target responses occur as a natural part of play and interaction. From the child's point of view, the activity is "just" play or conversation. A clinician may use a variety of linguistic models as instructional language when they seem appropriate in the context of the child's activity. There are no tangible reinforcers, no requirements that the child provide a response to the clinician's language, and no prompts or shaping of incorrect responses when they do occur, although the clinician does *consequate,* or follow up, any child remarks in specific ways, as we'll see.

CC intervention puts the child in the driver's seat. Apart from choosing the materials with which the child will play, the clinician does not direct the activity. Rather, we follow the child's lead, doing what he or she is doing and talking about what he or she is talking about or doing. This has a great many advantages for both obstinate and unassertive clients. Rather than spending all their energy resisting, in the case of the obstinate child, or passively complying, as the unassertive one will do, clients engaged in a CC activity spend their time in natural, enjoyable play with a very accepting and responsive adult who makes a consistent and salient match between what they are doing and the language used to talk about it. And all clients can benefit from opportunities to see how actions and objects are mapped onto words in the context of fun, familiar activities.

When we use CC intervention, the first (and perhaps hardest) thing we must learn to do is *wait*. The key to this approach is to *respond* to the client. To do this, we have to wait for the client to do something. Ideally, that something will be to talk. If it is, we can respond to the child's language with one of several specific verbal techniques. Sometimes, though, we must interpret some action of the child's and act as if it were intended to communicate, even though the client may not truly have had such an intention. Once the child has said or done something that we can interpret as communicative, we then respond to the behavior in a way that models communicative language use. Unlike in the CD approach, we are not trying to elicit specific structures from the client. Instead, we react to the child's behavior, placing it in a communicative context and giving it a linguistic mapping.

Child-centered intervention.

The clinician does this mapping by using a variety of techniques that constitute the indirect language stimulation approach. These techniques can be summarized as follows:

1. *Self-talk and parallel talk*. In *self-talk* we describe our own actions as we engage in parallel play with the child. If the child is building a block tower, we copy the tower with our own blocks, saying as we do, "I'm building. I'm building with blocks. See my blocks? I'm building." Self-talk provides a clear and simple match between actions and words. By using the child's actions and matching our own words and actions to them, we model how to comment on our actions with language.

   In a sense, in *parallel talk* we provide self-talk for the child. Instead of talking about our own actions, we talk about the client's, providing a running commentary, something like the play-by-play at a sporting event. To take the same block-building example we used before, parallel talk might sound like, "You're building. You put on a block. You did it again. You put on another block. Now it's big! You're building a big one!" Parallel talk also can help us make connections to children with severe disorders whose choice of actions may not be typical. For example, children with autism, if given a set of toys, may use them in unconventional ways. Instead of building a tower with blocks, an autistic child may smell them or focus on the texture of the rug underneath the blocks. Parallel talk allows us to share this child's focus. Again, we talk about the child's focus of attention; for example, "You see the rug. It's green. It's a green rug. It's soft. Can you feel it? It's soft. The blocks are on the rug. They're on the soft, green rug."

   Self-talk and parallel talk are helpful for children who are not talking at all in the clinical setting. The clinician's use of these techniques maximizes the chances that the child will use the model in producing a spontaneous utterance. Once the child does, the clinician can respond with other techniques included in the indirect language stimulation approach. These techniques are designed to provide a verbal response that is highly contingent on the child's own utterance. Let's look at these contingent response possibilities, too.

2. *Imitations*. We often ask children to *imitate* what we say in intervention. But instead, we can turn the tables and imitate what the child says. Folger and Chapman (1978) showed that adults often repeat what normal toddlers say, and that when they do, there is a substantial probability that the child will imitate the imitation. Research suggests that children who imitate show advances in language development (Carpenter, Tomasello, & Striano, 2005). Moreover, we know that anything that increases the amount of child talk is associated with acceleration of language development (Gallagher, 1993; Hoff-Ginsberg, 1987; Sachs, 1983). The more the child says, the more the opportunities exist for practice of phonological, lexical, and syntactic forms and the more opportunities there are for feedback. If the child repeats our imitation, we can go on to use some of the other forms of contingent responses available in indirect language stimulation to provide more focused and extensive feedback. Or, alternatively, we can use the child's imitation to initiate a repeated back-and-forth exchange that will help the child develop this basic turn-taking structure for conversation.

3. *Expansions*. In *expanding* the child's utterance we take what the child said and add the grammatical markers and semantic details that would make it an acceptable adult utterance. For example, if the child puts a toy dog in a dollhouse and says "doggy," or "doggy house," this could be expanded as "The doggy is in the house." Expansions have been shown to increase the probability that a child will spontaneously imitate at least part of the expansion (Scherer & Olswang, 1984). Again, any talk is good talk in our book. It's practice, and it gives us yet another opportunity to provide additional contingent feedback. Moreover, Saxton (2005) reviewed literature to suggest that expansions specifically have been associated with grammatical development for a number of structures in a number of diagnostic groups. In more current literature, these are sometimes called *recasts* (Camarata & Nelson, 2006).

4. *Extensions*. Some writers call these responses *expatiations* (Fey, 1986). They are comments that add some semantic information to a remark made by the child. In our "doggy house" example, saying "He went inside" or "Yes, he got cold" could extend this remark. Cazden (1965) and Barnes, Gutfreund, Satterly, and Wells (1983) showed that adults' extensions are associated with significant increases in children's sentence length.

   Owens (2009) called the latter three kinds of responses—imitation, expansions, and extensions—*consequating behaviors* on the part of the adult. They decrease the amount of information in the adult utterance that the child has to process (Proctor-Williams, Fey, & Loeb, 2001). They do this by taking the form and meaning the child has already expressed and pushing it a small step further, into the ZPD, we might say. All three behaviors increase the likelihood that the child will imitate some part of the consequating utterance. This is important because anything that increases the rate of child talk has positive consequences for language development, in general, as we've seen. In particular, these consequating remarks provide the child with information about how to encode in a more mature linguistic form the ideas they are already expressing.

5. *Buildups and breakdowns*. Weir (1962) studied the before-sleep monologues of a typically developing 2-year-old child. She found that the monologues commonly contained sequences in which the child took her own utterance, broke it down into smaller, phrase-sized pieces, and then built them back up into sentences. We can do this *breaking down* and *building up* for the client, in an attempt to demonstrate how sentences get put together. We start by expanding the child's utterance to a fully grammatical form. Then we break it down into several phrase-sized pieces in a series of sequential utterances that overlap in content. Let's take the "doggy house" example again. To do a buildup and breakdown on this utterance, we might respond, "Yes, the doggy is in the house. The house. He's in the house. In the house. The doggy is in the house. The doggy. The doggie's in the house." Cross (1978) found that these types of responses, too, are associated with language growth in normally developing children.

6. *Recast sentences*. These are similar to expansions. Expansions, you'll remember, elaborate the child's utterance into a grammatically correct version of the intended sentence type. In recasting we expand the child's remark into a different type or more elaborated sentence. If the child makes the statement

"doggy house," we can recast it as a question, "Is the doggy in the house?" or a negative sentence (used as a playful denial of the child's utterance), "The doggy is *not* in the house!" or even a negative question, "Isn't the doggy in the house?" Camarata et al. (1994); Nelson et al. (1996); and Proctor-Williams, Fey, and Loeb (2001) showed that recast treatment was effective in teaching grammatical forms to children with specific language impairment, but only when the recasts were presented at rates that are much greater than those available in typical conversations with young children (Procter-Williams & Fey, 2007). Hassink & Leonard (2010) suggested recasts work especially well when they do not correct a child's form, but simply demonstrate correct use of the target (e.g., Child: "My mom like ice cream." Clinician: "I'll bet she eats it every day!") . This finding reminds us that one of the ways thera-peutic conversation differs from ordinary talk is in its con-scious attempt to greatly increase the "dose" of helpful input it provides. When engaging in any CC language activity, it is essential to focus attention on using our linguistic input to maximize the intensity of our client's exposure to helpful examples of language.

One particular type of recast sentence has been found in research (Hoff-Ginsberg, 1990) to be particularly helpful to normal children in learning the verb structure of English, a system that gives children with language impairments a particularly hard time. This is the *verbal reflective question.* Verbal reflective questions are recasts that repeat part of the child's utterance but pass the conver-sational turn to the child by turning the partial repetition into a question. So if the child says, "doggy house," a verbal reflective question response would be "The doggy is in the house, isn't he?" Again, these responses seem to be useful, like the other consequat-ing behaviors we've discussed, because they provide a scaffold to elicit talk from the child that is contingent on the child's own topic. However, Fey and Loeb (2002) found that it was important to pro-vide these recasts only to children for whom the targeted form was within the ZPD. Providing them to children whose language levels were too low did not result in increased learning for the new form. This is one reason that careful assessment of language level is so important; it helps us identify the appropriate "next step" in the child's language development, so we can provide just the right input to make that step possible.

Indirect language stimulation, then, attempts to provide a simple, accessible model of the mapping between the child's actions and the language that can be used to describe them. Its purpose is to "tempt" the child to talk by following the child's choice of activities and top-ics, providing an attentive and responsive person with whom the client can interact and supplying models of more mature language that are within the child's ZPD. Research on both children with typical acquisition and those with language disorders suggests that these techniques are indeed helpful in accelerating language growth (see Camarata & Nelson, 2006; Girolametto & Weitzman, 2006; Peterson, 2004; Saxton, 2005, for reviews), particularly at Brown's stages IV and V of language development (Gillum et al., 2003). Ingersoll (2011) also suggests this approach is useful for eliciting comments from children with ASD, a communicative act that is often very reduced in this population. It's interesting to note, though, that Shriberg and Kwiatkowski (1982a) found that clinicians did not like the ILS approach, even though the clients did. This finding prob-ably reflects the discomfort many of us feel in leaving the child in some sense in charge of the intervention, relinquishing the control that CD approaches afford us.

Despite this discomfort, in our view, there is a place for indirect language stimulation in our clinical arsenal. For obstinate and unassertive clients it may be the best bet for establishing a relation-ship that allows them to take some responsibility for communi-cation. For any client who is functioning at a mean length of utter-ance (MLU) level below three morphemes (where these techniques have been shown to be effective for normally developing children), ILS can be an especially useful adjunct to more structured inter-vention activities. Augmenting more structured approaches with ILS gives the child a chance to see how the forms being trained are used for real communication and gives the client an opportunity to try for spontaneous usage in a safe and responsive environment with a good deal of scaffolding and support. ILS, then, is an ideal first step for certain developmentally young clients and can be a useful adjunct to the intervention program for any client in the early stages of language acquisition. It is important to remember, however, that, to be effective, ILS techniques must provide high levels of intensity of input. Proctor-Williams & Fey (2007) esti-mated that it is necessary to provide about one consequating remark per minute in order to make this method work.

We can summarize our discussion of the CC approach to lan-guage intervention by saying that it is at the opposite end of the continuum from CD approaches in terms of naturalness, degree of adult control, use of external reinforcement, and adherence to prag-matic principles. Is there anything in between? Fey (1986) suggested that there are approaches that fall midway on this continuum. He referred to these as *hybrid* approaches.

Hybrid Approaches

According to Fey (1986), hybrid intervention approaches have three major characteristics. First, unlike CC approaches, which focus on general communication, hybrid approaches target one or a small set of specific language goals that are identified through the processes we discussed earlier. Second, the clinician maintains a good deal of control in selecting activities and materials but does so in a way that consciously tempts the child to make spontaneous use of utterances of the types being targeted. Finally, the clinician uses linguistic stimuli not just to respond to the child's communication but to model and highlight the forms being targeted. Munro, Lee, & Baker (2008) showed that hybrid techniques were effective for improving vocabu-lary and phonological awareness in children with DLD. We'll discuss several forms of hybrid intervention: focused stimulation, vertical structuring, milieu teaching, and script therapy.

Hybrid intervention combines some degree of structure with opportunities for the child to make selections.

Focused Stimulation

In this approach the clinician carefully arranges the context of interaction so that the child is tempted to produce utterances with obligatory contexts for the forms being targeted. The clinician helps the child succeed in this by providing a very high density of models of the target forms in a meaningful communicative context, usually play. The child is not required to produce the target forms, however—only tempted. Because the clinician provides many models of the target form in a meaningful context, this approach is very effective for improving comprehension of a form, as well as production (Weismer & Robertson, 2006). Box 3-3 gives an example of a focused stimulation approach to teaching use of "is" as a copula.

The example demonstrates how the clinician provides multiple exemplars of the target form in a structured but interactive play context. Note how the clinician first provides opportunities for the client to use the form, but when the child responds with something other than the target, the clinician responds contingently anyway, then goes on to give further models. The clinician gives feedback similar to an expansion when the child makes an unsuccessful attempt. She asks the child to attempt the form, but if the child declines to do so, the clinician simply goes on giving additional models. Weismer and Robertson (2006) provide an extensive review of the evidence supporting the use of focused stimulation to teach language form, content, and use for both monolingual and bilingual children (e.g., Cleave & Fey, 1997; Leonard, Camarata, Rowan, & Chapman, 1982; Robertson & Weismer, 1999; Skarakis-Doyle & Murphy, 1995), when implemented by both clinicians and parents (e.g., Girolametto & Weitzman, 2006; Lederer, 2001; Robertson & Weismer, 1999) for improving both functional comprehension and use of the target structures.

Vertical Structuring

Vertical structuring is a particular form of expansion used like focused stimulation to highlight target structures. Box 3-4 provides an example dialogue that uses vertical structuring. There we see that the clinician responds to a child's incomplete utterance with a contingent question. The child responds to the question with

another fragmentary remark. The clinician then takes the two pieces produced by the child and expands them into a more complete utterance. The child is not required to imitate this expansion. The fact that children often imitate adult expansions of their own utterances in normal development is the basis for the hope that children with language impairments will take these expanded models of their own intended utterances as a cue for spontaneous imitation. If they don't, the clinician simply goes on to elicit another set of related utterances from the child and offers the vertically structured expansion again.

Vertical structuring is obviously less naturalistic than standard ILS techniques in that the clinician provides a specific nonlinguistic stimulus, such as a picture; targets a particular form; and attempts to elicit particular language behavior from the child. But it does use a naturalistic response on the part of the clinician and takes the child's spontaneous utterance as the basis for the clinician response, rather than requiring an imitation. Vertical structuring has been used primarily to target early developing language forms and has been shown to be effective when used for this purpose (Schwartz, Chapman, Terrell, Prelock, & Rowan, 1985). Skarakis-Doyle and Murphy (1995) used the technique to target more advanced language structures (*should, must*). They demonstrated that vertical structuring used after focused stimulation enhanced the effectiveness of the intervention. Box 3-5 gives an example of a dialogue that uses vertical structuring to elicit sentences with relative clauses.

Milieu Communication Training

Milieu teaching includes several different techniques that apply operant principles to quasi-naturalistic settings. Hancock and Kaiser (2006) discuss three major components that characterize this approach: (1) environmental arrangement, (2) responsive interaction, and (3) conversation-based contexts that use child interest and initiation as opportunities for modeling and prompting communication in everyday settings. These methods make use of imitative cues and extrinsic reinforcement but do so during interactive

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BOX 3-3 A Focused Stimulation Approach to Teaching Copula "Is"

Materials: Toy barn, farmer, farm animals, toy truck that can hold animals.
Clinician: Let's pretend we're farmers. We're taking our animals to the fair. We want to be sure we don't forget any. Here they are in the barn. I'll put some in the truck. OK, now the cow *is* in the truck. The horse is in the truck. The sheep *is* in the truck. What about the dog?
Client: Bark.
Clinician: Yes, the dog can bark. He says, "Ruff, ruff."
Let's put the dog in the truck. Now he *is* in the truck. Good! Let's see. The cat *is* in the barn. Let's put her in the truck. Good, now she *is* the truck. The goat *is* in the truck. How about the chicken?
Client: Chick in truck.
Clinician: Yes, She *is*. The chicken *is* in the truck. That's good. *Is* the pig in the truck? He *is*. He *is* in the truck. Tell the farmer. Tell him, "The pig *is* in the truck."
Client: Pig is truck.
Clinician: Good, now everyone *is* in the truck. Now we can go to the fair.

BOX 3-4 Example of Vertical Structuring

Materials: A picture of children visiting a zoo.
Clinician: Look at this. What do you see? (If the child does not respond or makes a remark unrelated to the picture, the clinician directs the child's attention to a specific referent in the picture and asks again, "What do you see here?")
Client: Lion.
Clinician: Yes, and what is the lion doing?
Client: Roar.
Clinician: Yes, he's roaring. The lion is roaring.

BOX 3-5 Example of Vertical Structuring Used to Elicit Sentences with Relatives Clauses

Materials: A picture of children visiting a zoo.
Clinician: Tell me about one of the children in this picture.
Client: This boy sees the lion.
Clinician: Uh-huh. Tell me something else about him.
Client: He's wearing a baseball cap.
Clinician: Yeah, the boy who is wearing a cap sees the lion.

activities that have been carefully arranged by the clinician to elicit child initiations, necessitate social communication on the part of the client, and provide natural consequences for the communication.

Hart and Risley (1975) introduced the *incidental teaching* method, as one example of this approach. Here the clinician arranges the setting so that things the client wants or needs to complete a project are visible but out of reach. The child selects the topic of conversation by making some kind of request, such as gesturing or looking toward the desired item. The clinician responds first with *focused attention.* This involves moving toward the child, making eye contact, and waiting expectantly to see whether the child will offer a more elaborated request. If not, the clinician asks a question. The question form varies, depending on the clinician's goal. "What?" may be used if the target is simply for the client to produce verbal requests. "Which one do you want?" could attempt to elicit sentences with adjectives. "Why do you want it?" might be used if the goal is sentences with "because" clauses. If this question produces the target response, the clinician provides a confirmation, which includes a model of the target form (Client: "Want red marker." Clinician: "Oh, you want the red marker. Here it is."). If the question fails to produce the target response, a prompt is provided. Prompts can be general requests for the target, such as "You need to tell me." Or they can be requests for partial imitations, such as, "Say, 'I need a marker because . . .'" They can also be requests for complete imitations, such as, "Say, 'I want a red marker.'" If the child responds appropriately to the prompt, a confirmation is provided and the communicative goal is achieved (the child gets the marker). If not, one more attempt to prompt is made. If this also fails, the child still gets what he or she wants. The clinician tries again to elicit more elaborated language on the child's next attempt at communication.

A similar method is the *mand-model* approach of Rogers-Warren and Warren (1980). There are two major differences between this and incidental teaching. The first is that the clinician does not need to wait for the child to initiate communication. The clinician carefully observes the child, and when the child seems to show some interest in some aspect of the environment, the clinician "mands" (requests) an utterance with a stimulus, such as "What's that?" or "Tell me what you need." The second difference is that the goals are stated very generally. Rather than specific form or meaning targets, the clinician is merely trying to elicit one-word utterances from some clients, two-word sentences from others, or complete grammatical sentences from more advanced clients. In this way the mand-model approach can be easily adapted to work with groups of clients, where each might have his or her own set of goals, and prompts are individualized to the goals of each client. If the child provides the target response, he or she is verbally reinforced *and* given the desired item ("Good talking! You asked for the marker, so here it is!"). If the child does not, prompts similar to those used in incidental teaching are used.

Warren et al. (2006) Fey et al. (2006), and Yoder and Warren (2001, 2002) discuss an additional variation: *prelinguistic milieu teaching* (PMT). This method is designed for children not yet using spoken language, at developmental levels of 9 to 18 months, although they may be of chronological ages up to 6 years. The goal of PMT is to develop the basic intentional communication skills necessary for early language development by increasing the frequency, maturity, and complexity of nonverbal communicative acts. Table 3-2 lists the five essential goals of this approach. We'll discuss PMT in more detail in Chapter 7.

Finally, Hancock and Kaiser (2006) discuss *Enhanced Milieu Teaching* (EMT). This method has been shown to be especially effective for children who meet the following criteria: (1) produce some verbal imitation (2) have at least 10 productive words, and (3) are in the early stages of language development, with MLUs from 1 to 3.5. The approach has been used with clinicians, parents, and teachers as agents of intervention, but most of the research on EMT has focused on parent-delivered therapy. It incorporates methods from both incidental teaching and the mand/model approach, using activities like those in Box 3-6.

A large literature base exists on the effectiveness of various examples of milieu teaching. Goldstein (2007); Hancock and Kaiser (2006); Mancil (2009); Mancil, Conroy, and Hayden, 2009; Peterson (2004); Prelock et al. (2011); and Warren et al. (2006) review studies that provide evidence for the usefulness of these approaches with preschool children with intellectual and language disorders, autism spectrum disorders, as well as children from high-risk and low-income families. Delprato (2001), as we saw, used meta-analysis to argue that these techniques lead to better generalization than strict CD approaches. Milieu teaching has been shown to increase children's frequency of talking both to the teacher and to each other (Hart & Risley, 1980; Warren, McQuarter, & Rogers-Warren, 1984) and to be helpful for addressing a broad range of expressive communication targets (Camarata & Nelson, 2006) and to have gains maintained over time (Mancil, 2009). These approaches are particularly useful in small-group or classroom settings in which clinicians want to retain some of the positive aspects of clinician-directed language intervention but to expand their effects to a broader communicative context. They allow the clinician to use imitation, prompting, and cueing during the course of naturalistic activities, thus showing the child how the language being trained works to accomplish real communicative ends.

Script Therapy

Olswang and Bain (1991) discussed script therapy as a way to reduce the cognitive load of language training by embedding it in the context of a familiar routine. Here the clinician develops some routines or scripts with the child in the intervention context. For example, a clinician may institute a routine of placing a nametag on a peg when the client enters the room or always passing out supplies for snacks in the same sequence. Alternatively, the clinician re-enacts scripts the child already knows. These already known scripts could include eating at a fast-food restaurant, for example. In the intervention activity the known script is disrupted in some way, challenging the child to communicate to call attention to or repair the disruption. Disruptions can be accomplished by violating the routine. For example, the teacher can begin to give out cookies before the napkins have been distributed. The clinician can withhold turns, passing over one child when she is distributing drawing supplies. The clinician can violate the normal uses of objects in routines. For example, she can wear the clients' nametags on her head one day, or she can hide objects needed to complete routines. If she locks the classroom each day as the class leaves for recess, she can hide the key and pretend to leave without locking up.

Verbal scripts or routines also can be used in this kind of activity. If the group always begins a session by singing a good-morning song, the clinician can start one day by singing, "Good-night." If the clinician has read the clients a book several times so that the

TABLE 3-2 Goals and Activities for Prelinguistic Milieu Teaching

Goal	Activities
Establish interactive routines to serve as contexts for communication	Imitate child's actions Imitate child's vocalizations Interrupt patterns of action with an adult turn; wait for child to take a turn; perform an action child finds silly, pause for child reaction, repeat When a child performs one part of a routine, perform the act needed to complete it.
Increase frequency of vocalizations	Recast the child's vocalization with a word if he or she is focused on a referent Imitate vocalizations in varying ways: Precisely as child produces them With different sounds and syllables within the child's repertoire With sounds and syllables outside the child's repertoire.
Increase frequency and spontaneity of coordinated gaze	Create a need for communication within a routine in which the child looks at an object, then: Give the child the object or action only if he or she looks at it Verbally prompt for gaze Move the object to your face to get the child to look at you Intersect the child's gaze by moving your face into the child's line of sight When the child looks, acknowledge the look with a pleased facial expression
Increase use of nonconventional and conventional gestures	Create a need for communication within a routine in which the child looks at an object, then: Give the child the object or action only if s/he uses a gesture, such as pointing Pretend not to understand if child fails to gesture; ask "What do you want?" If needed, give a more specific cue ("Show me which one") Give an explicit cue ("Show me!") Model an appropriate gesture Verbally acknowledge when the child complies by producing a gesture
Encourage combinations of gaze, vocalization, and gesture	If the child produces two of the three elements, wait expectantly for the third If the child does not supply it: Ask, "What do you want?" Intersect the child's gaze Model the gesture Model the word Provide feedback and praise

Adapted from Warren, S., Bredin-Oja, S., Fairchild, M., Finestack, L., Fey, M., & Brady, N. (2006). Responsivity education/prelinguistic milieu teaching. In R., McCarthy & M. Fey (Eds.) *Treatment of language disorders in children* (pp. 47-75). Baltimore: Paul H, Brokkes. In press.

BOX 3-6 Activities Used in Enhanced Milieu Teaching

- Choose materials of interest to child; arrange environment to support engagement and requesting.
- Use environmental arrangement to elicit child initiations.
- Mirror child actions to take a nonverbal turn; pause and wait expectantly following an adult remark to give child a chance to take a turn.
- Recognize and respond to what child communicates verbally or nonverbally.
- Expand child utterances to those at child's current ZPD.
- Use models following child requests to elaborate child form.
- Use request or questions that give child a limited choice for responses.
- Use time delay/expectant waiting to elicit child speech.

Adapted from Hancock, T.B., Kaiser, A.P. (2006). Enhanced milieu teaching. In R, McCauley and M. Fey (Eds.) *Treatment of language disorders in children.* Baltimore. Paul H. Brookes (pp. 203-236). In press.

Finger plays can be used in script therapy.

children know it by heart, she can misread various portions. If a finger play such as "Where is Thumbkin?" is part of the group's routine, the clinician can purposely hold up an incorrect finger for one part of the rhyme. If the class has been learning nursery rhymes, the clinician can substitute words that rhyme but are inaccurate ("Humpty Dumpty sat on a wall; Humpty Dumpty had a

great *doll*") or that don't rhyme ("Tom, Tom, the piper's son/Stole a pig and away he *walked*.").

Violations of verbal scripts also can be encouraged in clients, as a way to provide a scaffold from a known form to a slightly different or more complex variant. For example, a particular book, song, finger play, or poem can be included as part of every intervention session. The clients can be encouraged to "play with" this script once it has been overlearned. These violations can be pegged to specific intervention goals. For example, clients can be asked to change some words in the script to their opposites, if opposites are a target concept in the intervention. They can be asked to recast a present-tense text in past tense or vice versa. ("Let's read *The House that Jack Built* as if it is just happening now. I'll do the first page. 'This is the house that Jack *builds'* [or *'is building'*]. 'This is the malt that lies in the house that Jack builds.' Now you try the next page.")

Literature-Based Scripts and Interactive Book Reading   One variant of script therapy that has been subject to a good deal of research involves scripts based on picture and story books. This approach capitalizes on the familiarity and naturalness of interacting with young children around story book reading. Cole, Maddox, and Lim (2006) argue that book-sharing contexts are particularly effective because the book provides parents with greater opportunities for asking questions, making comments, and taking turns than do unsupported conversational settings. But they emphasize that simply reading to children is not enough, the reading must be accompanied by specific interactive techniques if it is to be effective as a language therapeutic tool. They review studies (e.g., Crain-Thoreson & Dale, 1999; Dale et al., 1996; Hargrave & Senechal, 2000) showing that children with language disorders associated with a variety of disabilities, as well as children with

Interactive storybook reading builds language and preliteracy skills.

limited English proficiency (Lim & Cole, 2002), benefit from interacting with adults who use specific picture book interaction methods. They also cite studies demonstrating that clinicians can teach parents, teachers, and librarians to use and disseminate these techniques (Crain-Thoreson & Dale, 1999; Dale et al., 1996; Huebner, 2000). The critical pieces of this method include the following:

Commenting: The adult notices what the child is interested in on the page, makes a comment, and waits for a child response (e.g., Child points to picture of dog; adult says, "Our dog looks like that one!")

Asking questions: The adult asks a question at the child's language level about what the child has shown an interest in on the page (e.g., Child looks at picture of dog and says, "Dog"; adult says, "What shall we call that dog?")

Responding by adding a little more: After the child talks, the adult expands, extends or recasts the child's remark, then waits for the child to take a turn. (e.g., Child says, "Go on bus"; adult says, "Yes, they're getting on the bus. They're ready for school.")

Giving time to respond: Adults consistently use expectant waiting before giving another remark, allowing the child an opportunity to take a turn

Using the Continuum of Naturalness

Are naturalistic activities always better than "unnatural" ones? Fey (1986) argued that highly naturalistic activities are best only if they improve the child's language. If two activities are equally effective in getting a child to produce a form or function he or she has not used before, then the naturalistic activity would be preferred, since it will presumably be more helpful to the child in moving the new form into everyday usage. But if the less naturalistic activity is more efficient in eliciting usage of the new form or function, the unnatural activity is the better choice.

Remember the argument the behaviorists use? They remind us that children with language impairments have been engaging in natural language activities since they were born and have not been able to take advantage of them the way normally speaking children have. Children with language impairments have particular difficulty abstracting conventional language structures from natural interactions. Some children with language impairments are excellent communicators. They get messages across with gestures and vocalizations very effectively and in a natural communicative environment can continue to do so indefinitely. Their communication will not necessarily change in an intervention program that merely provides more of the natural opportunities and consequences that they have been exposed to throughout their history.

So the point to be made about naturalness is that, all things being equal, a natural activity is better than an unnatural one, but only if all things are equal. If it can be shown that the child gives a greater number of correct responses in an unnatural activity, then the unnatural activity is better for eliciting the form, at least initially.

When thinking about naturalness in intervention, it is important to recall, too, that as Craig (1983) pointed out, communication can look natural to the child but does not have to be natural to the clinician. It is possible to design intervention contexts that appear to be natural but actually require a good deal of contrivance on the part of the clinician. For example, a clinician could set up a situation in which a child is supposed to build a block structure, a naturalistic activity. The clinician could give the child

all the materials, then ask for each piece he or she needed to build a duplicate of what the child was building. Each request could be framed in an exactly parallel way, "Can you pass me the [X] please, [client]?" Clearly, this is not a natural way to talk. In real conversation we would vary our request forms, make a request for several items at once, just take some things that were in reach, and so on. But this stilted, unnatural style provides a clear and consistent model of how the client is to phrase a polite request. Suppose the tables are then turned and for the next building project the clinician has all the materials. The child has been exposed to an intensive dose of the forms he or she needs to request the desired materials.

So, in dealing with the continuum of naturalness in intervention, we have several options. We can complement CD activities with more naturalistic hybrid or CC activities throughout the intervention program. Or we can engineer the environment, carefully designing settings and activities that appear natural from the child's point of view. A third option was also presented by Fey (1986). We can use highly structured, clinician-directed activities and modify their format to increase the extent to which they resemble real-life communication. Fey gave the following guidelines for increasing the naturalness of CD activities.

Make the Language Informative

For example, instead of having the client simply imitate the clinician's "is (verb)-ing" description of a picture ("The boy is jumping."), we can display two similar action pictures and describe one, asking the client to point to the one we're talking about. Then we can give the client the same two pictures and ask him or her to describe one so the clinician can point to the picture being talked about. If the client chooses to imitate the same description as the clinician ("The boy is jumping."), well and good; a drill-like response has been given, and the clinician can point to the matching picture. If the client chooses to describe the other picture and uses a correct "is (verb)-ing" form, well and good again. If the client describes either picture with an incorrect form, the clinician can feign confusion, present the correct form as a model, and ask the client to give him or her another chance ("I'm not sure I heard you right. Did you say, 'The girl is running?' This picture shows 'The girl is running.' Tell me again which picture you want me to point to, so I can be sure to get it right.").

Increase the Motivation to Communicate within the Task

This principle concentrates on getting the client to initiate communication within the CD format. One way to do this is to use a barrier or have the clinician and client sit back-to-back and talk to each other on toy telephones. In this format, the clinician can make a comment designed to pique the curiosity of the client to find out more about the clinician's topic, which is hidden from the client's view. In an activity designed to elicit questions, for example, the clinician can say, "WOW!" The client will presumably want to know what the excitement is about and initiate further communication by asking a question. Or, if the clinician wants to elicit negative statements, grossly false assertions can be made and the client can be allowed to correct the clinician by pointing out the error. The clinician might show the child a set of pictures and describe each one with an incorrect verb (for a picture of a boy jumping, the clinician might say, "He's sleeping. Uh-oh, I think I made a mistake. Can you straighten me out?").

Use Cohesive Texts

Many CD intervention activities have the child respond with a series of utterances that are syntactically related, in that they have the same form, but are semantically unrelated. In real conversation, though, there is usually a topic about which several related remarks are made. We don't usually say, "A boy is jumping. A girl is running. A dog is sitting." We usually establish a topic of conversation and then elaborate on it; for example, "A girl is running. She's going very fast. She's going over the finish line now. She wins the gold medal!"

Lee, Koenigsknecht, and Mulhern (1975) dealt with this problem in their *Interactive Language Development Teaching*. This CD program comprises a series of stories, each of which targets several syntactic forms. The clinician reads a story that is illustrated with simple flannelboard figures and contains examples of the target form. A question is then asked that is, essentially, a request for the client to imitate one of the statements heard in the narrative. The "exchange techniques" given in Box 3-7 are used to consequate the child's response so that the intended target is produced fully and accurately. Box 3-8 gives an example of an *Interactive Language Development Teaching* lesson.

Clinicians also can develop their own materials to serve the same purpose. For example, in eliciting use of auxiliary "can," the clinician could use a picture book about dressing. The clinician can show each page of the book to the child, while saying, "Here are some things my friend Sam can do. Sam can put on his shoes. Sam can put on his socks. Sam can put on his shirt," and so on. "Now let's talk about what you can do. Look at each page. Tell me what you can do to dress yourself. Here is a boy. He can put on his shoe. What about you?"

Move from Here and Now to There and Then

When first attempting to teach language use to developmentally young children, parents and clinicians both use language to talk about objects and events in the immediate environment. This helps the child to see how language is used to map, or refer to, things in the world. But eventually children begin to use language to convey new information about things that are not present in the here and now. This shift is important. It shows that the child realizes that language is primarily used, not to tell people things they can see with their own eyes, but to impart information that is not present in the immediate environment. This ability to use language to talk

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BOX 3-7   Interchange Techniques

(In response to client's utterance. "There one more.")
1. Complete model: a prompt to imitate ("There's one more")
2. Reduced model: a prompt to imitate that contains only a portion of the target response ("There's . . . .")
3. Expansion request: the clinician asks for an expansion but does not present a model ("Tell me some more. Say the whole thing.")
4. Repetition request: the clinician asks the client to repeat his or her utterance but does not present a mode. ("What did you say? Tell me again.")
5. Self-correction request: the clinician asks the child to monitor his or her response ("Did you say that right?")

Adapted from Lee, L., Koenigsknecht, R., and Mulhern, S. (1975) *Interactive language development teaching.* Evanston, IL: Northwestern university Press.

BOX 3-8 Sample Lesson from Interactive Language Development Teaching

Concepts: baiting a hook, camping, fishing, hurrying
Vocabulary: bait, campfire
Flannel-board materials: figures of Mommy, Daddy, Timmy, Bobby; cutout of tent, table, four fishing poles with strings and hooks, worms, pond, boat

ELICITED STRUCTURES

Primary Emphasis
Personal pronouns: he, she, his, her, him, we, us, our, them, their, they
Main verbs: *-s, -ed, am, are, can* + verb, *will* + verb, *do* + verb, *could* + verb, *should* + verb, *does* + verb, *did* + verb
Secondary verb: gerund
Negative: couldn't, uncontracted negative

Secondary Emphasis
Secondary verbs: later-developing infinitives
Interrogative: Reversal of modal and obligatory do

NARRATIVE	TARGET RESPONSE
This is Mommy. Who is this?	This is Mommy.
This is Daddy. Who is this?	This is Daddy.
Mommy and Daddy are on a camping trip.	
Mommy and Daddy are fixing breakfast on their camping trip.	
They are fixing breakfast	
They are hungry. What are they doing?	They are fixing breakfast.
Where are Bobby and Timmy?	
I do not see them. Where are they? Do you see them?	I do not see them.
Here are Timmy and Bobby!	
They were playing in the woods.	
They smelled the bacon so they came back.	
Why did they come back?	They came back because they smelled the bacon.
Timmy and Bobby say: We're hungry.	
Mommy and Daddy say: We' re hungry.	
Mommy says: Breakfast is not ready yet. We will have to wait because breakfast is not ready.	
What does Mommy say?	We will have to wait because breakfast is not ready.
Now breakfast is ready.	
Mommy says: Breakfast is ready. Come and eat. Come and eat, because breakfast is ready.	
What does Mommy say?	Come and eat because breakfast is ready.
Everyone is sitting around the campfire.	
Timmy says: I wish we could stay longer. This is fun. I wish we could stay longer.	
What does Timmy say?	I wish we could stay longer.
Bobby says: Couldn't we stay. Daddy? Couldn't we stay?	
What does Bobby say?	Couldn't we stay?
(Lesson continues to address other goals listed above.)	

about events removed in time and space is what frees the child from dependence on the immediate context. Eventually, this shift allows the child to use the kinds of decontextualized language that are important for literacy development and school success (Nelson, 2005; Wallach & Miller, 1988; Westby, 2005).

Spradlin and Siegel (1982) discussed the importance of teaching children to use language to accomplish things that cannot be accomplished in other ways. One basic function of language is to tell people about things they do not already know, about places they have never been, or about things they have never seen. So it seems important to give children with language impairments the opportunity to practice using language for this informative pur-

pose. One way to increase the naturalness of CD intervention is to contrive contexts for children to drill forms in such a way as to use them in reference to "there and then" rather than "here and now."

But for many children with language impairments, this is no easy task. Fey (1986) suggested that one way to scaffold this kind of activity is to talk about events outside the immediate context and to rely on familiar activities or "scripts" for doing so. For example, a child working on basic subject-verb-object (S-V-O) sentence structures might make popcorn with the clinician. Each step in the process can be labeled by the clinician and, using a CD format, repeated by the child. ("We get the popcorn. We fill the popper. We plug in the popper. . . .") After completing the activity, the clinician

can invite a parent, peer, aide, or puppet to join the client in eating the popcorn. The client can then be asked to retell the steps in making popcorn to the confederate ("You get popcorn. . . ."). This activity requires the client to talk about a nonpresent set of actions without using props, but provides the strong scaffold of recent personal experience.

Using these techniques to increase the naturalness of CD activities can be another means toward our end of helping the child not only to produce target forms, but also to use them to communicate. Whether we use a mix of approaches, engineer the environment to make intervention appear natural from the child's point of view, modify CD approaches to increase their naturalness, or do all of these, our overriding objective is to make the language we teach to children a meaningful tool for accomplishing social goals.

Intervention Activities

Once a general approach to intervention for a specific set of goals has been established and a mix of approaches for the entire intervention program has been set out, we need to plan the individual activities that will comprise the "meat" of the intervention. Although it is impossible in a textbook to outline all the activities that can be part of an intervention program, we can talk about some features of these activities so that the clinician will have a menu of choices for putting activities together. Let's see how we can structure specific activities to achieve changes in clients' language skills.

Structuring Intervention Activities to Maximize Learning

Bayles (2011) and Gillam and Loeb (2010) identified several essential ingredients that appear to be associated with enhanced learning in intervention settings. These principles are drawn both from evidence based on randomized controlled trials of a range of intervention procedures, as well as from literature on neuroplasticity, which highlights the conditions associated with the brain's reorganization by experience, which is the definition of *learning*. These elements were found to be present in the effective intervention methods tested, and were associated with changes in the brains of individuals who learned new skills. They are summarized in Box 3-9. We will discuss some of these ingredients in more detail in this section. As we plan intervention activities, though, it is useful to keep these principles in mind and attempt to incorporate as many as we can into each clinical encounter.

Modifying the Linguistic Signal

When we deliver language intervention, one of our most important tools is our own linguistic input to the client. Linguistic input is one of the major means of structuring what the child has to deal with in the intervention. Because it is such an important tool, we need to think very carefully about the input we present to the child, in terms of both its meaning and its formal properties. Linguistic input can be manipulated in many ways to make it a more effective, efficient vehicle for encouraging change in the client's language use. As language pathologists, our linguistic signal is our richest and most flexible device for accomplishing this change. That's why we have to use it wisely. Let's look at some of the ways we can modify our input.

Rate

Reducing the rate of speech is a fundamental means of modifying input. In speech to normally developing young children, adults produce fewer words per minute and take longer pauses between words and utterances than they do in speaking to adults (Sheng, McGregor, & Xu, 2005). Talking more slowly may help the child by reducing the number of units that need to be processed per unit time, by providing somewhat more stable auditory models, and by encouraging increased clarity of articulation on the clinician's part, thus supplying a higher-quality model for the child. Furthermore, in activities involving choral speech or song, the clients' speech-motor capacities may preclude their participation at normal speech rates. Slower delivery gives them more time to formulate and execute their speech-motor capacities. Montgomery (2005) and Weismer and Hesketh (1993) have shown that slowing the rate of speech improves both comprehension and production of new words by children with language impairments. Weismer (1996) showed that reducing speaking rates also aids in the acquisition of grammatical morphemes in children with language disorders. Cirrin & Gillam (2008) suggested slowed presentation rate can be helpful in vocabulary development for school-aged children.

Slowing down the rate of speech is often easier said than done, particularly when working with a group of children or with very active clients, whose behavior tends to influence our own sense of pacing. Consciously trying to speak slowly and distinctly, conveying a sense of calm control, is a good habit for a clinician to cultivate. When working in a script therapy format using songs, rhymes, or finger plays, slowed rate is especially important. If the goal of these activities is to allow the client to internalize a verbal script, it is vital that the script be easily accessible. Singing may be more fun when it is "up tempo," but it will do the client less good. In our own work in supervising student clinicians, we have often seen students leading a group of young children in a song, the students themselves merrily singing away at normal tempo while the clients sit silent, unable to keep up the pace. When the clinicians are encouraged to slow the song down, the clients often begin to join in. Again, a slower-than-natural rate of speech, song, and rhyme often helps the language-learning child.

Repetition

"If I've said it once, I've said it a hundred times." This should be the language clinician's motto. Research has shown that children with language disorders need many more exposures before acquiring language forms and concepts than typically developing children do (Camarata & Nelson, 2006; Proctor-Williams, Fey, & Loeb, 2001). In normal development, clear examples of the match between a particular linguistic form and its nonlinguistic referent are often few and far between. For children with normal development, these few widely spaced exemplars may be enough. But children with language disorders are, by definition, less efficient language learners. They may need many more experiences of this match concentrated in relatively short periods of time to assimilate them. Intervention that exposes clients to multiple examples of target forms and their nonlinguistic mapping may be a key to their learning.

This implies that intervention can sometimes entail providing clients with what they would normally get from natural interactions, but simply increasing the frequency of both these focused interactions and the particular forms used within them. It could be taken to suggest a rationale for ILS and other naturalistic forms of intervention. It also could be seen as a rationale for drill forms of intervention or for focused stimulation, which also supply numerous examples in concentrated formats. The point is that there are a variety of ways, both naturalistic and contrived, to provide a client with intensive experience with form-meaning matches. What matters is providing the repetition.

One additional way to supply the child with useful, repetitive information about how language works is to provide contrasting

BOX 3-9   Essential Ingredients of Successful Therapy*

PRINCIPLE	DESCRIPTION	EXAMPLE STRATEGY
Intensity	Daily, 1–1.5 hour sessions for 5–8 weeks	Use intensive cycle scheduling (see Ch. 12) to provide intervention to a smaller number of students on a more intensive schedule for a limited number of weeks; use summer programs to provide intensive intervention opportunities.
Active engagement	Sustaining a client's active involvement in intervention tasks by monitoring and guiding attention through pre-paratory, selective, and maintenance cueing, and choosing activities that are appealing enough to sustain cli-ent engagement.	Provide a pre-attentive stimulus ("Look at this!"), and promote selective attention and maintenance of attention by carefully monitoring child focus, pointing out what the child should look at/listen to, guiding attention back to the relevant stimuli when it strays, and providing engaging social interaction to accompany the learning activities.
Feedback	Information about the accuracy of client response.	Give a mildly unpleasant response for incorrect answers, such as a "clunk" noise made by a computer or instrument; give informa-tion when response is correct as to *why* it is correct ("That's right; you remembered to say 'is' in your sentence!")
Reinforcement	Delivering a reward following a correct response that increases the rate or likelihood of the appearance of the target behavior.	Reinforcements must be carefully selected that are powerful for the individual client. For some, social praise may be adequate, but many will require more extrinsic rewards, such as stickers, prizes, edibles, or opportunities to engage in preferred activities. Intrin-sic reinforcement, or the achievement of the client's communica-tive goal (saying "want teddy" and getting the teddy), can also be powerful.
Repetition	Providing many opportunities for clients to use or process a new target.	Drill play activities, contrastive drills, repeated exposure to scripts.
Use distributed practice	Provide short, intense periods of practice for new forms; intersperse with practice on other forms or instruction in new targets.	Structure sessions to include 5–10 minutes of drill/drill-play on new or recently learned targets, then move to introducing initial instruction on another target, rehearse a script, or provide indirect language stimulation, then provide another short bout of intensive practice.
Specificity	Children learn what they are *taught;* to teach a skill, provide instruction, and practice on that specific skill, not on skills thought to be pre-requisite or related to it.	To teach language comprehension, provide experiences in which words and sentences are presented along with clear examples of their referents and provide practice in observing and interacting with the specific words, sentences, and referents targeted. Avoid using "auditory processing skills," such as discriminating non-speech sounds or locating environmental sounds, to teach comprehension.
Control complexity	Teach in the zone of proximal development; provide activities the client can do with the clinician's support but cannot do without it.	Provide language a few morphemes longer than the client's average utterance length; adhere to the principle of only one new thing at a time: have client produce a new form in a familiar function or a new function using a familiar form.
Minimize error responses	Provide adequate cueing and scaffolding so child responses are correct almost all the time.	Rehearsing errors can strengthen them as a response. Always provide corrective feedback when a client makes an error; encourage them to repeat the correction.
Work within schemas	Embed practice of new forms and functions within familiar sequences of actions.	Practice new language forms in well-known contexts; e.g., practice asking yes-no questions in a game of "Go Fish," practice using polite requests by "shopping" at several pretend "stores."

forms from which the child can induce linguistic rules. This ap-proach is sometimes called "inductive teaching" (Connell, 1989) or "contrastive drill" (Fey, Long, & Finestack, 2003) and is frequently used in both phonological and language intervention. This approach provides the client with a large number of examples of the operation of a linguistic rule, presented in a concentrated manner. If the goal were use of plural forms, the client might be shown a set of picture pairs. Each pair would contain one card with a picture of a single item and one card with a picture of more than one (not always the same number) of the same item. The clinician would then go through the sets, naming each picture with an appropriate singular or plural label for the client ("cat/cats," "dog/dogs," "bike/bikes," "car/cars," and so on). The clinician might then, after the multiple exemplars, explain the rule in simple terms for the child ("When we see more than one, we put an /s/ sound at the end."). The client could then be asked, with help from the

clinician, to label the same sets of pictures. When success on this task is achieved, a new set of pictures that the child has not heard labeled could be tried.

Although adults see repetition as redundant and boring, it may not be so for the child, as you know if you have ever heard a child ask to watch a video he or she has already seen a dozen times. It is not necessary, as it is in adult conversation, to come up with a new and different way to say the same thing each time. In intervention the opposite may be true. We should strive to say the same thing the same way in the same context over and over and over. In this way we can maximize clients' opportunity to add it to their repertoire.

Increasing Perceptual Saliency through Prosody and Word Order

In speech to normally developing young children, adults typically stress more than one word per utterance and use exaggerated intonation contours. This style of speech does not sound natural in other contexts, but it may help the very young listener direct attention to the auditory signal and highlight the segments containing the most salient information. These prosodic changes are available for talk in intervention, too. Weismer and Hesketh (1993) showed that children with language impairments produced new words that had received emphatic stress during an intervention program more often than they produced words that had been trained with neutral stress. Weismer (1998) showed that this effect was specific to the production modality. These findings suggest that intonational highlighting helps get children to produce new structures. Sheng et al. (2005) called this complex of changes clinicians make in their speech to highlight language forms for clients a *therapeutic register*. Their research suggests that this register takes time and experience to acquire, so beginning clinicians will need to consciously practice and cultivate it.

Fey (1986) and Weismer and Robertson (2006) discussed a second means of increasing the perceptual saliency of language forms: by varying word order. Some forms that are particularly difficult for children with language-learning problems, such as auxiliary verbs and forms of the verb "to be," are usually found in the middle of sentences where they receive very little stress or intonational highlighting. One way to make these forms more perceptually salient is to present them in sentence variants that naturally place stress on them, such as questions that put them in the initial sentence position ("*Will* he ride the bike?" "*Is* he here?") or elliptical responses to questions that put them in final position ("Who will ride the bike? He *will*." "Where is Thumbkin? Here he *is*."). Using these forms as initial instructional contexts for auxiliaries and copulas avoids unnatural stress conditions in declarative sentences. When usage reaches criterion in these more perceptually salient contexts, efforts could be made to generalize the forms to their less marked variants in declarative sentences.

Controlling Complexity

When talking to very young children, adults generally produce sentences about two morphemes longer than the child's MLU (Paul & Elwood, 1991). The sentences parents produce when talking to normal language learners are shorter than those they use when talking to adults (Sheng et al., 2005). They also are semantically simple in that they generally use a limited vocabulary to refer to concrete objects and perceptions in the child's immediate environment (Chapman, 1981). But they are not simplified syntactically. Parents produce many questions when talking to young children, rather than more straightforward declaratives. And their sentences are fully grammatical and well formed—in fact, more so than sentences spoken to adults, which often contain garbles and false starts (Owens, 2005). So it would seem that normally developing children learn language from a semantically restricted but syntactically well-formed database.

What does this imply for the complexity of language used in intervention? Our answer would be that we should adhere to the same principles. Our sentences should be slightly longer than those the child is using, they should refer to concepts that are semantically accessible to the child, and they should be well formed. Some clinicians "simplify" their input by leaving out function words and grammatical details, producing instructions such as "Get ball." They believe that these utterances are easier for children to process, so they model exactly the kinds of sentences the children are likely to produce.

Our belief, shared by Chapman (1981); Fey, Long, and Finestack (2003); and Hubbell (1981), is that the sentences children hear should, like those heard by normally developing children, be slightly longer and more advanced than those the child currently can produce and include only grammatically correct forms. For children whose comprehension skills are ahead of their current levels of production, the inclusion of grammatical markers in the linguistic input, even if the child cannot reproduce them in his or her own speech, helps to build an accurate auditory image of what well-formed sentences are supposed to sound like. Incorporating grammatical markers in the utterance gives it a rhythmic frame that may eventually help the child fill in the slots created by the rhythm. It also gives children additional exposure to these forms and, as we've seen, children with language impairments need higher levels of exposure before forms are learned. Furthermore, there is no evidence that simplifying sentences to telegraphic forms helps children to understand them (Fey, Long, & Finestack, 2003), although there isn't very strong evidence that about the use of well-formed sentences, either (van Kleeck et al., 2010). Still, Hassink & Leonard (2010) review evidence suggesting that children exposed to more complex input show greater comprehension of complex sentences than children whose input contains fewer complex examples. Semantically constrained, well-formed, grammatically correct input just slightly more complex than the child's own does not hinder, but may help, language development.

Obligating Pragmatically Appropriate Responses

When using linguistic stimuli to elicit talk from a client, we should try to elicit language that is not only semantically and syntactically correct, but pragmatically appropriate. This suggests that if we want a client to produce a whole sentence as a response, our linguistic stimulus should obligate that form and not provide a context for an elliptical sentence. For example, if we want a client to produce, "He is running," we should not use the linguistic stimulus, "What is the boy doing?" The pragmatically appropriate response to this question is, "running." To have the client give this response, and then to tell him or her, "No, say the whole thing," in effect teaches a pragmatic error. If we want "He is running," as the response, we had better choose a stimulus that properly evokes this form. For example, we might say, "Let's look at these pictures. Here, the girl is running. Here the dog is running. Now you tell me about the boy."

There are times when the elliptical response may be the one we want. For example, we may decide to elicit elliptical responses to questions containing inverted auxiliaries to highlight these forms perceptually. In this case a question such as *"Will he run?"* will elicit the ellipted auxiliary form, "He will," if we make it a rule of the game that the child cannot say "yes" or "no" but

must use some other words as an answer. This format supplies linguistic input that elicits the target form in a pragmatically appropriate context.

Careful selection of linguistic stimuli is one of the most important aspects of our clinical work. It is one thing that allows a trained clinician to provide a more efficient and effective form of linguistic input to a client than an untrained conversationalist. We have an obligation to show the child not only how to produce a syntactically correct sentence but also how to choose which of many possible forms of the sentence is pragmatically appropriate in a given linguistic context. That is, part of our job is not only to teach the child what to say but also when to say it. To tell a client to "say the whole thing" when we have given a stimulus that normally elicits less than the whole sentence violates this obligation. We fulfill our mission to teach language as real communication when we create the linguistic context that obligates a target sentence form in a pragmatically appropriate way.

Determining Dosage

Intensity is one of our principal ingredients in effective intervention, but *how* intense does intense need to be? Ukrainetz (2007) reviewed data and concluded the 10 to 20 hours of phonemic awareness instruction is enough to allow children with DLD to achieve phonemic awareness skills sufficient for beginning reading and spelling. But beyond that, very little empirical evidence exists to guide us in determining optimal intensity for the wide range of communication skills that SLPs address (Warren, Fey, & Yoder, 2007). Proctor-Williams (2007) reviewed evidence on dosage in intervention, and found scant support for identifying any ideal, generalized total intervention duration, but did conclude that distributed practice within sessions and throughout the treatment program appears to be more effective than massed practice (the "drill and kill" approach, involving long periods of repetitive practice). Thus, although the systematic evidence is not yet available, it is likely that daily, intensive sessions involving distributed practice for a few weeks or months will be more effective than the current standard schedules of two to three 30 to 45 minute sessions per week for an academic year. Ways to accomplish these more intensive schedules will be discussed in more detail in Chapter 12.

Determining the Intervention Modality

Besides deciding how to manage the input to the child in the intervention program, we must decide how we will require the child to respond. This decision involves choosing the modality of the child's communication, and again we have a range of choices available. Let's explore what some of these choices are.

Comprehension versus Production

One fundamental decision we make in intervention is whether we work toward the child's ability to show that a target was understood or whether we require that the child use the target in his or her own speech. In normal development, children sometimes use forms, such as correct word order, before they show the ability to comprehend the same forms (Chapman & Miller, 1975; Paul, 2000c). So it is not necessarily true that comprehension precedes production. It follows that it is not always necessary to train comprehension before having a child produce a target form.

For forms and functions that assessment indicates are comprehended but not produced, production training is clearly indicated. Fey (1986) argued that such targets should be high priorities for production training, since they are clearly within the child's ZPD and the child is "ready" to learn to use them. But what about structures and meanings that assessment indicates are neither

comprehended nor produced? Should they be targeted for production training, for comprehension, or not at all? Behaviorists (e.g., Guess, Rutherford, & Twichell, 1969; Lovaas, Berberich, Perloff, & Schaeffer, 1966; Sundberg & Michael, 2001) have stressed production, in imitation, as a first step in language learning. They believe that to be learned, behavior must be reinforced, and to be reinforced, it must be produced.

Lahey (1988), on the other hand, emphasized the fact that equivalent comprehension and production responses are often not present in normal language learners. She argued that a child should be exposed through multiple meaningful exemplars in the input language to forms that the child does not have in the comprehension repertoire. But she concluded from her review of research on comprehension versus production training that comprehension responses, such as pointing to contrastive stimuli, do *not* need to be trained before production of the forms is targeted. Guided production activities appear to facilitate both comprehension and production of new forms in children. What's more, Fey et al. (2010) found no compelling evidence that interventions that include listening only, auditory discrimination, or listening to acoustically modified input make any significant contributions to auditory, language, and academic outcomes in children with DLD.

In light of this discussion, we would suggest that for forms the child comprehends, production training should be a high priority. For forms and functions that the child does not yet appear to comprehend, but that are chosen as intervention targets on the basis of other considerations we've discussed, an input component should be part of the intervention plan. This might include focused stimulation activities or CC activities that provide multiple opportunities for the clinician to demonstrate use of the structure in context. These approaches should be presented along with activities that elicit production of the target. It is not necessary to wait until the child demonstrates comprehension in pointing activities before trying to elicit the use of target forms.

Augmentative and Alternative Modalities

Speech is the most universal form of human communication. A child who can speak will have the most direct access to the greatest number of communication partners. For some children, though, speech is simply not a realistic option. These children have severe deficits in hearing or oral-motor structure or function that prevent them from using vocal communication. It might seem, on the surface, that these children should be easy to identify. But this is not always the case. Remember when we talked about etiological models of language disorders? We said that the etiology doesn't always explain the language level that a child attains. For example, you might have two children with the same level of hearing, one with very intelligible speech and one with almost none. One may need to use signs as a form of communication, whereas the other does quite well with spoken language. Moreover, some children do not have any obvious barriers in sensory or motor domains, but simply do not begin speaking; children with moderate to severe levels of intellectual disability sometimes present this picture, as do some children with autism spectrum disorders. For clients who present these profiles, Beukelman and Mirenda (2005) advocate a "communication needs" model for delivery of augmentative and alternative communication (AAC) services. In this model, children who need a means to communicate because of a lack of speech are provided with some communication system, regardless of whether they have identifiable barriers to vocal expression. Binger and Light (2006) suggest approximately 12% of young children receiving special educational services make use of AAC.

Once the decision to adopt an alternative form of communication is made, a variety of communication systems are available to us. The process of choosing an AAC system has two components: *choice of the symbols* to be used and *choice of the interface* between communicator and the system, or how the child will access the symbols.

Symbols can be either aided or unaided. Unaided symbols include gestures, vocalizations, and body language. Aided symbols include productions that require some tool outside the client's own body. Examples of aided systems include objects, pictures, graphic symbols (such as Blissymbols [Figure 3-5]), and alphabet letters. Both types of symbols can differ in their level of *iconicity,* or the degree to which the symbol visually resembles its referent (Millikin, 1997; Romski, Sevcik, Cheslock, & Barton, 2006). In general, it is thought that iconic systems are easier to learn and easier for communication partners who have not been taught the system to understand (Hetzroni, Quist, & Lloyd, 2002). However, Romski and Sevcik (1996) and Romski, Sevcik, Cheslock, and Barton (2006) discuss their System for Augmenting Language (SAL), an approach developed for use with school-aged clients with severe cognitive disabilities who had fewer than 10 spoken words, some intentional communication, and a history of many years of unsuccessful communication experiences. SAL differs from other AAC systems in that it uses abstract visual symbols, rather than pictures, to stand for words, and it employs a speech-generating device that "speaks" the word for each symbol selected by the client. Their research has shown that this computer-based form of alternative communication that employs visual symbols and voice output can increase not only communication but vocal production and intelligibility, as well, in older clients without spoken language. Still, children just introduced to an AAC system are commonly given a highly iconic one to start with. The disadvantage of iconic systems, though, is that they are somewhat limited in generativity, or the degree to which they can support the user in producing a full range of novel, original communicative messages.
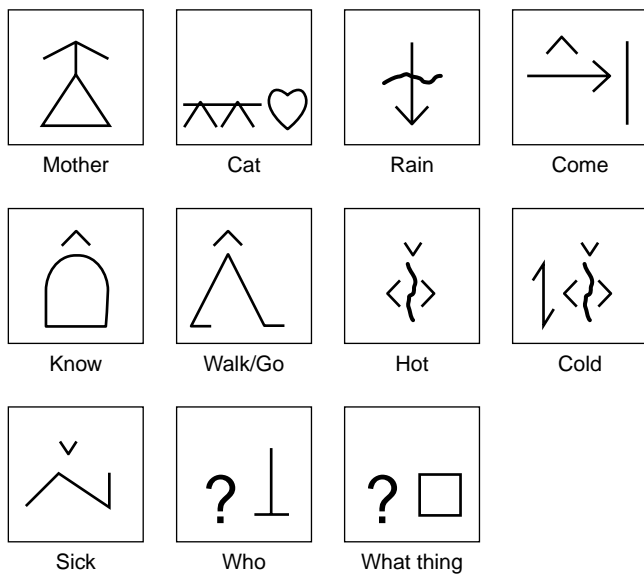
For this reason, we want, whenever we can, to move clients toward less iconicity in their AAC systems as their development and skill with the system proceed, with a written system as the ultimate goal. Daniel (2004) discussed additional considerations in moving students along a continuum of AAC devices. Figure 3-6 presents an outline of the varying levels of iconicity seen in several aided and unaided AAC symbol systems.

The second issue in choosing an AAC system concerns *interface.* Communication boards containing words, letters, pictures, or symbols are sometimes used. Clients can indicate what they want to point out with a finger, head stick, headlight, or other device. Portable computers that either type out or produce synthesized speech versions of client messages also are available. These can be activated in a variety of ways: with a finger; stick; headlight; or a switch operated by sucking and puffing, head tap, eye movements, or whatever motor abilities the client can muster. These devices allow the client to select the letter, word, symbol, or picture he or she wants from an array presented on the computer screen, either by direct selection or by scanning through a series from which the client chooses when a cursor gets to the desired item. Recently, programs such as Proloquo2go provide speech generation from pictures and symbols on consumer electronic devices such as smart phones and note pad computers. These platforms can be powerful in reducing stigma and making communication with the device user more appealing, especially for peers. (See Binger & Kent-Walsh, 2009; Glennen and DeCoste, 1997; and Mirenda & Beukelman, 2006 for a more complete discussion.)

Augmentative communication use often begins with single message switch devices.

FIGURE 3-5 Blissymbols. (Reprinted with permission from Millikin, C. [1997]. Symbol systems and vocabulary selection strategies. In S. Glennen and D. DeCoste [Eds.], *Handbook of AAC* [p. 120]. San Diego, CA: Singular.)
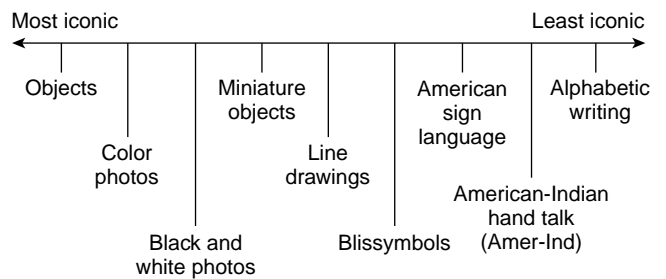
FIGURE 3-6 Symbol iconicity: Hierarchy of AAC symbols. (Adapted from Millikin, C. [1997]. Symbol systems and vocabulary selection strategies. In S. Glennen and D. DeCoste [Eds.], *Handbook of AAC* [p. 120]. San Diego, CA: Singular.)

The choice of a particular augmentative or alternative system is always a matter of experimentation to see what works best for a particular individual. The clinician working with a client who needs an augmentative or alternative system should give the client the opportunity to try the full range of devices that his or her abilities allow. Choice of a system should depend on the ease, accuracy, and efficiency with which the client can use the system, and these won't be obvious until the client gives several systems an extended try. Electronic systems with speech generation devices are available and often very useful, especially since it is known that voice output capacity not only increases vocalization and intelligibility, as Romski and Sevcik (1996) and Romski et al. (2006) showed, but also improves phonological awareness skills, which may help in the development of literacy (Foley, 1993; Millar, Light, & McNaughton, 2004). And systems that can use consumer electronic devices like smart phones, rather than dedicated devices, may be less stigmatizing and more inviting to peers. However, some clients may need to start with a simpler system.

Another important consideration in choosing an AAC system should be the client's communication partners. Parents, siblings, teachers, and whoever else interacts regularly with the child should be involved in this decision from the beginning and should also be part of the process of training for using the system. Remember that communication is a two-way street. The client won't be able to use the system effectively if the people in the environment are not able to comprehend the messages (if, for example, the child is signing to people who don't know Sign), or are uncomfortable with the particular system, or don't know how to enable the client to use it (Calculator, 1997b). Kent-Walsh and McNaughton (2005) discussed the importance of including training for communication partners (family, teachers, aides, peers) when implementing an AAC system for a client. They identified four interactive skills that research has supported as leading to increases in conversation participation, turn-taking skills, and the range of communicative functions expressed by the AAC user. These functions are listed in Box 3-10. They emphasized the importance of systematically describing, demonstrating, practicing, and providing feedback to partners in a structured, direct instructional program in order to

achieve positive changes in the partners' interactive use of the AAC system. When implementing an AAC system for a client, it will be important to include a carefully designed program for helping communication partners participate in the client's new communication modality.

Consequating Client Language

Once we have succeeded in getting the client to produce some communication, whether in the form of speech, Sign, or some other modality, our responsibility as clinicians—rather than ordinary interlocutors—is to provide the client with a consequence for the production. One type of consequence is what behaviorists call *reinforcement*. The intent of reinforcement is to increase the frequency of the behavior being reinforced. Reinforcement can be tangible, such as a raisin or a sticker given for correct imitation of a sentence, or it can be a token, such as plastic chips or hash marks on paper, that are accumulated to "buy" an object or activity the client likes. Reinforcement also can be social. Social reinforcement takes the form of praise or approbation (such as the dreaded "Good talking!"). These kinds of reinforcement that are outside of the interactive frame and do not contribute to the interaction itself are called *extrinsic reinforcements*.

Reinforcement also can be more *intrinsic* to the communication process. It can be a naturalistic social reward, such as the achievement of the intended goal of a child's request (the child says, "Want crayon" and is given one) or the control of the clinician's attention or actions through the client's language (the child says, "See!" and the clinician looks at what the child points out). All these consequences are reinforcement, though some are clearly more natural reinforcers than others. A behaviorist would accept any of these forms of reinforcement as a valid way to increase the frequency of the desired behaviors. A pragmatically oriented clinician, on the other hand, would only accept natural communicative consequences as an acceptable form of reinforcement.

A second kind of consequence we can provide is somewhat different from reinforcement. This kind of consequence is *feedback*. Unlike reinforcement, feedback is not intended to increase the frequency of the client's behavior. Instead, its intent is to give the client information about the communicative value or linguistic accuracy of an utterance. In addition, it often provides the child

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BOX 3-10 Interactive Functions of Communication Partners that Increase Communication Opportunities for Clients Using AAC Systems

- Use extended pause time and expectant waiting to increase opportunity for client to take a conversational turn.
- Respond to all user attempts to communicate, whether with the device, or by means of vocalization, gesture, or gaze; treat behaviors with the AAC device as if they were communicative and respond even when user's intent is not entirely clear.
- Use open-ended questions to encourage more elaborated response from user.
- Model using the AAC system to communicate; accompany speech with indicating symbols on the user's device to show that the device is a means anyone can use for communication.

Adapted from Kent-Walsh, J., & McNaughton, D. (2005). Communication partner instruction in AAC: Present practice and future directions. *Augmentative and Alternative Communication*, 21, 195-204.

Social reinforcement can be used to consequate client language.

with a scaffold to a more acceptable production. We talked about many forms of feedback under the CC approaches. CC approaches generally consequate client language behavior with feedback rather than reinforcement, except when they use natural communicative consequences as reinforcement, as we saw earlier.

It is possible to use feedback in CD approaches also, though. Lee, Koenigsknecht, and Mulhern (1975), for example, provided a set of "interchange techniques" in their CD program, *Interactive Language Development Teaching.* A clinician can use these, too, as feedback to consequate an incorrect production. Some of these feedback techniques are given in Box 3-7.

Gillam and Loeb (2010) identify both feedback and reinforcement as two of the essential ingredients in successful intervention outlined in Box 3-9. They argue for providing *both* information about the accuracy of the response, as well as rewards, not only for correct responses but also for attending to tasks and maintaining desired behavior during intervention sessions.

Generalizing Language Gains

The goal of language intervention is not only to get the client to produce appropriate forms in response to our stimuli but also to get the child to use these forms in real interactions. Moving from use of communication in structured, formal situations to using the same forms and functions in real life is the process we call *generalization.* Traditionally, generalization is thought of as the last step in the intervention process, something we work toward after all other objectives have been met. But really, generalization ought to be incorporated into every intervention session, though not every activity, just as we advocated using more naturalistic activities for every goal, but not for every activity.

Although our hope is that generalization will just happen as a result of our intervention, we know that this is often not the case. As we saw when we talked about CD approaches to intervention, years of research have shown that children do not always generalize the forms learned in this manner to spontaneous conversations, even when high levels of accuracy are achieved in the structured setting. An argument that is commonly used for more naturalistic clinical approaches is that they are more likely to lead to generalization, since they are more similar to the other settings in which the targets will be used. But even when we use naturalistic approaches we cannot assume that the client will spontaneously generalize the language behaviors we train to people, places, and purposes outside the clinic.

So what do we do? If even a careful mix of structured CD and less formal hybrid and CC approaches does not guarantee that the client will spontaneously transfer learning, how can we achieve generalization? Costello (1983) and Smith (2001) argued that this could only be done by carefully planning generalization training within the context of the intervention program. Their guidelines for achieving this transfer of training will be summarized here.

First, Costello suggested that we use *many exemplars* of target forms and functions. This means that we should not stop training when the client is responding with high degrees of accuracy to a limited set of exemplars, such as a set of pictures. Nothing is wrong with using a limited set of stimuli in a repetitive CD format to elicit new forms from clients who use them very infrequently. Once this has been done, though, we cannot assume that the client will generalize the form's use. We need to work toward that generalization by providing many different examples of how the form can be used, when it can be used, and who can use it in real conversations. And one or two real situations may not be enough. We may need to provide quite a few. If we are teaching a client to use "is (verb) -ing" to describe ongoing action, it may not be enough to have the

child use it to tell about making pudding. The child may have to tell about making a collage, a pizza, and a birthday card, too.

Another aspect of the multiple exemplars idea is the notion of *sequential modification.* Sequential modification happens when the intervention environment is extended from one place to another until spontaneous generalization to new environments occurs. For us it means that in addition to providing multiple exemplars of target forms, we should do so in multiple settings. These could include the client's home, the classroom, outdoors, or in the cafeteria. How many different settings? Costello suggested that two or three are enough. This does not have to be an overly arduous or expensive process. One or two sessions in one or two alternate environments every few months of intervention may be adequate. For school-aged and adolescent clients this may suggest the "pull-out/sit in" model of service delivery, in which some sessions take place in the clinician's office and some in the child's classroom. For preschoolers, it may mean that now and then the clinician travels to the child's home, day-care center, or preschool. This form of generalization training involves doing what the clinician normally does with the client in a different place.

Costello also suggested that we *make the treatment material similar to things used in the natural environment*. This may mean, for example, using classroom textbooks rather than specially designed materials in intervention for school-age children or using the storybooks read in the preschool class instead of commercial "speech therapy" materials.

Intermittent or delayed reinforcement is another important generalization tool. Costello warned that these schedules would probably not be effective in the early stages of training, when more consistent reinforcement is necessary to stabilize target productions. Once stabilization is achieved, though, extrinsic reinforcement should, as discussed earlier, be less and less frequent, and the use of natural contingencies should be increased. In this way the contingencies of training become more similar to those found in the natural environment.

Another one of Costello's ideas for promoting generalization involves introducing *distracter items* into the intervention stimuli. The theory is that we should use some stimuli that are semantically relevant but not direct targets of intervention because this more closely resembles what happens in natural conversation. In other words, occasionally within a training sequence used to elicit particular language targets, the clinician should inject a relevant comment that will elicit a nontargeted response from the child.

These suggestions are important because children's language use cannot be maintained in the natural environment if they cannot withstand the inconsistent, delayed, and indirect reinforcement contingencies that the natural environment provides. An additional way to guard against this danger is to attempt to increase the frequency of the child's communication by targeting high rates of response within the initial phases of training and to provide multiple opportunities for the child to produce the same responses in hybrid and CC settings. Focused stimulation and script activities may be particularly useful in this regard. Increasing rates of production also may help the child to automatize production processes, freeing resources to be devoted to more complex levels of language formulation. In other words, practice makes perfect. Providing extended practice with new forms and functions may increase generalization and provide a scaffold to higher levels of language complexity.

Another strategy that may be useful in helping children to transfer learning is the use of *self-monitoring.* This requires

encouraging the child to become the internal "teacher" who constantly judges performance. If we can get clients into the habit of evaluating their own communicative effectiveness in the clinic setting, they are more likely to do so in other situations. Self-monitoring is particularly effective for clients at advanced language levels who have higher degrees of meta-linguistic and metacognitive ability than preschoolers. A client learning a particular communicative function, such as using questions to elicit information, can engage in a conversation with the clinician that is recorded via audiotape. The client can listen to the tape. The clinician can stop it after each client remark and ask, "Was that a good way to find out?" Roles can be switched and the client can make the same requests for self-monitoring to the clinician. During a third round of listening, clients can be prompted to ask the same question for each of their own utterances.

Even young children can do simple self-monitoring. They can begin by monitoring the clinician. Almost all children enjoy the opportunity to correct an adult's "mistakes." They can then be asked to make intentional mistakes themselves and let the clinician "guess" if they produced the target right or not, earning a point each time the clinician "discovers" an "error." They also can be given self-monitoring prompts, like those suggested by Lee, Koenigsknecht, and Mulhern (1975), "Did you say that right?"

Another way we can increase children's tendency to generalize language training is by encouraging them to take advantage of models in the environment. We can do this, first, by making imitation or use of a model in the intervention setting very rewarding. We accomplish this by praising and reinforcing clients for their efforts to imitate as well as for their production of specific forms. Second, we can provide the client with some very salient and appealing models. Hart (1981) suggested using peer models. Putting the client in a structured communication situation with a peer with the clinician available as a "troubleshooter" may be a helpful way to attain this end and effect generalization. Research on social skills training in autism spectrum disorders, for example, provides strong evidence of the efficacy of peer-mediated approaches (Ferraioli & Harris, 2011).

We've discussed a wide variety of techniques for encouraging clients to generalize the results of our intervention to real communication. The most important point to take away from this discussion is that generalization needs to be built consciously into our intervention programs. Using CD approaches will not ensure it. Using naturalistic approaches cannot guarantee it, either. The only way to be sure that our teaching generalizes to real conversation is to make a concerted effort to see that it does and then to evaluate the use of targets in natural settings, as we discussed in the assessment section. Hoping for generalization, or assuming it will happen, will not make it so.

The Context of Intervention

The context of intervention, according to McLean (1989), involves the physical and social settings in which the intervention takes place. Let's look at some of the ways we can manipulate the context of intervention to achieve our objectives for the client.

Choosing the Nonlinguistic Stimuli

We've talked already about the importance of controlling the linguistic stimuli in intervention. In addition, though, we need to choose the nonlinguistic context of objects and events in which the intervention takes place. Let's examine some of the choices we have available.

Types of Stimuli

Clinicians often use text, pictures, toys, and real objects as nonlinguistic stimuli in intervention. Pictures are popular choices because they are convenient and easy to obtain. For young children, though, pictures may not be a best first choice. They may contain too few central aspects of the referent. For example, an important thing to know about the meaning of the word "ball" is that balls roll. A picture of a ball may not convey this notion. Leonard (1975b) showed that children acquired certain syntactic forms more readily when given demonstrations of event referents for the sentences than when shown pictures. This is not to say that we should never use pictures, only that we should not use pictures exclusively. Furthermore, the younger the client, the more advantageous the use of objects and real events is going to be. Lahey (1988) pointed out that young children also seem to be more interested in moving objects than static ones and are most likely to talk about objects they act on themselves. For example, a toy with a button that a client pushes may be more interesting than one with a key that the clinician must operate for him. This suggests that successful intervention for young children includes allowing them to manipulate real objects and providing objects that do something interesting when they are manipulated, such as make a noise, move, fit onto something, light up, or play music. This approach will also increase the ingredient of active engagement, that we saw was one of the basic principles of successful intervention in Box 3-9.

For older clients, though, pictures, particularly in the form of photographs, can be very engaging. Tarulli (1998) discussed a variety of uses of photography in intervention for school-aged children, most of which focus on linking the client's personal experiences, as recorded in the photos, with language use. Examples include using photographs from class events as a basis for labeling, describing, and writing about the events or to compare and contrast experiences in which the child participated, such as a field trip to an aquarium, with those described in a nonfiction text, such as a book on marine life. The advent of digital photography on smartphones and other accessible devices makes collecting and printing pictures to use in intervention available to most clinicians and families.

What about pictures on a computer screen? Many software programs designed to provide computer-assisted language intervention use amusing pictures or moving images as either stimuli or reinforcement for child language behavior. These are often very entertaining for children. Many have lots of experience with computer or hand-held games from a very early age. Steiner and Larson (1991) pointed out that using a computer often can be very exciting for children because it allows them to "command the machine." The danger in this is that the human-machine interaction may overshadow the interpersonal communication that is the goal of our intervention. When children enjoy computers and when programs are available that target goals identified in the client's assessment, there is every reason to include them as part of the intervention program, so long as the clinician interacts with the child as he or she uses the machine. Cochran and Masterson (1995) report on several research studies that show clinician-mediated computer-based activities to be comparable in efficacy with more traditional approaches. They find no evidence, though, that children with speech and language problems show improvements in interactive communication as a result of independent computer use. This is true even of Fast ForWord (Scientific Learning Corporation, 2000), perhaps the most popular computer-assisted language development program as of this writing. Cohen et al. (2005), Fey, Finestack, Gajewski, Popescu, & Lewine (2010), and Given, Wasserman,

Chari, Beattie, and Eden (2008) compared results of Fast ForWord intervention with other computer-assisted intervention activities, as well as with traditional intervention. They found that children receiving several different kinds of intervention made gains, although there was no advantage for any computer-based method over regular speech-language therapy. Troia and Whitney (2003), in studying Fast ForWord, found that positive changes were seen in tested expressive language, but not in academic or social skills. Loeb, Stoke, and Fey (2001) also saw changes on expressive test scores following Fast ForWord training, but did not find that these translated to functional language use. A small study of children with autism, however (Hetzroni & Tannous, 2004), suggests that these children do show some improvement as a result of exposure to an interactive video game focused on social communication.

Cochran and Masterson (1995) discussed several uses to which computers can be put in clinical practice. One is as a context for treatment. In this use, the computer program or game functions as the topic of conversation. For example, an activity might involve using a graphics program, such as *Walt Disney Comic Strip Maker* (The Walt Disney Co., 1983), to create a greeting card, or a creative writing program, such as *Mystery at Pinecrest Manor* (Klug, 1983) or *Tiger's Tales* (Hermann, 1986), to generate a story. Here the computer serves as the shared context for structured conversation, much as a board game or craft activity can in more traditional activities. For school-age children and adolescents with language-learning disorders there is a wealth of educational software designed to teach mathematics, history, geography, and other topics. *Where in the World Is Carmen Sandiego?* (Bigham, Portwood, & Elliott, 1986) provides just one example. Since many students with language-learning disabilities have low levels of general information because they have difficulty acquiring new knowledge from language and print, these programs can often help to fill in the gaps in their knowledge base. They generally require reading skill, so the clinician can either read the text to the client or choose programs carefully to match the client's reading ability. Adolescents with language-learning disorders, for example, may benefit from educational software designed for elementary students. Content-related educational software also can give the clinician a base of information to be used to help clients work on, for example, discourse comprehension skills such as summarizing, getting the main idea, and paraphrasing. Lots of other materials can serve the

Computer-assisted language therapy is often popular with young clients.

same function, though, including classroom texts, Internet sites, library books, newspapers and magazines, carefully chosen children's literature, and commercial instructional materials. The point is that computer software is useful if it motivates clients, but a skilled clinician can find many ways to motivate clients. Commercially available multimedia programs also can be adapted for use with children with language disorders, and numerous resources are available on the Internet, at sites such as www.communicationdisorders.com, to give just one example. But as Steiner and Larson (1991) pointed out, good clinical practice always integrates computer-based instruction with other activities. The computer is just one tool, which always needs to be supplemented with other kinds of communicative activities.

A second important use for computers for school-aged clients is word processing as a way to facilitate the development of written language skills. Cochran and Masterson (1995) emphasize the advantages of "talking" word processors, not only for motorically impaired students who use them as an alternative communication mode, but for speaking students as well. They argue that the auditory feedback provided by these programs helps writers develop a better sense of audience as well as identify grammatical errors. They cite research demonstrating that students given word processing opportunities improved in written language skills.

Some software (e.g., *Micro-LADS* [Wilson & Fox, 1983] and *Language Carnival* [Ertmer, 1986]) is specifically designed to teach language to children with disabilities. It often contains fixed vocabulary, uses too heavy a reinforcement schedule, or is very expensive when it is applicable to only a few children in the caseload. Programs designed for more general use, such as *Stickybear ABC* (Hefter, Worthington, Worthington, & Howe, 1982) or *The Factory* (Kosel & Fish, 1984), may be just as useful as more expensive software designed for children with language disorders and can be adapted for a variety of intervention goals. Coufal (2002) and Westby and Atencio (2002) provide additional discussion of these issues.

Timing

Besides deciding what the client needs as a referent for the linguistic signal, we also need to decide when the referent will appear. This simply means that we need to be careful about the timing of our nonlinguistic stimuli to be sure that they correspond appropriately to what is being said. This is sometimes not as simple as it sounds. Take past-tense forms, for example. To demonstrate an action referred to with a past-tense form, it is important to be sure that the action is completed before the speech act begins. We might throw a paper airplane across the room, then say to the client, "Tell me what I did." "You threw (or flew) the airplane," would be an appropriate response. But if we asked the question *while* throwing the paper airplane, our question would be inappropriate. We must plan our linguistic stimuli carefully to be sure that they elicit the target response appropriately, and the same is true of the timing of the stimuli in reference to the nonlinguistic context.

Service Delivery Models

There is one final aspect of the context of intervention. This refers to where, when, and with whom the intervention takes place. Traditionally we think of language intervention as taking place in a clinic room with a clinician providing therapy to a client or a small group for several 30- to 60-minute sessions each week. This model is often referred to as a *pull-out,* or *clinical,* form of service delivery. But language intervention can be delivered in a variety of ways. We'll discuss options briefly here and return to them in later

chapters when we talk about which service delivery models are most appropriate for clients at different ages and developmental levels.

The Consultant Model

As we have said, the traditional answer to the question, "Who delivers language intervention?" is "the speech-language pathologist." But an additional role for the SLP has evolved—that of consultant. In a consultant role, the speech-language pathologist still determines the intervention targets, procedures, and contexts. But instead of relating directly to the client, the SLP relates to another agent of intervention, giving that person information and a rationale for the intervention targets and more or less detailed instructions for the intervention procedures. The SLP also meets regularly with this individual to provide feedback on the intervention process, discuss problems that arise, and plan further intervention targets and activities. When acting in a consultant role, the SLP remains responsible for evaluating the client's progress in the intervention program, for deciding when targets have been met, and for troubleshooting the intervention procedures and contexts to ensure that they are effective.

The alternative agents of intervention may be parents, classroom teachers, speech-language aides, or peers. Girolametto and Weitzman (2006) reviewed research showing that parents can be trained to use focused stimulation techniques that will result in positive changes in language form and content. Cole, Maddox, and Lim (2006) showed that interactive story book sharing techniques could be effectively implemented by parents and teachers to improve children's language skills. Law, Garrett, and Nye (2004) reported few differences in the outcomes of language therapy for preschoolers when the intervention was delivered by clinicians or trained parents. Given these findings, it is likely that clinicians will find themselves frequently playing the role of consultant to parents or educators who will work directly to improve language skills in children with communication problems. It will be important for clinicians not only to know how to deliver effective intervention themselves, but to have effective means of teaching these techniques to others. Girolametto and Weitzman (2006) provide some guidelines, and more will be discussed in Chapters 6, 7, and 9.

Aides are used frequently in a variety of settings, especially when SLP shortages make hiring qualified personnel difficult. McCready (2007), however, emphasizes that the aide's role is to assist, not replace the SLP, and it is the SLP's role to plan, observe, monitor, review, and analyze the work of the aide, as well as to guide the aide's learning by making time to discuss and integrate the aide's experiences. Table 3-3 summarizes these roles.

Peers of the client also can be important agents of intervention. Paul (2003a) reviewed literature that suggests peers may be the most effective agents for teaching social communication skills to children with primary deficits in the area of pragmatics. When training peers it will, again, be important to have effective ways of teaching them how to support and expand clients' communication attempts. Several programs for peer training are discussed in Chapters 9 and 14.

The Language-Based Classroom Model

Here the clinician is the classroom teacher for a group of students with language disorders. Mainstream students also may be members of the class, although the focus is on intervention for the group with disorders. Language-based classrooms at the preschool level resemble traditional preschool programs. Many of the themes and activities resemble those used in mainstream preschools. The main difference is that SLPs in these settings use their expertise in language development and intervention to maximize the students' opportunities to attend to and practice oral language. What distinguishes them from the clinical model is that the SLP provides a continuous form of intervention embedded within a context of day-to-day activities.

For school-age clients, language-based classroom instruction may comprise either the entire school day or part of the day, depending on

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TABLE 3-3 Reciprocal Roles of SLPs and SLP Aides*

SLP Role	SLP Aide Role
Select and assign clients to SLP aide (SLPA).	
Determine nature of supervision appropriate for SLPA; interact with SLPA in planning and implementing supervisory conferences; establish and maintain effective professional relationship with SLPA.	Participate in supervisory process.
Establish and maintain system of accountability and documentation for SLPA.	Assist with informal documentation, as directed by SLP.
Demonstrate for and participate with SLPA in the clinical process.	Support the SLP in research, in-service training, and public information programs.
Select screening instruments; interpret screening results.	Assist with screenings.
Conduct assessments.	Assist SLP during assessments.
Develop individualized treatment plans.	Follow treatment plans developed by SLP; document client performance by tallying data and preparing charts and records.
Provide feedback to SLPA on clinical skills.	Collect data for monitoring quality improvement.
Assist SLP with developing clinical, oral, and written language skills, preparing and presenting clinical materials and treatment environments; model professional conduct.	Assist SLP with clerical activities such as preparing materials and scheduling; assist with departmental operations.
Train SLPA to maintain clinical records, check and maintain equipment, and observe universal precautions.	Perform checks and maintenance of equipment.
Share information on ethical, legal, reimbursement, and regulatory practices.	Exhibit compliance with regulations, reimbursement requirements, ethical standards, and SLPA job responsibilities.

*Adapted from American Speech-Language and Hearing Association (2004). Guidelines for the training, use and supervision of SLPAs. www.usha.org/docs/htm/PS2004-0019.html; McCready, V. (May, 2007). Supervision of speech pathology assistants: A reciprocal relationship. *ASHA Leader, 12(6),* 10-13.

the severity of the student's needs. This organization places children identified as having special needs in a "resource room" with the SLP as the classroom teacher. The SLP provides instruction for each client, according to his or her Individual Educational Plan (IEP), and also organizes activities that focus on oral language skills for the group. Many students in this setting also spend part of their school day with a regular teacher in a mainstream classroom.

For adolescents with language disorders, the language-based classroom model often takes the form of one of the student's classes. When the mainstream students go to English for a 50-minute period, for example, the student with a language-learning disorder may go instead to a language classroom taught by an SLP. The organization of this classroom is similar to that of the resource room at the elementary level. But because the students usually spend less time there, perhaps one period a day for one or two marking periods of the school year, instruction is more concentrated. Theme-based and curriculum-based approaches are often used to help the students develop not only oral language abilities, but also study skills, thinking skills, and the ability to deal more proficiently with written forms of language.

Collaborative Models

Midway between the consultant model and the language-based classroom model, in terms of intensity of client contact, is the collaborative model. The SLP works with one or more students who have been identified as having a language disorder, but does so in the mainstream classroom in collaboration with the regular teacher. Instead of seeing the client in a clinic or pull-out setting, the clinician delivers the intervention mandated in the IEP in the context of the regular classroom. This model, too, can be implemented at any developmental level, from preschool through adolescence.

The collaborative model requires consultation and cooperation with the classroom teacher. The SLP and teacher must meet together to decide what classroom material will fit in with the goals identified on the client's IEP and how the SLP can either develop activities in line with those themes or use the regular teacher's normal classroom activities to work toward IEP goals. The SLP then plans the specific activities to be used and works within the classroom alongside the regular teacher. The SLP focuses primarily on the children identified as having a language disorder, whereas the regular teacher focuses on the other students. Ehren (2000a,b, 2007), Michaels and Ferrara (2005), and Prelock

Collaborative planning is needed for clients in integrated settings.

(2000) provide some additional guidelines in implementing collaborative practice. Here's an example of how a collaborative activity might work.

Suppose George and Martha are students identified as having language disorders. Both are in Ms. Marshal's fourth-grade class. One of the goals identified on George's IEP is producing complex sentences. Martha has production and understanding of narratives as an IEP goal. Mr. Taylor, the SLP, consults with Ms. Marshal about doing some in-class activities to work toward these goals. They decide together that Ms. Marshal's literature unit on fantasy novels might be a good context for the intervention activity. The class has been reading children's books that tell fantasy stories. So Mr. Taylor decides to have the class write a fantasy story of their own in small, cooperative learning groups. He puts George and Martha in separate groups and arranges with Ms. Marshal that he will supervise these two groups while she supervises the other three.

Mr. Taylor introduces the lesson and has the class talk about the differences between fantasy and reality, give examples of fantasy books they've read, and generate some ideas for fantasy stories about magical animals. He then tells the students that each group is to work together to write a fantasy story, but first he wants to talk about what makes a good story. He writes two short choppy sentences on the board (such as, "The dragon was fierce. The dragon breathed fire.") and asks students to judge whether these tell a story well. Then he asks for suggestions from the class about how to better convey these thoughts, by combining them into one sentence. After letting several mainstream students model this process, he asks George to do one. Then he asks the class to think about what parts their story should have. He can ask them to recall some of the fantasy stories they've read and identify parts, such as main character, setting, a problem that gets the story going, and so on. He can have several mainstream students identify these parts in books they have read. Then he can ask Martha to do so.

Next he tells the class that each group is to write a short fantasy story about a magical animal. He reminds them to make their sentences more informative by sometimes combining two ideas into one. He reminds them about the parts that a good story should have. Then he and Ms. Marshal work with their cooperative learning groups. Mr. Taylor is careful to be sure that George and Martha are fully involved in their respective groups and have opportunities to contribute. He reminds them about complex sentences and narrative structure as he "troubleshoots" for them within the activity. This project may take more than one collaborative classroom session to complete. When the project is finished, the groups may illustrate, display, and share their stories.

Collaborative intervention does not need to be an all-or-nothing affair. Some clinicians use a "pull-out/sit-in" version. In this approach, some intervention is provided in a pull-out or clinical format, perhaps once or twice a week. Additional intervention, perhaps once a week, is delivered collaboratively in the student's classroom.

All the service delivery models we've discussed—clinical, consultative, language-based classroom, and collaborative—are valid contexts for language intervention. The choice depends on the needs of our clients and the clinician's relations with other professionals who work with them. Cirrin et al. (2010) reported data showing that classroom-based direct services are at least as effective as pull-out intervention for many intervention goals. We'll talk more about criteria for making these choices when discussing intervention for different developmental levels. The

important thing for now is to be aware of the range of service delivery options that are available and not think of ourselves as being limited to one option to the exclusion of others.

EVALUATING INTERVENTION OUTCOMES

We've talked about the importance of planning each aspect of language intervention: the selection of objectives, the choice of procedures, and determination of contexts. But we have an additional responsibility: to demonstrate that we have not wasted the client's time; that we have, in fact, achieved the goals that we set for the intervention. This responsibility is known as *accountability.* We are accountable to the client, and to whoever paid for our services, for making a significant change in language behavior. Furthermore, we should be able to show that the changes we made would not have happened if our intervention had not taken place. Let's talk about how we can fulfill these responsibilities.

Termination Criteria

One way to demonstrate that intervention objectives have been met is to specify ahead of time what criterion we will use to decide that a goal has been achieved. This specification is called the *termination criterion.* ASHA (2004e) has proposed a list of criteria for terminating services. These are summarized in Box 3-11.

The termination criterion for individual objectives, as opposed to termination from an intervention program, is simply the level of use of a targeted structure that the client must achieve for the structure to be considered learned. In behaviorist intervention formats, this criterion is usually set quite high, at 80% to 90% correct usages. However, usage is measured within the structured intervention context. Lee, Koenigsknecht, and Mulhern (1975) have argued that termination criteria should be set lower, at 50%, but be measured in natural contexts such as spontaneous conversation. It seems to us that to claim we have truly changed language behavior, we have an obligation to show that the client does use the targeted forms in natural, spontaneous speech. Furthermore, we know that once children use forms a majority of the time in spontaneous speech, they are very likely to progress toward consistent correct usage on their own without intervention. So a criterion of 50% correct usage

BOX 3-11 Discharge Criteria

Intervention may be terminated if one or more of the following conditions are met:
1. Communication is now within normal limits.
2. All goals and objectives or intervention have been met.
3. The client's communication is comparable to those of others of the same age, sex, and ethnic and cultural backgrounds.
4. The individual's speech or language skills no longer adversely affect social, emotional, or educational status.
5. The individual uses an AAC system and has achieved optimal communication across partners and setting.
6. The client has attained the desired level of communication skills.

Adapted from American Speech-Language-Hearing Association (2004e). Admission/discharge criteria in speech-language pathology. *ASHA Supplement, 24,* 65-70.

in spontaneous speech seems likely to be a responsible terminal objective for any particular intervention goal.

But how will we know when to take that spontaneous speech sample to determine whether 50% correct usage is achieved? Here we would want to see high (80% to 90% correct) levels of usage in the structured intervention setting before we would expect the child to use the forms spontaneously. Therefore, some charting of progress in structured intervention formats is an important part of the intervention program. A simple form such as the one in Figure 3-7 can be used to track performance in structured activities. As we discussed in Chapter 2, it is not necessary to chart every activity, but only to take samples periodically throughout the structured portion of the intervention program. Furthermore, we know that high degrees of accuracy in CD formats will not guarantee that usage will generalize to spontaneous speech. So once we get those high levels of use in structured activities, we should use the generalization techniques we discussed, if we have not done so already. We also would be wise to give the client some opportunities to use the forms in hybrid and other more naturalistic intervention formats. When all these have been accomplished—high levels of accuracy in structured formats; provision of activities designed to promote generalization; and use of hybrid, CC, or naturalistically modified CD intervention activities—then we should monitor the use of target forms in unstructured conversation, using speech sampling or other criterion-referenced techniques.

If correct use of the forms in this context exceeds 50%, we suggest discontinuing direct intervention for that target. The target form should be monitored every few months in spontaneous speech, though, to see that its correct usage is increasing. If not, it can be returned to the intervention program. If the target form or function is not used correctly a majority of the time in spontaneous speech, even if the client is very successful in producing it in the structured context, more generalization training and naturalistic activities are needed to help the client make the transition to spontaneous usage. By using a termination criterion that requires use of intervention targets in real communication, we can be sure of fulfilling our obligation to demonstrate meaningful change in language behavior.

Evaluating the Effectiveness of Intervention

The second aspect of accountability concerns our obligation to make changes that would not happen without our intervention, as ethical practice requires (American Speech-Language and Hearing Association, 2010a). There are a variety of ways to evaluate the efficacy of intervention (see Dollaghan, 2003, 2004; Fey & Justice, 2007; McReynolds & Kearns, 1982; Ochsner, 2003, for discussions) including using single-subject research designs, in which each client serves as his or her own control. Fey (1986) argued that the most appropriate of these, for clinical purposes, is the *multiple-baseline* design. Multiple-baseline designs give us the opportunity to show that the behaviors we targeted in intervention improved more than other language behaviors that were not subjected to intervention. By demonstrating this facilitative effect of intervention, we can ensure that the time and money spent on intervention were worthwhile.

The procedures for conducting a multiple-baseline single-subject research design are schematized in Figure 3-8. The first step in implementing a multiple-baseline design to study the effects of intervention

RESPONSE DATA FORM

Name of client: _____ Name of clinician: _____ Date: _____

Bahavioral objective: _____

Therapy materials: _____

Reinforcement type and schedule: _____

Trials

Stimulus presented	1	2	3	4	5	6	7	8	9	10	Comments
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											
16.											
17.											
18.											
19.											
20.											
Total Number of Responses: Total Correct Responses: Total Incorrect Responses: Percent Correct:											Key:

FIGURE 3-7 Response data form. (Reprinted with permission from Roth, R., and Worthington, C. [2005]. *Treatment resource manual for speech language pathology*, ed 3. Clifton Park, NY: Delmar.)

is to identify several intervention objectives, based on assessment data. Using some of the other criteria we discussed earlier, certain of these objectives will be chosen as targets of the intervention program. Others will not be chosen, perhaps because they are not considered high in communicative effectiveness, because they require phonological skills the client does not yet have, or because we feel they are low in teachability. The goals that were not chosen could be considered *control goals*.

When choosing control goals, we need to be careful to choose language behaviors different enough from the targeted goals so that response generalization is unlikely. Goals that are similar in form to the target goals can be chosen as *generalization goals*. These would be tracked along with the target and control goals to determine whether training is generalizing, as expected, to these similar behaviors. If, for example, "is (verb)ing" were the target, we would probably not want to choose copula "be" as the control goal, since

FIGURE 3-8   The proposed steps in a multiple-baseline intervention design.   (Redrawn with permission from Fey, M. [1986]. *Language intervention with young children* [p. 110]. San Diego, CA: College-Hill.)

it is quite likely that some learning from the "is (verb)ing" intervention program might generalize to copula use. Instead, we would designate copula "be" as a generalization goal. We might choose to use the auxiliary "will" as a control goal.

The second step in the multiple-baseline procedure is to gather baseline data on the target, generalization, and control goals. Elicited production procedures, such as the ones we discussed in Chapter 2, can be used to compute a percentage of usage in obligatory contexts for both target and control forms. It is important to establish a stable baseline for each form so we know that the baseline is a reliable reflection of the child's ordinary use of the form. Baseline measures may be taken two to three times during the course of a few sessions, and percentage of usage may be averaged to achieve this stability.

The next step is to institute intervention for the target, but not the control or generalization goals, using all the principles of intervention that we have discussed. Although multiple-baseline designs are often used in applied behavior analysis, Fey (1986) pointed out that this fact in no way restricts us to CD intervention programs. We can make use of all the intervention approaches we have talked about when we implement multiple-baseline studies. Intervention is continued until our termination criterion for the target goal is met, including both high levels of correct use in structured formats and use of the targets in spontaneous conversation.

We would then evaluate the child's use of the target and control goals. We can use the same elicited production tasks we used in the baseline studies, as long as they are not exactly the same as what we did in the intervention program. If use of the target and generalization goals shows a significant increase over the baseline, whereas use of the control goal remains unchanged, then we have demonstrated that our intervention was what made the difference in the client's use of the target form. If we graphed the data from

such a study, it could resemble the graph displayed in Figure 3-9. We might then choose to go on and target the control goal for intervention as well.

Finally, we need to remember that meeting goals in a structured setting is not our ultimate aim. Our real objective is improved functional communication, what Kovarsky, Culatta, Franklin, and Theadore (2001) called "communicative participation." Before deciding that a goal has been reached, we need to demonstrate that the goal has been incorporated into the child's functional communicative repertoire. ASHA has developed functional communication measures (FCMs) for children, which are listed in Appendix 3-1. Jacoby, Lee, Kummer, Levin, and Creaghead (2002) showed that it was possible to document improvement in intervention using these FCMs, such that a majority of children (76.5%) improved by at least one FCM level following 20 hours or more of therapy. So we can identify a child's pretreatment FCM and use this as a baseline for determining whether and to what extent functional changes have occurred in children's communication following intervention. To determine these kinds of functional changes, Olswang, Coggins, and Timler (2001) suggested that communicative behaviors be assessed in a core set of salient contexts. These contexts include role-playing tasks, narrative tasks, structured peer interactions, and natural observation in real settings. Although we may not always sample every goal in every one of these contexts to establish its level of functional use, we do need to demonstrate that each communicative behavior we teach has become functional for the child in real social situations before claiming "effectiveness." Table 3-4 provides some examples of Olswang et al.'s advice.

Determining Responsiveness to Intervention

One additional concept that has recently become of interest in the evaluation of treatment outcomes is the idea of measuring responsiveness to intervention (RTI) as an assessment technique. Gillam and Justice (2010), Graner, Faggella-Luby, and Fritschmann (2005), and Mellard, McKnight, & Woods (2009) discussed this concept as an emerging method of determining whether children qualify for special educational services. RTI approaches are designed to overcome the problem of identifying children with language and learning disorders based on a discrepancy, for example, between verbal and nonverbal test scores. We've already discussed the issues with this kind of identification for children with language disorders in Chapter 1, and the same problem occurs in identifying school children with learning disabilities (Graner et al., 2005; Justice, 2006), as well as preschoolers at risk for reading failure (Justice, 2005). In addition, children from poor and minority backgrounds often under-achieve in school and are frequently placed inappropriately in special education (Moore-Brown, Montgomery, Bielinski, & Shubin, 2005). RTI provides one possible solution to these problems. Using RTI, children are exposed to a series of levels of instruction, which Ehren and Nelson (2005), Fletcher and Vaughn (2009), and Troia (2005) defined as follows:

Tier I: classroom instruction for all children that is evidence-based, with frequent progress monitoring implemented by classroom teachers with adaptations provided by the SLP for children at risk. Progress is monitored by regular in-class evaluation. Children who show difficulties in learning at this level are given Tier II instruction.

Tier II: targeted, short-term research-based instruction designed to address weaknesses in children who struggle with language and literacy, as identified through progress monitoring; this

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Please refer to the printed publication.

FIGURE 3-9 Multiple-baseline study data. (Reprinted from Fey, M. [1986]. *Language intervention with young children* [p. 110]. San Diego, CA: College-Hill.)

intervention supplements regular instruction, is delivered in small groups by paraprofessionals or volunteers in consultation with the SLP and special educators; monitoring continues. Children who continue to struggle with language and learning at this level are given Tier III instruction.

Tier III: students who continue to struggle in Tier II instruction are considered in need of intensive, therapeutic intervention; SLP collaborates to determine this eligibility by evaluating response to Tier I and II instruction, and provides specialized language and literacy intervention in collaboration with others using an individualized instructional plan once identification of special educational need is made.

The SLP has several roles to play in the RTI process. SLPs can consult with teachers and educate staff about how language influences all aspects of school performance, the identification of evidence-based practices in reading, writing, and spelling instruction, and the need for language-facilitating approaches in all areas of the curriculum. For Tier II instruction, SLPs can help to select or design the procedures to be implemented in small group instruction, such as the provision of phonological awareness training for

TABLE 3-4 Tasks for Documenting Functional Use of Commnicative Goal Behaviors

Contexts	Example Goal	Example Activity
Role-playing	Negative sentences forms	"Let's imagine you're shopping for a pair of shoes, and the clerk is trying to sell you a pair you don't like. I'm the clerk. Act out what you would say to tell him why you don't want these shoes."
Narrative	Use of articles (*a, an, the*)	"Tell me about your class trip to the fast food restaurant. Tell me about the equipment you saw that they use when they make food there."
Structured peer interaction	Use of polite forms	"I'm going to give you and Aisha some toys to play with. Some are for you and some are for Aisha. If you want to use each other's toys, you have to ask nicely."
Natural setting observation	Use of quantity terms (*more, less, all, etc*)	Observe student during math lesson in which teacher gives instructions using quantity terms ("What's one more than two?")

Adapted from Olswang, L., Coggins, T. & Timler, G. (2001). Outcome measures for school-age children with social communication problems. *Topics in Language Disorders, 22*(1), 50-73.

young children or the use of morphological and "word study" approaches to spelling for older children (see Chapters 9, 12, and 14), and can train paraprofessionals and volunteers to deliver them. SLPs may provide, or collaborate in providing, Tier III instruction for children identified through the RTI process as having special educational needs. But perhaps the most important role that SLPs play in this process is through our knowledge and experience in evaluating treatment outcomes, since ongoing monitoring is a central element of RTI. Just as we've talked about evaluating the outcomes of our own intervention, we can use the same techniques—including determining termination or outcome criteria, tracking individual behaviors, developing nonstandard assessments including functional, dynamic, and curriculum-based methods, and using single subject design procedures—to determine whether the Tier I and II instruction has accomplished its goals. In this way, our expertise not only in language and literacy, but in evaluation methods that can contribute to the team's ability to use RTI to identify children at risk and work toward preventing school failure.

You may be feeling that, with all the thought and work involved in planning an intervention program, maybe trying to evaluate it, too, is just too much to expect. While we can understand that feeling, we must caution against giving in to it. The respect that we can command as professionals and as a profession rests to a large degree on our ability to prove that we make a difference. Because we don't usually cure our clients, but rather facilitate their language development, the fruits of our labor are not always easy to see. The client's continuing deficits may overshadow them, or they may not seem very different from maturational change. Because our results can sometimes seem invisible and because it really is important to document that we are making ethical use of time and resources, it is incumbent upon our profession to fulfill our obligation to be accountable. Only by doing so can we earn the respect we deserve and be in a strong position to advocate for the importance of the services we provide to our clients.

PREVENTION OF LANGUAGE DISORDERS IN CHILDREN

We've talked for a long while now about ways to change communication disorders. But any humane and responsible person would like to work toward preventing the devastating effects of these disorders by eliminating their root causes and thereby inhibiting the disorders from ever occurring. Why should prevention be our concern? Are we not speech-language pathologists, people who

diagnose and treat disorders of language learning? Isn't remediation our business? Certainly it is. In all areas of health care, though, including our own (ASHA, 2004d; Marge, 1993; Executive Order Establishing the National Prevention, Health Promotion, and Public Health Council, the White House, June 2010 [www.whitehouse.gov/the-press-office/executive-order-establishing-national-prevention-health-promotion-and-public-health]), there is a national trend away from exclusive attention to rehabilitation and toward prevention efforts. This trend arises partly from our knowledge of the enormous cost of rehabilitation and the burden it places on all levels of the economy. In 2003, the Centers for Disease Control estimated that preventing even one case of intellectual disability can result in long-term savings of more than $1 million, and the figure would be even higher today. The U.S. Public Health Service (PHS), in its Healthy People 2020: National Health Promotion and Disease Prevention Objectives (Department of Health and Human Services, www.healthypeople.gov/2020/default.aspx, accessed 4/3/11), has established national goals for improving health, reducing risk factors, providing screening and early identification resources, and increasing public awareness and information about health and the prevention of disease; disability is one of their focus areas. ASHA has worked with the PHS to develop objectives for reducing the incidence of communication disorders. As responsible health professionals, we have an obligation to contribute to these efforts.

There is another reason, too, why SLPs would be concerned about preventing communication disorders. As the professionals who deal day to day with these problems, we know the suffering they bring to our clients and their families. We know how a parent of a preschooler with little speech feels when she sees her child made fun of or left out by other children because the child cannot talk. We know how a language-impaired fourth grader who has trouble understanding the teacher feels when he fails yet another spelling test, even after he studied hard for it. We know how a teenager with a language-learning disability feels when he can't get a date for a school dance because his pragmatic skills are so poor. We know how a high-functioning adolescent with autism feels when he sees his classmates "rapping" and using slang that he cannot master or understand and when they giggle at his attempts to join them. We know because we try every day to help our clients overcome these problems. But how much better it would be, from a purely human standpoint, if they never happened in the first place! Although our job is the remediation of language disorders, our concern is for the welfare of our children and their families. It is this concern and our knowledge of the central role of communication in human development that

urges us to work toward not only treating but also preventing disorders of language learning. This has, in fact, happened in some cases. The last major epidemic of rubella was in 1965. Since the introduction of inoculation against this disease, new cases of profound hearing impairment caused by rubella are very rare, despite the fact that rubella was one of the most common causes of acquired deafness in children before the availability of the vaccine. But this ideal situation, in which we eliminate the cause of a disorder, is not always achievable. Sometimes prevention has to occur in a more modest way. Epidemiologists look at prevention as happening at three levels. Definitions of each of these levels of prevention, as discussed by the Committee on Prevention of Speech, Language, and Hearing Problems of the American Speech-Language and Hearing Association (ASHA, 1991, 2004d), are found in Table 3-5.

Primary Prevention and the Speech-Language Pathologist

ASHA (2005b) and Marge (1993) identified several primary prevention strategies that can be applied to disabilities that lead to communicative disorders. They include proper health and medical care, including immunizations and prenatal care; public education; genetic counseling; mass screening and early identification; environmental quality control; governmental action; and the elimination of poverty. Donahue-Kilburg (1993) argued that wellness promotion is another primary prevention tactic in which SLPs can engage. This approach involves optimizing psychological, physical, and behavioral well-being to increase resistance to disease or disorder. Donahue-Kilburg suggested that family-centered early intervention programs are ideal settings in which to promote wellness as a means of preventing communication disorders. Wellness promotion in these settings might involve encouraging good maternal nutrition and prenatal care to promote optimal fetal growth, helping parents of premature babies to become aware of infant states and receptive capacities so that they can maximize interaction, and working to help pregnant women avoid drug and alcohol use during pregnancy. Table 3-6 lists some suggestions for primary prevention activities that SLPs employed in a variety of settings can initiate. "May Is Better Hearing and Speech Month," sponsored by ASHA, is always a good opportunity to introduce efforts like these.

When primary prevention is accomplished, the incidence of a disorder is reduced. *Incidence* is defined as "the rate of new occurrences of a condition in a population free of the disorder within a specified time period" (ASHA, 2005b). In other words, incidence refers to the number of new cases of a disorder that appear. For example, Down syndrome has an incidence of 1 in every 800 live births. This means that for every 800 babies born, 1, on average, has Down syndrome. This one baby out of 800 who is born with Down syndrome contributes to the total number of individuals in the population who have this condition. Epidemiologists have another term for this total: prevalence. *Prevalence* is defined as "the total rate or proportion of cases in a population at, or during, a specified period of time" (ASHA, 2005b). For example, the prevalence of learning disabilities is thought to be 5% to 10% of school-aged children. This means that at any given time, about 10% of a population of school-aged children will be affected by this disorder. Primary prevention is aimed at reducing the incidence, and thereby decreasing the prevalence, of disorders.

The Speech-Language Pathologist's Role in Secondary and Tertiary Prevention

Unfortunately we will never be able to prevent all disorders. In some cases, such as specific language disorders, we do not know the cause and so cannot ward off its effect. In other cases, in this imperfect world, primary prevention efforts will fall short of their goals. When this happens, we must fall back on secondary and tertiary prevention to minimize handicapping effects. SLPs can and should be active participants in secondary prevention, including early identification and treatment efforts, as well as in research programs to identify risk factors and preventive intervention methods. The advent of mandatory newborn hearing screening, as well as preschool and kindergarten speech/language screening programs are good examples of secondary prevention.

Then, too, old-fashioned tertiary prevention, or rehabilitation, will always be needed. Some children will "fall through the cracks" of even the most aggressive screening program and will turn up with problems in communication that need to be addressed by attempting to reduce the already-present disability. Some will need ongoing support as their disability persists throughout development. But this traditional role of the SLP, regardless of its clear importance and centrality to our mission, is no longer sufficient. To be the kind of professionals we all strive to be, who serve not only our individual clients but their families and communities, we need to expand our conception of what being an SLP means. It means not only picking up the pieces after disabilities strike but also working toward preventing them.

TABLE 3-5 Levels of Prevention as Defined By ASHA

Level	Description	Example
Primary prevention	The elimination or inhibition of the onset and development of a disorder by altering susceptibility or reducing exposure for susceptible persons.	Inoculation to prevent rubella.
Secondary prevention	Early detection and treatment are used to eliminate the disorders or retard its progress, thereby preventing further complications.	Newborn hearing screening to detect hearing loss and provide early amplification or cochlear implantation.
Tertiary prevention	Intervention is used to reduce a disability by attempting to restore effective functioning.	Providing rehabilitation and special educational services to a child with Down syndrome.

TABLE 3-6 Primary Prevention Activities in Various Employment Settings

Setting	Suggested Activity
Preschool or early invention program	Work with health officials to set up a low-cost on-site inoculation clinic. Set up a "Parenting" class to help parents deal with issues of discipline and prevent child abuse. Provide contraceptive and family-planning services to teens who have had one child, to prevent a subsequent pregnancy before the mother finishes school. Display poster, hold short education session to discuss dangers to fetuses of drugs, alcohol, and smoking for mothers who may become or are already pregnant again. Make arrangements with local health-care agencies to refer mothers for free or low-cost prenatal care if they become pregnant again. Set up a "health education" class, using a curriculum such as "Smooth Sailing into Next Generation" (Plumridge & Hylton, 1987) to educate parents about family planning and preventing birth defects in future children.
Elementary School	Work with health officials to set up a low-cost on-site inoculation clinic. Set up a "parenting" class to help parents deal with issues of discipline and prevent child abuse. Make arrangements with local health care agencies to refer mothers for free or low-cost prenatal care if they become pregnant again. Set up assembly programs with local police agencies to talk to students about seat-belt and helmet use. Send home a calendar on which each students is to mark the days on which everyone in the family used a seat belt in the car or on which every child in the family wore a bike helmet. Students who achieve a given number of days of use win a prize or have names posted on a bulletin board. Collaborate with drug and alcohol educational programs by "guest lecturing" to students about the dangers these substance pose. Hold an essay or drawing contest, "How I Will Get My Family to Use Seat Belts and Helmets." Display winning entries in the school newspapers with an interview with winners about how they convinced others to take these precautions.
Middle and high school	Hold and essay contest on "How I will Get My Family to Use Seat Belts and Helmets." Display winning entries in the school newspapers with an interview with winners about how they convinced others to take these precautions. Set up assembly programs with local police agencies to talk to students about seat-belt and helmet use. Collaborate with drug and alcohol educational programs by "guest lecturing" to students about the dangers these substance pose for unborn children. Work with health teacher to initiate a curriculum module such as "Smooth Sailing into Next Generation" (Plumridge & Hylton, 1987), to educate students about family planning, contraception, avoiding early sexual activity, and preventing birth defects in future children. Work with health teachers to initiate a curriculum module on parenting, discipline, and preventing child abuse. Set up a language stimulation class for teen mothers to help them learn techniques for encouraging language development.
Hospital or clinic	Arrange with obstetrics section for low-cost prenatal care for mothers of children on caseload, if they should become pregnant again. Develop referral network for getting families in touch with parenting classes, family-planning programs. Work with health educator and public relations office to offer classes in language development and preventing birth defects to families in the community. Encourage agency to mount public information campaigns to address drug abuse, child abuse, and seat-belt use.
Private practice	Offer parenting classes as part of your practice; include family planning and prevention of birth defects, using a curriculum such as "Smooth Sailing into the Next Generation" (Plumridge & Hylton, 1987), as well as methods of discipline and language stimulation techniques. Work with local pediatric practices to provide inoculations for clients who are lacking them. Offer to contract with local high schools to work with teen parents on a language-stimulation module within an existing parenting class, or on preventing pregnancy and birth defects in an existing health class. Offer low-cost speech and hearing screenings at community events that focus on children, such as toy "expos," etc. Involve practice in local public education campaigns regarding drug abuse, child abuse, seatbelt and helmet use, and similar issues.

CONCLUSIONS

Planning and evaluating language intervention requires us to make a series of decisions. We need to decide on the overall purpose of the program, the specific long-term and short-term goals, the procedures we will use to achieve these goals, the evidence available to support the use of these procedures, the context in which the intervention will take place, and how we will demonstrate that we have made a real difference in the client's communication. What we have tried to do in this chapter is give you a broad overview of the range of options we have for making these decisions. We have tried to suggest that as clinicians we do not

need to pick just one approach, orientation, or style of intervention. We do not have to identify ourselves as behaviorists, milieu therapists, or pragmaticists; or as classroom teachers, consultants, or parent trainers. What we can strive for, instead, is access to the fullest possible set of tools for improving communication. We can then choose the right tool for the job of improving the communication skills of each individual client in our charge. We can work, too, toward preventing communication disorders by engaging in activities to promote communicative wellness and community education. We who know the high cost of these disorders, in both fiscal and human terms, should be among those most motivated to work for their prevention.

STUDY GUIDE

I. The Purpose of Intervention
  A. What are the three basic purposes of intervention? Give an example of a client for whom each would be used.
  B. What are three ways that intervention can change language behavior?
II. Developing Intervention Plans
  A. Discuss the difference between short- and long-term goals.
  B. Define and give examples of the *zone of proximal development.*
  C. What criteria are used to decide which goals identified in the assessment will be targeted in the intervention program?
  D. Name the three basic approaches to intervention discussed in this chapter. Give an example activity for teaching "is (verb)ing" as it might be done in each approach.
  E. Why is it suggested that intervention focus on selecting production as a target response rather than comprehension?
  F. Discuss the role of perceptual salience and pragmatic appropriateness in determining the linguistic stimuli to be used in intervention.

  G. What is meant by the *continuum of naturalness* in intervention? Give examples of three activities and settings at different points along this continuum.
  H. Discuss the considerations involved in determining the modality of language for the client to use.
  I. Describe and give examples of both extrinsic and intrinsic reinforcement.
  J. Describe five activities for promoting generalization of plural forms.
  K. Discuss the uses of computers in language intervention.
  L. Name and define the four models of contexts for language intervention. Give situations in which each one would be the best choice for teaching use of the conjunctions "because," "unless," and "although."
  M. Discuss the criteria you would use for evaluating a new technique to decide whether it is evidence-based.
  N. Discuss the essential ingredients in successful intervention, and give examples of incorporating each into a therapy program.
III. Evaluating Intervention Outcomes
  A. Define *termination criteria,* and discuss the guidelines suggested in the text.
  B. Describe how to implement a multiple-baseline study of language intervention.
  C. Why is it important to evaluate the effectiveness of intervention?
  D. How can functional use of communication be evaluated?
IV. Prevention of Language Disorders in Children
  A. Define and discuss levels of prevention identified by ASHA.
  B. Compare and contrast the meaning of the terms *incidence* and *prevalence.*
  C. What primary prevention strategies are appropriate for disorders of genetic and chromosomal origin?
  D. What kinds of primary prevention efforts are appropriate for SLPs?
  E. What is the role of the SLP in secondary prevention of communicative disorders?

Functional Communication Measures for Child Language

Spoken Language Production

Level 1: Child attempts to communicate, but attempts are not meaningful to familiar or unfamiliar individuals at any time.

Level 2: Child attempts to communicate, but even with consistent maximal cuing, child rarely produces meaningful communication with familiar people in routine situations.

Level 3: With moderate cueing the child usually produces meaningful communication in routine events of daily living with persons familiar to the child. This communication is much simpler than expected for chronological age.

Level 4: With minimal cues, child can communicate in routine events of daily living. When moderate cues are given, child occasionally communicates in familiar and novel settings, using simpler sentences than are appropriate for his chronological age.

Level 5: With minimal cues, child usually communicates in familiar and novel settings, using simple sentences than are appropriate for his chorological age. With maximal cueing, child occasionally uses age-appropriate sentences in familiar settings.

Level 6: Child usually communicates using age-appropriate sentences in most adult-child, peer, and directed group activities but some limitations are still apparent. Minimal cueing is occasionally required from the communication partner.

Level 7: Child ability to participate in adult-child, peer, and directed group activities is not limited by language production. Cueing is rarely required.

Spoken Language Comprehension

Level 1: Child understands a limited number of common object and action labels and simple directions only in highly structured, repetitive daily routines, with consistent maximal cueing.

Level 2: Child understands a limited number of common objects and action labels and simple directions only in highly structured repetitive daily routines.

Level 3: Child understands a limited number of common objects and action labels and simple directions in novel situations.

Level 4: Child understands simple word combinations/sentences. Child usually requires rephrasing and repetition to ensure understanding of brief conversations.

Level 5: Child understands brief conversations. Child usually requires rephrasing and repetition to ensure understanding of the type and length of sentence typically understood by chronological age-matched peers.

Level 6: Child understands communication of the type and length typically understood by chronologically age-matched peers but occasionally requires rephrasing and repetition. Child's ability to participate in adult-child, peer, and group activities is sometimes limited by language comprehension.

Level 7: Child's ability to participate in adult-child, peer, and group activities is not limited by language comprehension. Repetition and rephrasing are rarely required.

4 Special Consideration for Special Populations

Readers of this chapter will be able to:

1. Describe the similarities and differences between the speech, language, and communication profiles of children with disorders of known genetic origin and more primary developmental language disorders.
2. Discuss language disorders and differences associated with sensory impairments.
3. Describe the ways in which acquired language disorders in children differ from congenital developmental language disorders.
4. Highlight the language and communication impairments associated with psychiatric disorders of complex genetic origin.
5. Explain the role of extreme environmental disadvantage in language and communication impairment.
6. Evaluate the overlap between developmental language disorders and literacy disorders.
7. Consider the particular challenges that arise when assessing language and communication in the nonverbal child.
8. Discuss the relationship between social, cognitive, and emotional factors in language development and disorder.

Our perspective in this book is that it is more important in clinical practice to describe the nature of a child's language disorder than to get to the root cause of the problem. We discussed earlier how the diagnostic category in which a child is placed may not always either explain or predict language and communication behavior. We know there is considerable variability within a single diagnostic category; sometimes the differences between children with the same "diagnosis" are as striking as the similarities. We've also talked about the fact that many children don't fit very neatly into one diagnostic classification. The causal model we outlined in Chapter 1 (see Figure 1-1) gives us a clue as to why this is so: several genetic, environmental, and cognitive risk factors are common across disorders, increasing the chances that children may have symptoms of different disorders at the same time. For example, many children with intellectual disability (ID) have characteristics of autism spectrum disorder (ASD) and many children with ASD have additional intellectual disabilities. Finally, we've said that knowing a child's diagnostic label often doesn't precisely indicate a specific child's assessment or intervention needs. Knowing that a nonverbal child has ASD, for example, does not automatically prescribe the program. Should he or she be given intervention in the speech modality, or should an alternative modality such as

sign language be introduced? This decision is not very different from the decision that must be made in the case of a non-speaking child who has a hearing impairment or a severe motor speech disorder.

Is there any reason then, to use diagnostic labels in clinical practice? Although diagnostic category may not be the primary determiner of clinical decisions in developmental language disorders (DLD), knowledge of different diagnostic groups can be useful in a number of ways. First, a diagnostic label may be necessary to secure access to SLP services and educational support. The SLP alone will not usually be responsible for the diagnosis, but is likely to contribute to multidisciplinary team assessments that gather evidence of a child's speech, language, communication, and literacy needs. In the case of a child with ASD, for example, the SLP may be required to document the social communication difficulties the child displays, which are part of the core symptoms of this condition. To fulfill this role, it is important to know the standard definitions of each disorder. That's one reason we discuss diagnostic criteria in this chapter.

Second, although the etiological classification associated with DLD does not dictate the assessment and intervention strategies appropriate for each child, knowing the classification often provides hints about what areas to look at in the assessment or what areas might receive priority in intervention. For example, if we know that a child has ASD, we can make an informed guess that pragmatic aspects of language will be impaired, among other things. This could suggest that we include a detailed pragmatic evaluation in our assessment plan. In addition to the key aspects of language likely to be compromised in a given disorder, many disorders have associated cognitive or perceptual impairments that will influence the course of language development. Knowing what these are and how they impact children's language can help us devise interventions, or modify the child's environment in a way that minimizes the negative effects of associated deficits. Remember however, that, although characteristics may be typical of a particular diagnostic group, they are by no means inevitable or universal. Not all children with ASD echo language, for example, although echolalia is a typical symptom of this disorder. Diagnostic categories provide signposts for assessment and intervention; these must be followed through with a detailed description of the individual's actual needs and abilities.

Third, the clinical reports and medical histories of clients often contain information about the diagnostic categories. To read these documents intelligently, we need to understand what the labels mean. In this chapter, we will look at some of the major developmental disorders that are often associated with language impairment. We will outline standard definitions of each of these conditions, then talk about the typical cognitive, linguistic, and literacy characteristics of each disorder, and the implications of these learning challenges for clinical practice in speech-language pathology.

Language disorders can be associated with a variety of congenital conditions.

INTELLECTUAL DISABILITY

Meredith had been a placid baby. She sat up late, not until 9 months of age. She didn't walk until she was 25 months old, and hardly talked at all before her third birthday. Her parents expressed some concern to their family doctor, who referred Meredith for an evaluation when she was 3½. Meredith's cognitive skills were found to be even more delayed. Her parents were interviewed about her self-help skills, and they reported that she did not have independent feeding and wasn't yet toilet trained. Her parents said Meredith acted more "like a 2-year-old" than a preschooler. After some observations of Meredith's play and further discussion with her family, Meredith's parents were told that she had global developmental delays and recommended that she be enrolled in a preschool program for children with special educational needs. Her parents were distressed to learn that her problems were serious, but relieved that their concerns were justified and that help was available.

Meredith is just one example of the kind of child who can receive the diagnosis of developmental or intellectual disability and has just one of the several possible types of communicative disorders associated with her diagnosis. In Meredith's case, as in a significant proportion of cases with ID, the cause of disorder is unknown. Diagnosis of ID in these cases is based on behavioral rather than medical characteristics, and the cause of disorder is not necessary for diagnosis or intervention decisions. Let's look first at the standard definition of ID and caveats associated with that diagnosis. We'll then consider some of the typical (but, of course, by no means universal) relationships between language and communication skills and level of nonverbal cognitive ability. Finally, we'll consider developmental language disorders that accompany ID in the context of known genetic etiology. The most important thing to remember is that, even if we know a child's IQ score and the genes that play a causal role in ID, we cannot accurately predict what the child's language profile will be or how it will change over time. Careful assessment of form, content, use, and literacy development is therefore needed.

Definition and Classification

The American Association on Intellectual and Developmental Disabilities (AAIDD, www.aaidd.org) provides the following definition of intellectual disability (Schalock et al., 2010):

> "Intellectual disability is a disability characterized by significant limitations both in intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills. This disability originates before the age of 18."

In addition, the AAIDD (2010) diagnosis requires that:
1. Limitations in present functioning must be considered within the context of community environments typical of the individual's age, peer group, and culture.
2. Valid assessments consider linguistic and cultural differences in the way people communicate, move, and behave.
3. Within an individual, limitations often coexist with strengths.
4. The major purpose of describing limitations is to develop a profile of needed supports.

These conditions help to ensure that, if appropriate, individualized supports are provided over a sustained period, which will improve the person's level of life functioning.

The AAIDD provide definitions of intellectual and adaptive function. Intellectual functioning, or intelligence, refers to general mental capacity, such as learning, reasoning, and problem solving. This may be operationalized on the basis of IQ test scores; generally, an IQ test score of around 70 to 75 indicates a limitation in intellectual functioning. This range of scores translates to a criterion of at least 2 standard deviations below the mean (a standard score of 100). You'll remember from Chapter 2 that fewer than 3% of a normally distributed population will score farther from the mean than -2 SD (see Figure 2-11). You'll note that this is not an absolute score; the inclusion of adaptive skills in the definition leaves open the option of diagnosing an intellectual disability in an individual who has borderline IQ scores and significant limitations in adaptive behavior.

According to the AAIDD, adaptive behavior comprises three skill types: *conceptual skills*—language and literacy; money, time, and number concepts; and self-direction; *social skills*—interpersonal skills, social responsibility, self-esteem, gullibility, naïveté, social problem solving, and the ability to follow rules/obey laws and to avoid being victimized; and *practical skills*—activities of daily living (personal care), occupational skills, healthcare, travel/transportation, schedules/routines, safety, use of money, and use of the telephone. Note that deficits in adaptive behavior must be *relative to the individual's cultural group*. This criterion is necessary because people from diverse cultural backgrounds may have different expectations of individuals at different ages. In mainstream American culture, we expect children to be able to separate from their mothers easily at age 5 for example; other cultures expect much longer-term dependency on mothers. In the past, too many children were classified as having an intellectual disability because their experiences were different from those of middle-class children, which resulted in their scoring low on IQ tests that contained culturally biased items. As we have already discussed, it is also critically important to rule out language differences as a source of "failure to adapt."

Although adaptive behavior is often evaluated subjectively, standardized measures exist for various aspects of adaptive performance. Some examples include: the *Adaptive Behavior Assessment System—2nd edition* (ABAS:2; Harrison & Oakland, 2003), the *Scales of Independent Behavior-Revised* (SIB-R; Bruininks, Woodcock, Weatherman & Hill, 1997), the *Adaptive Behavior Scales-School—2nd edition* (ABS-S:2; Lambert, Nihira & Leland, 1993), and the *Vineland Adaptive Behavior Scales—II* (Sparrow, Cichetti, & Balla, 2005). Ecological inventories and environmental assessments (see Chapter 8) also can be used to assess various aspects of adaptive performance.

The definition of ID also includes the requirement that onset occur before 18 years of age, or during the developmental period. This criterion is used to differentiate ID, which is considered a developmental disorder, from forms of dementia that result in intellectual impairment and deterioration during adulthood. Of course, there can be cases that are difficult to judge. For example, suppose a typically developing child has a serious accident at age 10 that results in brain damage and subsequent IQ scores of more than 2 SD below the normative mean. By the AAIDD definition, this child would be considered to have an intellectual disability (assuming his or her adaptive skills were also compromised) even though the origins of impairment are traumatic rather than developmental. Nevertheless, this child would likely benefit from the types of interventions or supports that other children with ID require. This is an important reminder that clinicians need to determine the child's individual needs rather than focusing too much on diagnostic labels.

For many children, ID occurs in the context of a recognized disorder of known or unknown (complex) genetic origin. However, it is important to remember that this is not always the case. A population study of school-aged children in an urban area of England revealed that 5% to 10% scored below 70 on the WISC, but only 15% of those low scorers were receiving special educational support (Simonoff et al., 2006). Provision of special educational services was more likely to occur if children had overt emotional or behavioral problems in addition to low IQ. Nevertheless, children with low IQ may be struggling academically and it is worthwhile considering the cognitive, linguistic, and literacy abilities of any child not meeting age expectations at school.

Cognitive Characteristics

Early reports of the cognitive profile of individuals with nonspecific ID reported a similar pattern of cognitive development to typically developing children, but a slower developmental trajectory (Owens, 2009). Other researchers have reported a more uneven profile of cognitive development with more pronounced deficits in executive functioning (EF; Willner et al., 2010) and working memory (Henry & Winfield, 2010; Caretti, Belachi, & Cornoldi, 2010) than would be expected given overall level of intellectual ability. Willner et al. noted that, in a cohort of individuals with ID attending day center services, EF skills were not strongly correlated with IQ scores, but that impairments in EF may be more closely associated with impairments in adaptive behavior. Henry and Winfield (2010) considered the relationship between different components of working memory and scholastic attainment in 11- to 12-year-old children with ID. They found that measures of phonological working memory (word and digit repetition) accounted for a large degree of variance in literacy skill, whereas measures of the "central executive" (a listening span task, in which children make true/false judgements about statements while simultaneously remembering the final word of each

statement) were more predictive of numeracy skill. Caretti et al. (2010) indicated that working memory performance in ID was particularly influenced in attentional control and in "updating" information held in temporary store. Cognitive abilities do generally improve throughout childhood and into adulthood, though IQ scores (which take age into account) remain stable throughout development for many individuals (Yang et al., 2010).

Language Characteristics

Delayed language acquisition is often one of the first signs of ID. One question that the clinician is likely to face is whether language skills are in line with nonverbal mental age expectations, or whether language is impaired relative to other cognitive achievements. Both patterns of language acquisition have been observed; Miller and Chapman (1984) estimated that approximately 50% of children with nonspecific ID had language skills commensurate with nonverbal abilities. The remainder have more uneven profiles; 25% had expressive language deficits relative to comprehension skill (which was on par with nonverbal mental age) while the remainder had deficits in both comprehension and expression. This variation may be related to differences in cognitive abilities, for instance the differences in working memory and attention control we discussed earlier (Abbeduto & Boudreau, 2004).

Form

In general, the acquisition of specific grammatical devices follows a typical developmental sequence, albeit at a slower developmental pace. However, once the mean length of utterance (MLU) is above 3, children with ID tend to use shorter, less complex sentences with fewer elaborations and relative clauses than do typical peers at the same MLU level (Abbeduto & Boudreau, 2004).

Content

It has generally been thought that vocabulary is easier for children to learn than syntax; however, recent research suggests this may be artifact of test selection (Chapman, 2006). Specifically, the *Peabody Picture Vocabulary Test (PPVT IV)* (Dunn & Dunn, 2007) exaggerated differences between IV vocabulary and syntax in adolescents with nonspecific ID relative to the vocabulary subtest of the *Test of Auditory Comprehension of Language—3* (Carrow-Woolfolk, 1999). On this measure, age-equivalent scores did not differ significantly from syntactic measures. Chapman (2006) concluded that, while vocabulary size may be an advantage in ID, conceptual knowledge is more in keeping with developmental expectations (see also Norbury, Griffiths, & Nation, 2010, for a similar pattern of results in autism spectrum disorder).

Use

The ability to use language meaningfully in social contexts is an important component of adaptive behavior, yet the pragmatic skills of children with nonspecific ID have attracted relatively little research attention. Pragmatic competence in everyday situations requires the integration of cognitive, linguistic, and social-emotional cues, making it particularly vulnerable in ID. Not surprisingly then, the evidence that exists suggests that pragmatic development often lags behind cognitive development, though it may not be qualitatively different (Abedutto & Boudreau, 2004; Abedutto & Hesketh, 1997). Specifically, individuals with ID may be slow to develop intentional communication in the pre-verbal stages of development. Once some language is acquired, children with ID are able to engage in socially meaningful conversations, with adequate turn-taking and topic maintenance skills. However, they may be less able to clarify meaning and request clarification when they

have not understood utterances. In addition, using language forms for different social purposes may also be challenging. Recent research suggests that individuals with ID have considerable difficulties constructing coherent narratives (Murfett, Powell, & Snow, 2008), but are able to make use of gestural supports to enhance understanding, particularly in the context of understanding verbal humour (Degabriele & Walsh, 2010).

Literacy

Like other aspects of language development, literacy is slower to progress for children with ID. However, just as we see in typical development, phonological processing skills predict word and non-word reading in this population (Wise et al., 2010), while word reading and oral language skills predict reading comprehension abilities (Verhoeven & Vermeer, 2006). Differences in literacy achievement are not caused by lack of reading opportunity in the home literacy environment; van der Schuit et al. (2009) demonstrated that parents of children with ID provided similar literacy opportunities as other families, although the children with ID initiated these activities less often. Home literacy experiences were associated with the child's verbal and nonverbal abilities, indicating that parents adapt their level of engagement to the child's linguistic abilities.

Summary

Nonspecific ID is relatively common, with a prevalence of approximately 1%, and can have profound implications for language development and academic success. In general, children with nonspecific ID follow a typical trajectory at a much slower developmental pace. However, at times language and communication skills may be out of step with nonverbal abilities. The acquisition of particular language forms does not guarantee that children will automatically use these forms in socially appropriate ways, which may further interfere with the development of adaptive behaviors. These are key aspects of development to consider, and each individual will require a thorough assessment of language abilities in different environmental contexts, supplemented by detailed discussion with families about successes and challenges in daily communication.

DLD ASSOCIATED WITH DISORDERS OF KNOWN GENETIC ORIGIN

Down Syndrome

Down syndrome (DS) is the most common genetic cause of intellectual disability, occurring in approximately 1 in 700 live births (Canfield et al., 2006). DS is named for John Langdon Down, the nineteenth-century English physician who first published a description of a group of clients with the syndrome. In the majority of cases, DS results from an extra (third) copy of chromosome 21 (which is why it is sometimes referred to as trisomy 21); increasing maternal age significantly increases risk of Down syndrome (see Fidler & Daunhauer, 2011 for a comprehensive review of etiological factors). Down syndrome is characterised by mild to moderate ID, hypotonia (low muscle tone), distinctive facial features such as microgenia (an abnormally small chin), round face, macroglossia (protruding or oversized tongue), epicanthal fold (fold of skin on the eyelid), short stature and shorter limbs, and hyperflexibility of joints (Figure 4-1). DS is also associated with a number of health concerns including a higher risk for congenital heart defects, gastroesophageal reflux disease, recurrent ear infections, obstructive

FIGURE 4-1   Children with Down syndrome have characteristic features.   (Reprinted with permission from Zitelli, B.J., and Davis, H.W. [2002]. *Atlas of pediatric physical diagnosis* [ed 4]. St. Louis, MO: Mosby.)

sleep apnea, and thyroid disfunction. Co-morbid autism is diagnosed in 10% of children with DS, though there is debate concerning the degree to which severe cognitive impairments increase the likelihood of a dual diagnosis. As individuals with DS are now living longer, it has become apparent that adults with DS are at greatly increased risk of experiencing early onset Alzheimer's disease. In DS, the earliest symptoms of Alzheimer's disease are marked changes in behavior, rather than cognitive decline (Nelson et al., 2001).

Cognitive Characteristics

Children with DS experience global developmental delays in fine and gross motor skills. These motor delays are accompanied by mild to moderate intellectual disability, with the majority of IQ scores between 40 and 70 (Hodapp, Evans, & Gray, 1999). Individuals with DS generally have an uneven profile of cognitive development that may impact on language development and language processing. For instance, they have marked deficits on measures of working memory, but these are more pronounced with verbal material relative to visuospatial working memory (Lanfranchi, Jerman, & Vianello, 2010), a pattern that appears to be unique to DS and not other syndromes of ID (Edgin, Pennington, & Mervis, 2010). Executive functions, the cognitive processes integral to adaptive, goal-directed actions, are vulnerable in DS (Kittler, Krinsky-McHale, & Devenny, 2008). These include problems with response inhibition (impulse control), cognitive flexibility, and planning. Limitations in response inhibition have been linked to reduced generation of strategies for delaying gratification, difficulties persisting with learning tasks, and engaging in more off-task behavior (Kopp et al., 1983, Vlachou & Ferrell, 2000). Individuals with DS have greater difficulty than mental-age–matched comparison groups learning new rules and applying them (Lanfranchi et al., 2010). They also take

longer to solve problems and are more likely to abandon efforts at problem solving, reflecting difficulties with planning and persistence (Fidler et al., 2005; Lanfranchi et al, 2010). Clearly, deficits in executive skills can impact academic performance as children with DS struggle to stay on task and monitor and adapt their own behavior to achieve learning goals.

Language Characteristics

The most consistently reported language profile in DS is one in which expressive language is more severely impaired than receptive language abilities (Laws & Bishop, 2003). Here we consider language development and disorder in DS in relation to form, content, use, and literacy.

Form

Speech intelligibility in DS is poor relative to cognitive ability and is particularly pronounced in connected speech (Barnes et al., 2009). Most speech sound errors are developmental in nature (e.g., cluster reduction and final consonant deletion) though some atypical errors are also evident, such as vowel distortions and inconsistent pronunciations (Cleland et al., 2010). Reduced intelligibility may be attributed in part to anomalies of the articulatory structures or complications arising from frequent bouts of middle ear infection (Martin et al., 2009). Apraxia of speech has also been reported in DS (Rupela & Manjula, 2007), suggesting assessment of oral-motor structure and function is warranted.

Like children with primary DLD, children with DS appear to have disproportionate difficulties acquiring and using syntax (Chapman, 2006; Laws & Bishop, 2003). Syntactic comprehension is characterised by slowed growth and even decline in late adolescence (Laws & Gunn, 2004) and is more impaired than overall cognitive ability and vocabulary size (Caselli et al., 2008; Price, Roberts, Vandergrift, & Martin, 2007). Expressive syntax presents even greater challenges and can be an earlier indicator of language difficulties. Children with DS produce shorter and less complex sentences and fewer question/negation forms than typically developing peers matched for nonverbal mental age (Caselli et al., 2008; Price et al., 2008). Similarities and differences have also been noted between the grammatical profiles of individuals with DS and individuals with other DLDs (Ypsilanti & Grouios, 2008). For instance, numerous similarities between DS and more specific language impairments have been noted (Laws & Bishop, 2004) with particular limitations in tense marking (past tense –ed; third person singular –s) (Caselli et al., 2008; Laws & Bishop, 2003). On the other hand, individuals with DS appear to have more pronounced grammatical deficits relative to other groups with ID of known genetic origin. For instance, Price et al. (2008) reported that grammar was more severely impaired in DS than in Fragile X syndrome and that differences persist into adolescence and early adulthood (Finestack & Abedduto, 2010).

Content

Acquisition of first words in DS is significantly delayed and subsequent growth of expressive vocabulary is slower than expected (Berglund, Eriksson, & Johansson, 2001). Once words are acquired, there is some debate as to whether vocabulary keeps pace with nonverbal cognitive abilities, and whether there are asymmetries in receptive/expressive vocabulary as there are in grammatical development. Some investigators have reported receptive vocabulary scores in line with cognitive expectations (Laws & Bishop, 2003), whereas other have reported that expressive vocabulary is impaired relative to peers matched on nonverbal IQ (Caselli et al., 2008; Price et al., 2007). Differences between studies may be due, in part, to differences in the vocabulary measures used (cf. Chapman,

2006), though differences in participants (hearing status or parental education levels) cannot be ruled out.

There is some evidence that gesture is preferentially used by young children with DS and supports vocabulary comprehension, and may be predictive of later vocabulary development (Zampini & D'Odorico, 2009). Individuals with DS are proficient in using referential cues to learn new words (McDuffie, Sindberg, Hesketh, & Chapman, 2007) but word learning and vocabulary growth may be hampered by limitations in phonological short-term memory (Jarrold, Thorn, & Stephens, 2009).

Use

Pragmatics is generally considered to be an area of strength for individuals with DS, although early joint communicative behaviors such as mutual eye contact, vocalizations, and dyadic interactions with caregivers may be delayed or less coordinated than those observed in typically developing (TD) infants (Berger & Cunningham, 1983; Jasnow et al., 1988). By the age of two, infants with DS catch up, with many children with DS showing more social-interactive behaviors than TD peers (Mundy et al., 1988). Children with DS use the same variety communicative functions (comment, answer, protest) as language- or nonverbal ability-matched younger children, though they demonstrate fewer requesting behaviors (Beeghly et al., 1990).

Conversational development is also an area of strength, as children with DS demonstrate high levels of contingent responding and topic maintenance (Beeghly et al., 1991; Tager-Flusberg & Andersen, 1991). Narrative skills of children with DS also reflect a good conceptual understanding of the story. When narrating a wordless picture book, children with DS produce more plot lines and thematic elements relative to MLU-matched peers (Miles & Chapman, 2002). This narrative strength may depend in part on the level of support provided. For instance, when asked to narrate stories without picture support, individuals with DS may recall fewer important story elements (Kay-Raining Bird, Chapman, & Schwartz, 2004; Murfett, Powell, & Snow, 2008).

Other aspects of language use may be vulnerable. Roberts et al. (2007) reported that children with DS provided fewer elaborative utterances in conversational turns relative to peers matched for nonverbal ability, instead providing minimally adequate replies. In addition, individuals with DS are less likely to signal non-comprehension of language or request clarifications in referential communication tasks (Abbeduto et al., 2008). Abbeduto et al. reported that the ability to request clarification was associated with vocabulary and syntactic skills, highlighting the strong links between core language skills and use of those skills in social contexts. These pragmatic behaviors may also be associated with executive skill, and particularly the ability to monitor comprehension, though further research is needed in this area.

Literacy

Reading skills of children with DS are extremely variable and little is known about the proportion of children with DS who achieve reading proficiency (Martin et al., 2009). It is clear that, like other aspects of language development, literacy development in DS follows a protracted, though qualitatively similar, developmental course (Cardoso-Martin, Peterson, Olson, & Pennington, 2009). For example, as in the case of typical development, word and non-word reading in DS is intimately related to phonological processing skills (Lemons & Fuchs, 2010; Roch & Jarrold, 2008). Comparison of word reading and comprehension skills suggests that individuals with DS are more likely to have a profile similar to that of "poor comprehenders" in which word reading abilities

outstrip reading comprehension skills (Roch & Levorato, 2009). Poor reading comprehension was associated with levels of oral language comprehension, suggesting that oral language comprehension should form the foundations of educational interventions aimed at improving literacy skill for this population (cf. Clarke et al., 2010).

Implications for Clinical Practice

In summary, children with DS have a protracted rate of language and literacy development. Striking similarities between DS and more specific DLDs have been noted: relative strengths in vocabulary and pragmatic skill in the context of pronounced difficulties in syntax, morphosyntax, and phonological/verbal memory. Literacy is also particularly vulnerable, with increased risk of poor reading comprehension. Special considerations for this population include the need to monitor hearing, because of recurrent ear infections, and the need to give detailed consideration to oral-motor structure and function, and how anomalies in oral-motor development may affect speech production and intelligibility.

Detailed assessment of language attainments is necessary and we cannot assume that level of nonverbal ability will be predictive of language skill. We should also be cautious in assuming that acquisition of a particular skill results in appropriate use of that skill for learning or social exchanges. Observation and analysis of language in less structured contexts is warranted. Finally, children with DS demonstrate strengths in visual-spatial memory, and using gesture and other social cues may support comprehension and learning of new information. Any assessment profile should therefore detail the child's communication strengths as well as his or her needs, as these strengths may be usefully exploited in intervention contexts.

With regard to intervention, the ultimate goal should be to improve functioning in communication, academic, social, and vocational areas (American Speech-Language and Hearing Association [ASHA], 2005a). Decisions about what to prioritize in invention should be made in collaboration with families and clients themselves, and should focus not just on developing skills, but on the functional use of those skills in academic, vocational, and social contexts. With this in mind, Martin et al. (2009) suggest that general priorities for working with DS populations will be to target early communication using milieu communication techniques (see Chapter 3) with families to support development of early vocalizations, gesture, and eye gaze to initiate and respond to "conversational" exchanges (cf. Fey et al., 2006). Martin et al. also advocate targeting speech skills, complex language structures, and early literacy skills. While reading development may be seen as an outcome of early intervention strategies, there is also evidence that using written language in intervention programs may, because of its visual modality, support oral language, speech, and memory development in DS (Roberts et al., 2008; Laws, 2010).

In addition to improving language skills, it is worth remembering that children with DS may need support in attending to relevant information, staying on task, and recognising/signalling when they have not understood something. Providing strategies for these behaviors is critical to academic achievement. Finally, it may be prudent to consider using augmentative or alternative communication to improve the communicative competence of children with DS. Many children with DS use sign language and there is general agreement that the use of sign may support their language acquisition (see Brady, 2008).

Williams Syndrome

Definition and Classification

Williams syndrome (WS) is a complex neurodevelopmental disorder that results from the deletion of approximately 25 genes on one copy of chromosome 7q11.23 (Osborne, 2006). It is a relatively rare disorder with a prevalence rate of 1 in 7,500 live births (Stromme et al., 2002). WS is associated with multiple physical, cognitive, and behavioral features. Physical features include characteristic facial dysmorphology (Figure 4-2), cardiovascular heart disease, growth deficiency, and connective tissue abnormalities. The striking behavioral phenotype is one of overfriendliness, social gregariousness, and marked anxiety (see Mervis & John, 2010, for review).

Cognitive Characteristics

Infants and toddlers with WS experience global developmental delays, and older children and adults with WS generally have mild to moderate ID. Some individuals will have IQs within the low average range, while others will experience more severe impairment (Mervis & John, 2010). Apart from general ID, WS is associated with a unique profile of cognitive strengths and weaknesses. Most notably, children with WS have profound difficulties with visual-spatial construction, with scores on the Spatial Cluster of the *Differential Ability Scales* (Elliot, 2007) some 20 points lower than scores on other intelligence scales (Mervis & John, 2010). These cognitive deficits occur in the context of difficulties with adaptive behavior, particularly in the areas of motor development and independent living (Mervis & Morris, 2007).

Language Characteristics

Traditionally, WS has been put forward as the archetypal evidence for dissociations between cognitive and linguistic skill, with some suggesting "exquisite mastery" of syntax and vocabulary in the context of pronounced nonverbal cognitive deficits (cf. Piatelli-Palmarini, 2001). Recent investigations provide a more nuanced view of the relationship between language and cognition. For a
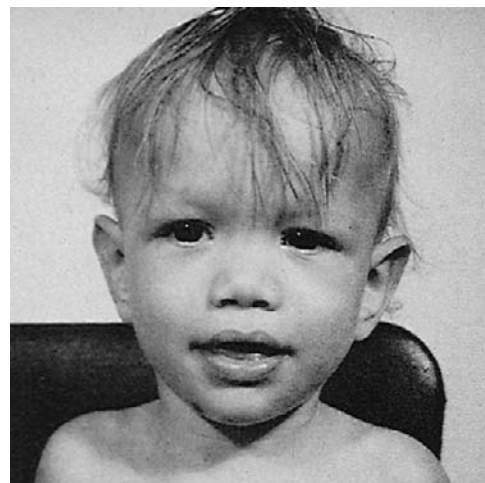
FIGURE 4-2 Children with Williams syndrome have an upturned nose and small chin.   (Reprinted with permission from Zitelli, B.J., and Davis, H.W. [2002]. *Atlas of pediatric physical diagnosis* [ed 4]. St. Louis, MO: Mosby; courtesy R.A. Mathews, MD, Philadelphia.)

start, the onset of first words and phrases is almost always delayed in WS. Once words have appeared, the pattern of linguistic strengths and weaknesses closely mimics those observed in nonverbal cognition. Let's look at this in a little more detail.

Form

Canonical babbling is significantly delayed in infants with WS relative to age-matched infants (Mervis & Becerra, 2007). Onset of babbling is predictive of onset of word production. There are no reports of significant speech sound disorders or reduced intelligibility in older, verbal children with WS.

Initial reports of grammatical development suggested that grammar was "intact" and much better than expected for overall level of nonverbal cognitive ability. Indeed, when compared with ability-matched peers with Down syndrome, the grammatical skills of children with WS are superior (Joffe & Varlokosta, 2007). However, Mervis and John (2010) point out that these findings may reflect the more pronounced grammatical limitations that characterize children with DS rather than demonstrating superior grammatical skills in WS. When compared to younger typically developing children with equivalent cognitive levels or to other participants with ID, grammatical skills are more in line with, or sometimes below, developmental expectations (Mervis & Becerra, 2007). Deficits in grammatical understanding are evident, but these are strongly related to verbal working memory abilities and general levels of cognitive ability (Mervis & John, 2010).

Content

Understanding and production of concrete vocabulary are relative strengths for individuals with WS, resulting in consistently higher scores on measures of vocabulary such as the *PPVT* (Dunn & Dunn, 2007) and the *Expressive Vocabulary Test* (Williams, 2006), relative to other language measures (cf. Brock, 2007). However, as we've seen in our earlier discussions, this profile is not unique to WS and characterizes many DLDs. What is less common across disorders is the profound difficulty with relational or conceptional vocabulary experienced by individuals with WS. This vocabulary is important for marking spatial, temporal, and dimensional concepts as well as for devices such as conjunction and disjunction. Deficits with these terms mimic deficits in spatial abilities (Mervis & John, 2008).

Use

In contrast to children with DS, children with WS have pronounced pragmatic difficulties, despite the superficial air of social skill. The emergence of joint attention is delayed and there is an atypical temporal relationship between gesture and word production. In typical development (as well as in DS), referential gestures such as pointing precede referential word production (Mervis & Becerra, 2007).

Although WS is often conceptualized as the "opposite" of ASD because of the increased interest in social interaction in WS, systematic investigation has highlighted overlaps between the two disorders. For example, although children with WS are more likely to look at faces than children with ASD, their ability to integrate gaze cues for communication purposes is impaired (Lincoln et al., 2007). Even when children do meet criteria for ASD, a significant proportion of children with WS have marked pragmatic difficulties on parent-report measures such as the *Children's Communication Checklist* (Bishop, 2003). Laws & Bishop (2004) reported that 79% of children with WS studied were rated as having pragmatic difficulties. These pragmatic difficulties are evident in conversational behavior, in which individuals with WS are less likely to provide contingent and informative responses than peers with more

specific DLDs (Stojanovik, 2006). In addition, qualitative differences in narrative skill have been reported; relative to other populations with ID, children with WS made considerably more social evaluative statements and fewer cognitive inferences (Reilly et al., 2004). Like other children with ID, children with WS have more difficulty monitoring their own comprehension and signalling when their conversational partners provide ambiguous or inadequate messages (John et al., 2009).

Literacy

The reading skills of children with WS are variable, with some achieving word recognition and non-word reading skills that are broadly in line with their nonverbal abilities whereas other are unable to read at all (see Mervis, 2009, for review). Consistent with reading profiles seen in other populations with ID, reading comprehension scores are generally significantly lower than word reading abilities (Laing et al., 2001).

Implications for Clinical Practice

Mervis and John (2010) suggest that intervention approaches developed for other populations with ID and social impairments can also be used for children with WS. In particular, working with families to develop language and communication is a priority for young children with WS. Language intervention is likely to be necessary throughout the school years; the focus of intervention may change and should emphasize use of language targets in academic and socially meaningful contexts. Social skills training for older children is also advocated; these not only aim to promote socially appropriate communication behaviors, but could help children with WS to be more discerning in approaching others and in reading more subtle social-communication cues. To date, only one study has explored literacy intervention in this population. Mervis (2009) suggests that a systematic phonics based approach in the context of direct reading instruction is preferable to a whole word approach for these children. Oral language instruction aimed at improving reading comprehension is also likely to be important (cf. Clarke et al., 2010) and will need to be complemented by explicit strategies for comprehension monitoring and linking text information to general knowledge.

Fragile X Syndrome

Definition and Classification

Fragile X syndrome (FXS) is a single gene disorder, caused by an expansion of the trinucleotide (CGG), which repeats too often on the fragile X mental retardation gene (FMR1), which is located on the bottom end of the X chromosome (see Hagerman, 2008 for extensive review). Typical individuals have 5 to 44 repetitions on FMR1; premutation carriers of FXS have 55 to 200 repeats, while individuals with the full mutation have in excess of 200 CGG repeats (Schneider, Hagerman, & Hessl, 2009). This expansion leads to eventual silencing of the FMR1 gene, reducing or completely eliminating production of its associated gene protein, FMRP (Oostra & Willemson, 2003). FMRP is critically important for experience-dependent neural development, particularly for the maturation of synapses and synaptic pruning in the developing brain; as such, there is a direct positive correlation between the amount of FMRP expressed and level of cognitive functioning (Schneider, Hagerman, & Hessl, 2009).

Unlike Down syndrome, which is not passed down from one generation to another, FXS is an inherited disorder, and is the most common inherited form of ID. FXS occurs in approximately 1 in

4000 males and 1 in 8000 females; it is more common in males because males have only one X chromosome. The prevalence of the premutation is much more common, with approximately 1 in 250 females and 1 in 600 to 800 males having the premutation (Beckett, Yu, & Long, 2005). The full mutation is associated with a characteristic, though variable, physical and behavioral phenotype. Boys with FXS do not have clearly dysmorphic features and are often difficult to identify before the age of 3, unlike children with DS, whose physical features are noticeable from birth. With increasing age, however, characteristic physical features emerge (Figure 4-3). These include elongated face, long and prominent ears, highly arched palate, enlarged head, hypotonia, flat feet, hyperextensible finger joints, and large testicles (macroorchidism). FMRP is also associated with the formation of connective tissue; medical difficulties associated with FXS therefore include occasional joint dislocations, recurrent otitis media, strabismus, mitral valve prolapse, and/or dilation at the base of the aorta and gastrointestinal reflux, which is seen in the majority of male infants with FXS (Hagerman & Hagerman, 2002).

Co-morbid conditions are extremely common in FXS and affect language development and disorder. Most striking are the high rates of autism spectrum disorder identified in males with the full FXS mutation; approximately 30% to 50% of boys with FXS meet criteria for a diagnosis of autism spectrum disorder (Harris, 2008). This makes FXS the single largest known genetic cause of ASD, though only 2% to 6% of ASD cases can be attributed to FXS (Reddy, 2005). Although we've mentioned that level of FMRP expression is predictive of cognitive ability, it does not appear to be associated with severity of ASD symptoms (Loesch et al., 2007). It is clearly important to distinguish the cognitive and language characteristics of individuals with FXS who also have ASD

from those who do not. Other co-morbidities include attention-deficit hyperactivity disorder (ADHD), which is reported to affect 44% to 93% of children with FXS meeting diagnostic criteria for ADHD (Sullivan et al., 2006); seizures, which affect approximately 20% of males; and high rates of anxiety, reported in a national parent survey to affect approximately 70% of males and 56% of females (Bailey et al,. 2008).

Cognitive Characteristics

ID is the predominant cognitive characteristic; nearly all males have a degree of ID that is similar to that seen in DS. Females tend to have less severe ID; approximately 25% have IQ scores less than 70, though about half have borderline IQ scores (Cornish, 2008). The rate of intellectual growth is reported to be about half that of typically developing children, the gap between individuals with FXS and their peer group increases with time, causing an age-dependent gradual decline in IQ (Hall et al., 2008). In addition to cognitive impairment, a core deficit in executive function has also been proposed, with significant deficits in sequential processing, working memory deficits, cognitive flexibility, planning, selective attention, inhibitory control problems, and fine and gross motor delay (Hooper et al., 2008).

Of course, there are pockets of relative cognitive strength, which include simultaneous processing and long-term memory (see Finestack, Richmond, & Abbeduto, 2009, for review). Intriguingly, a longitudinal investigation of academic achievement in FXS found that nonverbal IQ and FMR protein expression were not associated with academic level or rate of change in academic performance; however, autistic behavior and level of maternal education were significantly related to academic achievement scores (Roberts et al., 2005).

Language Characteristics

Gender differences in language attainment are particularly pronounced in FXS, with girls invariably demonstrating higher levels of linguistic competence relative to males with FXS. It will be absolutely essential for the clinician to establish whether co-morbid ASD is present as this will have significant implications for language development and particularly the social use of language. It is also important to realize that the bulk of research in FXS has been directed at understanding the genetic pathways to behavior; as a result very little is known about environmental influences on language development in FXS, or whether modifying the language-learning environment can positively alter developmental trajectories (Finestack et al., 2009).

Form

In general, the speech sound production of boys with FXS is commensurate with nonverbal mental age expectations. Barnes et al. (2008) reported that, regardless of ASD status, boys with FXS did not differ from their younger typically developing peers on phoneme accuracy or the number of developmental phonological processes, though they were less intelligible in connected speech. While speech articulation is a relative strength, phonological processing is less well developed in FXS, with many children scoring below the 10th percentile on measures of phonological awareness (Buckley & Johnson-Glenberg, 2008) and demonstrating significant impairments in phonological short-term memory (Baker et al., 2011).

Compared to younger typically developing children matched for nonverbal ability, boys with FXS are delayed in both their understanding and production of grammar and morphosyntax

FIGURE 4-3 Boys with fragile X syndrome typically have long, narrow faces and large ears. (Reprinted with permission from Simko, A., Hornstein, L., Soukup, S., and Bagamery, N. [1989]. Fragile X syndrome: Recognition in young children. *Pediatrics 83,* 547-552.)

(see Finestack et al., 2009 for review). Impairments are noted on both standardized measures and analyses of more spontaneous language samples. For example, boys with FXS have shorter MLUs relative to matched comparison groups even when nonverbal mental age and level of maternal education has been taken into account (Roberts et al., 2007). In addition, less complex noun and verb phrases are evident in conversational language, though production of questions/negation may be more in line with nonverbal skills. Where direct comparisons have been made, the expressive and receptive grammatical skills of boys with FXS are somewhat better than boys with DS, and are comparable in individuals with and without co-morbid ASD (Price et al., 2007, 2008).

Content

Investigations of receptive vocabulary knowledge in FXS have yielded mixed results, with some investigators reporting weaker vocabulary scores and others suggesting that vocabulary is commensurate with nonverbal mental age expectations (Finestack et al., 2009). A more consistent finding is that expressive vocabulary, as measured by number of different words used in connected discourse, is impaired and rates of vocabulary growth are slower than those seen for younger typically developing children (Roberts et al., 2002). In general, the presence of co-morbid ASD does not result in more severe vocabulary deficit (Kover & Abbeduto, 2010), though the small number of children with co-morbid diagnoses means we should be cautious in assuming this is always the case.

Studies to date have focused on lexical diversity in discourse; there is a dearth of research evidence about what children with FXS understand about the words they use. We also know very little about the integrity of semantic networks in FXS or about how flexibly children with FXS use their semantic knowledge, for example in understanding figurative expressive or verbal humor.

Use

Pragmatic competencies are perhaps most closely aligned with ASD status in boys with FXS. Qualitatively different language characteristics have been reported including increased use of tangential language, perseverative and repetitive speech, delayed echolalia, and use of stereotyped phrases (Cornish et al., 2004). These qualitative differences disrupt conversational exchanges; relative to developmental expectations, boys with FXS have difficulty maintaining coherent, semantically rich conversational exchanges (Roberts, Martin et al., 2007). For example, boys with FXS are more likely to provide conversational turns that are tangential or unrelated, and provide fewer turns in which they add or request new, on-topic information. These anomalies are particularly pronounced in those who also meet criteria for ASD, but are not limited to this subgroup (Roberts, Martin et al., 2007). This raises interesting questions about the source of these conversational errors; in ASD pragmatic errors are largely attributed to deficits in social-cognitive understanding. Children with FXS also show evidence of poor understanding of other people's minds, as indexed by false belief tasks (Grant, Apperly, & Oliver, 2007). However, these deficits appear to be associated with deficits in working memory and executive control (inhibition) rather than social understanding *per se*. This suggests that conversational anomalies may also reflect problems with inhibition and working memory.

Further support for this assertion comes from studies of narrative production; when narratives are elicited in the context of a wordless picture book, no differences have been found between individuals with FXS and ability-matched comparison groups (Keller-Bell & Abbeduto, 2007). The only exception was in "evaluative" devices, or the extent to which narrators provide socially engaging information about the story such as mental state verbs, character names, character dialogue, and exaggeration. Although children with FXS did not differ from younger, typically developing peers in the use of evaluative devices, they did produce fewer such devices relative to peers with DS, despite providing longer utterances overall (Keller-Bell & Abbeduto, 2007). This study did not differentiate individuals with FXS and co-morbid ASD; such studies are needed to determine the extent to which use of evaluation is linked to more general social interaction behaviors.

Measures of referential communication also reveal pragmatic weaknesses in FXS. For instance, relative to ability-matched peers, boys with FXS are less able to provide consistent, unambiguous language to describe a target shape to listeners (Abbeduto et al., 2006) and are less likely to indicate that the verbal messages of others are inadequate to meet task demands (Abbeduto et al., 2008). In the latter case, signaling noncomprehension was positively correlated with vocabulary and receptive grammar, and associated with gender; girls with FXS were more likely to signal noncomprehension than male counterparts. Again, these findings appear to indicate a reduced appreciation of listener need and/or deficits in executive skill; within-syndrome comparisons of those with/without co-morbid ASD are needed in order to determine how widespread these pragmatic deficits are.

Literacy

Investigations of literacy development in FXS are lacking. Preliminary evidence suggests that children with FXS read words at a level commensurate with nonverbal age expectations but have more significant difficulties reading non-words (Buckley & Johnson-Glenberg, 2008). Finestack et al. (2009) point out that relative strengths in word reading in FXS may be confounded by large age differences between individuals with FXS and their ability-matched typical peers, which affords the FXS group considerably more print exposure than the typically developing children. At present there are no systematic investigations of percentages of children with FXS who develop functional reading. Given oral language weaknesses and pervasive pragmatic difficulties, reading comprehension is likely to present significant challenges to individuals with FXS.

Implications for Clinical Practice

Children with FXS have complex cognitive and behavioral challenges that impact language development and language processing. However, as we've seen with other disorders of known genetic origin, there is a paucity of evidence regarding the best course of clinical action or how therapeutic and educational practices may influence developmental trajectories. Children with FXS are often referred to SLP services when they are very young (Brady et al., 2006); a top priority for the SLP will be to work closely with families and other professionals to ascertain ASD status and other co-morbid conditions that can negatively impact language development. Cognitive and linguistic strengths should be documented alongside weaknesses as these may be used to support language and communication. Throughout development, interventions to increase linguistic competencies should be embedded in socially meaningful contexts, with the goal of improving social interaction and pragmatic language skills. Literacy development will require attention; early oral language programs should have a positive effect on later reading comprehension. It also likely that there will be a need to work with families to decrease inappropriate communication and challenging behaviors.

DLD ASSOCIATED WITH SENSORY IMPAIRMENTS

Visual Impairment

Children with congenital visual impairments (VI) may experience some early delays in the acquisition of language, but by school age these problems are largely resolved (Mulford, 1988). Children with VI may also learn to read with the help of specially adapted writing systems such as Braille and computer programs that convert text to speech. However, pragmatic skills are vulnerable in children with VI and there is increasing evidence that many social-communication behaviors in VI resemble those seen in sighted children with ASD (Tadic, Pring, & Dale, 2010). This section will therefore focus on the nature of these pragmatic deficits and implications for clinical treatment.

Early differences in language acquisition may be attributable in part to disruptions in early visual experiences, for example triadic joint attention. As a result, toddlers with VI are delayed in their acquisition of first words and phrases (Lahey, 1988). Despite these early delays, previous research has consistently demonstrated that children with VI develop age appropriate vocabularies and MLUs by their third birthday (Andersen, Dunlea, & Kekelis, 1984; Landau & Gleitman, 1985). However, use of language may be disrupted; for example, children with VI and their conversational partners may have difficulty understanding each others' referents (Landau, 1997). Other pragmatic impairments include the extensive, and sometimes inappropriate, use of questions; a paucity of communicative gestures; and extensive use of imitative speech, repetitions, and verbal routines (Norgate, Collis, & Lewis, 1998; Preisler, 1991). Tadic et al. (2010) compared children with VI to sighted peers on measures of "structural" language (as measured by the Clinical Evaluation of Language Fundamentals [CELF]) and parent report of pragmatic impairments. On the whole, the groups did not differ on structural language measures, with the children with VI outscoring their peers on the Recalling Sentences subtest, demonstrating good verbal memory. However, on the *Childhood Communication Checklist—2* (CCC-2), children with VI received consistently poorer scores on the semantics scale, the social interaction scale, and all scales of pragmatic functioning (nonverbal communication, inappropriate initiation, coherence, stereotyped language, and use of context). Scores on the CCC-2 were significantly correlated with a checklist screening for ASD, but were not related to structural language scores.

Given these findings, the role of the SLP will likely involve facilitating early social-communicative exchanges between parents and their children with VI. This may involve helping parents to recognize and explicitly comment on and reinforce nonverbal communication behaviors they themselves emit or observe in their children. It will also be necessary to help families find alternative ways of establishing joint attention and using these opportunities to provide rich linguistic stimulation. Some tried and true methods of facilitating language and social communication in this population include:

- Provide labels and descriptions of the objects the child handles and what he or she can do with these objects
- Ask both open-ended and more directive questions
- Provide more qualitative information not only about the child's actions, but also other things going on in the environment
- Model and encourage the child to engage in pretend play
- Engage in shared book reading activities

Such activities will foster strong links between the child's language and the surrounding environment.

Hearing Impairment

Helen was a very bright toddler. At age 2 she was already saying sentences, chatting away to anyone who would listen. She liked to draw and had great fun playing "family" with her dolls. When she was 2½, she suffered a serious bout of meningitis, resulting in hospitalization. Her hearing was tested during her hospital stay, and she was found to have a severe loss in both ears. She was fitted with hearing aids before she returned home. Her parents were distraught that she had permanent hearing damage as the result of her disease, but they were determined to minimize any adverse effects. They made sure she wore her hearing aids at all times and were careful to speak clearly and directly to her only when she was fully attending to them. When she turned 3, they enrolled her in a preschool program that combined hearing-impaired and mainstream children in an intensive language stimulation program. When their physician saw Helen for a follow-up, she discussed the possibility of a cochlear implant to improve Helen's hearing. Her parents spent a great deal of time carefully considering the risks versus the benefits of this treatment option.

Helen has one kind of hearing impairment that can profoundly affect oral communication. Her story is also a powerful reminder that even today, common childhood illnesses can have devastating consequences. Her case also illustrates the crucial role that families can have in influencing the outcome of disorder. Finally, Helen's experiences show us the tough choices families and clinicians often face in selecting the best intervention strategies for a particular child with a hearing impairment. Let's look at some of these issues in a little more detail.

Hearing impairments may be characterized by both degree and type. The degree of hearing loss is defined by the autiometric classification of Bess and McConnell (1981). Their system is provided in Table 4-1. It is based on the pure tone average, or the average threshold a client displays in pure tone testing at the "speech" frequencies of 500, 1000, and 2000 Hz. Helen's audiogram appears in Figure 4-4.

Of course an audiogram alone tells us very little about a child's language competence. In addition to severity of loss, several other factors may influence language outcome: the age at which the hearing loss occurred or was identified, the cause of hearing loss, when and how hearing amplification devices are used, the presence of

TABLE 4-1 Categories of Hearing Loss

Degree of Hearing Loss	Hearing Range (dB SPL)
Normal	−10–15
Slight	16–25
Mild	26–40
Moderate	41–55
Moderately severe	56–70
Severe	71–90
Profound	91+
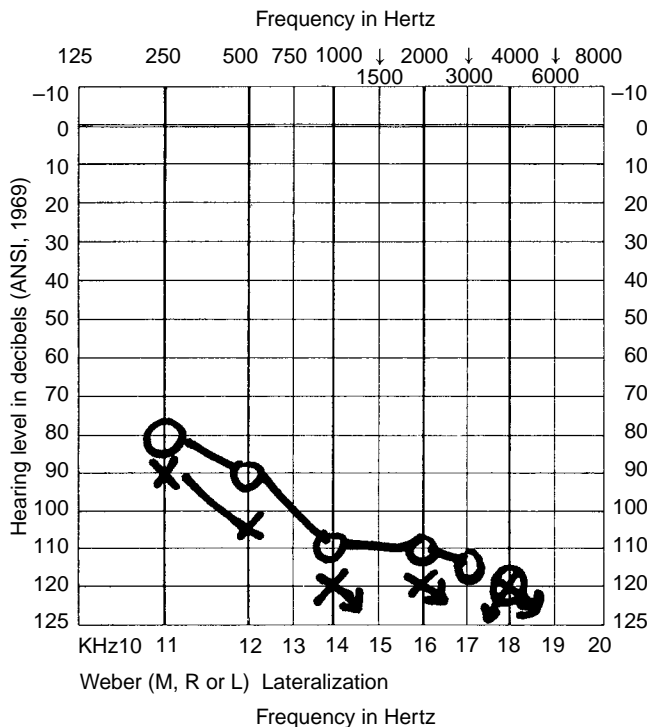
FIGURE 4-4   Helen's audiogram.

medical conditions, and the child's communication environment (Cleary, 2009). Thus, individualized assessment of language skills and careful consideration of individual needs are necessary to plan the intervention program.

Three types of hearing loss are usually described: conductive, sensorineural, and mixed. Conductive losses result from interference in the transmission of sound from the auditory canal to the inner ear, while the inner ear itself functions normally (Northern & Downs, 2002). Conductive losses are usually treatable and transient. The most common conductive losses in children are associated with otitis media (OM), the inflammation or infection of the middle ear. Hearing loss in relation to OM is usually fluctuating and intermittent. Sensorineural losses result from damage to the inner ear. They can be congenital or result from injury, infection, ototoxicity, or the degenerative effects of aging. They are not usually directly treatable or reversible, although cochlear implants are used to provide one form of surgical intervention. Mixed losses are caused by problems in both the conductive and sensorineural mechanisms. Below we will consider language and literacy development in children with sensorineural and mixed hearing impairments. Then we will briefly consider the impact of OM and conductive losses on language and literacy development. Finally, we will provide an overview of auditory processing disorder (APD). This disorder does not involve perceptual hearing loss, but is thought to result from atypicalities in neural responses to auditory information (ASHA, 2005a).

Sensori-Neural Hearing Loss

Cognitive Characteristics

Before the mid-twentieth century there was a general consensus that children with congenital hearing losses were intellectually disabled and inferior to their hearing counterparts. In the 1960s,

that view was comprehensively challenged (Vernon, 2005). Today of course we know there is no reason to assume that individuals with hearing impairment (HI) will experience intellectual impairments, indeed many children score within the normal range on appropriate tests of nonverbal reasoning. However, like all developmental populations, there is considerable variability. It is also important to remember that approximately 30% of children with moderate to profound losses have additional medical conditions that may adversely affect cognitive development (Fortnum, Marshall, & Summerfield, 2002). However, testing individuals with HI using appropriate measures can be a challenge. Tests such as the Universal Nonverbal Intelligence Test (UNIT, Bracken & McCullum, 1998) do not involve oral language instructions or responses and so may be ideal for assessing this population.

Language Characteristics

Unlike the other disorders we've covered in this chapter, a major consideration for families of children with profound hearing losses will be what language the child will learn and when he or she will learn it. Historically, this has been a contentious issue. Deaf children born to deaf parents are likely to learn American Sign Language (ASL) (or British Sign Language in the UK) and will have exposure to this language from the earliest opportunity. These parents may not view their child's HI as a disorder at all, but rather see themselves and their child as culturally different. Members of Deaf culture do not see the need for hearing aids or cochlear implants because they have developed a rich culture and fulfilling social world for members of the community, with a fully developed language, set of beliefs, and social mores. As clinicians, we must be sensitive to and respect these cultural views, as we would those of hearing clients from culturally diverse backgrounds.

Three issues require further consideration. First, the majority of deaf children are born to hearing parents who do not know Sign and may not even be immediately aware that their child has a hearing impairment. For these children there is a real possibility that early language and communication opportunities will be disrupted, with consequences for later language proficiency and social-cognitive reasoning (Woolfe et al., 2010). A second issue is that even within Signing communities, there are individual differences in language competence. Until recently we have lacked linguistically and culturally appropriate assessment instruments, but that is changing (visit www.dcal.ucl.ac.uk for an overview) and it is now possible to assess at least some aspects of language using Signed tests normed on Deaf populations (Mason et al., 2010). Finally, improvements in universal screening of hearing of newborn infants mean that hearing impairment is now identified at birth. In 2000, the FDA approved cochlear implantation for children as young as 12 months. These two advances mean that many more SLPs will be working with infants and their families to prepare them for cochlear implants (CI). The implications of early implantation and the outcomes for children with CI will therefore be considered.

Form

Not surprising, the early speech sound inventories and patterns of canonical babbling observed in children with HI are different from those of hearing children (Cleary, 2009). However there is enormous variability that is contingent on use of amplification or CI. Once words are acquired, the sequence of phonemes learned is roughly similar to that of hearing children, though protracted in development. There is also some evidence that, in addition to typical phonological processes, children with HI are more likely to produce voicing errors, extra nasality, and initial syllable omission.

Many children with severe and profound hearing losses will have lower levels of speech intelligibility, but again rates vary depending on aids/implantation, listener experience, and topic content. In one study that directly compared intelligibility ratings of speech in CI, hearing aid (HA), and normal hearing (NH) groups, children with CI had intelligibility scores that were indistinguishable from NH peers and significantly higher than ratings for the HA group (Baudonck, Dhooge, & Van Lierde, 2010).

Spoken language morphology and syntax have long been recognized as particularly challenging for children with HI. In the early stages, rate of MLU growth is slower than that seen in NH children (Geffner 1987). Rates of MLU growth in children with CI also appear to be delayed, but group means mask considerable within-group variation (Szagun, 2001). It appears that age of implantation or level of residual hearing can dramatically influence growth; in this case earlier and more are definitely better. In terms of morphological structure, the use of Signed systems of English can be useful in highlighting the sound, spelling, and morphological conventions of English (Cleary, 2009), many of which are perceptually non-salient. However, as we've seen, outcomes are decidedly mixed and many children fail to acquire the typical range of morphemes used in English.

In general, the picture is one of qualitatively similar but substantially delayed acquisition of grammar. There are some notable differences though and it is suggested that children with HI (including CI users) may rely more on semantic/conceptual cues than purely grammatical markers in developing morphology (Ruder, 2004). For instance, like children with primary DLD, children with HI are able to mark plural –s with little difficulty but are more likely to omit third person singular –s. In terms of grammatical structure, children with HI are prone to omit sentential elements and are significantly delayed in their acquisition of complex grammatical structures (Friedmann & Szterman, 2006). However, as we've seen already, early audiological intervention, and, in particular, CI use in the early preschool years yields marked improvement in language growth approaching 100% of gains seen in the NH population (Niparko et al., 2010).

Content
Like language forms, language content can vary dramatically depending on the situation. Overall, there is some evidence that vocabulary levels may be delayed in HI, but that early CI use can alter the developmental trajectory such that children achieve typical levels of receptive vocabulary (Hayes, Geers, Treiman, & Moog, 2009). A recent study of deaf children exposed from birth to British Sign Language revealed similar growth curves and patterns of vocabulary development, and indicated that predictors of language growth in Signing HI children are similar to those seen in NH populations, namely maternal education and maternal language input (Woolfe et al., 2010). Much less is known about the detailed semantic knowledge of children with HI and the integrity of their semantic networks.

Children with HI are reportedly less successful on experimental tasks of word learning (see Cleary, 2009). Children with HI make the typical inference that a novel label refers to a novel object rather than a familiar one (Lederberg, Prezbindowski, & Spencer, 2000) but have more difficulty labelling new referents and recalling the label after training (Houston et al., 2005).

Use
There is substantial evidence that learning about mental states requires rich conversational experience with others; as such, deaf children born to deaf parents tend to outperform deaf children born to hearing parents on measures that tap social-cognitive understanding (Woolfe et al., 2002). What is less clear is whether these inefficiencies in social understanding result in difficulties with social interaction or the social use of language. Falkman and Hjelmquist (2006) reported that non-native signers were less successful than hearing peers on referential communication tasks, but that performance was associated with working memory, rather than social cognition. These studies highlight that, in terms of language use, early exposure to language and communication in socially meaningful contexts is more important than hearing status per se. Pragmatic skills have not been extensively researched and clearly more work is needed to characterize the pragmatic abilities of children with different language and amplification experiences.

Literacy
As with spoken language outcomes, literacy outcomes for children with HI have changed dramatically with the introduction of CI. In the past, it was not uncommon to find children with HI leaving school with little functional literacy and reading age equivalent to a NH 9-year-old (Conrad, 1979). It has also been the case that the gap between HI and NH readers has increased over time; a delay of 1 year at age 8 can become a 4-year delay at age 14 (Harris & Moreno, 2004). There is evidence that CI use can result in near normal levels of reading comprehension (Spencer et al., 2003), though others have reported continued deficits in reading and spelling in adolescents with HI (Harris & Terleksti, 2010). Interestingly, Harris and Terlektsi (2010) reported that adolescents using HA were better than peers with CI on measures of literacy attainment, though they were still below age expectations. This could be due to the age at which children received CI (average age of 4) but may also reflect differences in educational placement; HA users were more likely to be placed in specialist educational provision, whereas CI users were more likely to be in mainstream classrooms. Johnson & Goswami (2010) explored literacy outcomes in early-implanted versus late-implanted CI users. The early CI users outperformed the comparison group on all measures of reading. Importantly, measures of oral language significantly predicted reading outcome, as did measures of phonological processing.

Another factor that may contribute to literacy development in this population is early exposure to print. The focus on amplification issues and establishment of oral language skills can sometimes mean that less attention is paid to preliteracy skills. Kretschmer and Kretschmer (2001) reported that children with HI exhibit more

Sign language is often used as a communication modality for children with HI.

emergent literacy behaviors when they are provided with engaging, print-rich environments at home and at school, and when their early attempts at writing in these environments are similar in form and content to NH peers. Clearly, exposing children with HI to books and stories, demonstrating the uses of writing in everyday activities, and providing attractive writing materials and opportunities will be useful in this population, as in others, for fostering literacy development.

Implications for Clinical Practice

There is little doubt that cochlear implants have radically changed the expected outcomes for children with severe and profound hearing impairments. There is also little doubt that earlier CI use is associated with better long term outcomes. For example, Niparko et al. (2010) reported that for each year the history of hearing deficit was shortened, there was a significantly steeper rate of increase in language comprehension and production scores. As we've seen, early implantation also yields better literacy outcomes, though literacy remains a challenging area of development for children with HI (Geers et al., 2008). In addition, there is some evidence that delayed exposure to language can alter neurocognitive mechanisms in ways that affect learning. For instance, Conway et al. (2011) reported that children with HI who were CI users were less adept than NH peers at implicitly learning visual sequences. Performance on this task was correlated with language ability, suggesting a potential limitation on the benefits of later implantation.

The net result is that children with HI will be referred to hearing and SLP services at ever earlier ages. Prior to implantation, many infants will be required to undergo a trial period of hearing aid use. The clinician will need to work closely with the family and the audiologist during this sensitive period. Spencer (2009) outlined key issues facing families and professionals. These include maximising device compliance, exploring communication philosophies and options (i.e., decisions regarding CI and sign language use) and the need for genetic testing. All of this will be occurring within the first year of life, a challenging and emotional time for any new parent! Working with families and infants will involve helping families to recognize and respond to their child's communication attempts, as well as helping them to recognize how their own behavior facilitates language and communication in their child. Once the CI is in place, the clinician will work with families and other professionals to establish treatment goals focused on improving listening skills and responses to new sounds as well as early speech and language goals to foster in a socially meaningful context. Intervention at this early age should pay off in the longer term, though monitoring of children throughout the school years is recommended, with particular focus on developing literacy skills.

Otitis Media

According to the U.S. Department of Health and Human Services, OM is one of the most common diseases of young children. Three quarters of all children experience at least one episode of OM during the preschool years. Children who experience OM, particularly with effusion, often suffer some degree of conductive hearing loss during the OM episode. It has long been thought that such mild, fluctuating hearing losses, when experienced repeatedly during the sensitive period of language development, can have a lasting and negative impact on language learning. Shriberg & Kwiatkowski (1982b), for example, found that one-third of children enrolled in speech-language interventions had a history of recurrent middle ear disease.

Many have questioned this long held assumption. Results such as those reported by Shriberg & Kwiatkowski (1982b) may be influenced by ascertainment bias; children who attract clinical attention are more likely to experience multiple developmental concerns, of which OM may be one. Of the entire population of children who experience OM though, it may be that all other things being equal, very few have lasting problems with language development. Population studies are required to determine the true risk of OM on language outcomes. A very large population study of more than 6000 preschool children reported weak and largely non-significant correlations between number or duration of OM episodes and later language scores, with sociodemographic variables proving the best predictors of outcome (Paradise et al., 2003). The same study also used a randomized controlled trial in which children with persistent OM were randomly allocated to receive tympanostomy tubes immediately or after a delay. At follow-up, there were no differences between the two groups in general cognitive outcomes or any measure of speech or language. Importantly, no differences emerged over time; at ages 9 to 11 the two treatment groups performed similarly on an extensive battery of cognitive, language, and literacy measures (Paradise et al., 2007). Even when early delays are detected in clinically referred samples, these early differences appear to wash out over time, with typical language status apparent by school age (Zumach et al., 2010).

Thus, in otherwise healthy children, OM does not confer increased risk for long-term language or literacy impairment. However, it is important to remember that many developmental disorders such as Down syndrome are particularly susceptible to OM, which may exacerbate language-learning difficulties. In these populations, hearing should be monitored closely.

Auditory Processing Disorder

APD is a controversial diagnosis that is not currently part of conventional diagnostic systems (e.g., Diagnostic and Statistical Manual of the American Psychiatric Association, DSM-IV) but is increasingly identified in the US, Australia, and the UK. Increasing interest in the disorder led ASHA to issue a position statement in 1996, which was updated in 2005. According to ASHA (2005a) APD may be defined as "the efficiency and effectiveness by which the central nervous system (CNS) utilizes auditory information." AP includes the auditory mechanisms that underlie the following abilities or skills:

- sound localization and lateralization
- auditory discrimination
- auditory pattern recognition
- temporal aspects of audition, including temporal integration, temporal discrimination (e.g., temporal gap detection), temporal ordering, and temporal masking
- auditory performance in competing acoustic signals (including dichotic listening)
- auditory performance with degraded acoustic signals

Part of the controversy surrounding this disorder appears to stem from the methods of assessment and the degree to which they involve speech stimuli (Dawes & Bishop, 2009). When such tasks are included, it is difficult to ascertain the causal connection: is language impaired because of auditory processing disorder, or is performance on the task compromised because of limitations in linguistic ability? Clearly though, many language-based tasks will require the abilities listed above. ASHA (2005a) clarifies the situation to some extent by stating:

> although abilities such as phonological awareness, attention to and memory for auditory information, auditory synthesis, comprehension and interpretation of auditorily presented information, and similar

skills may be reliant on or associated with intact central auditory function, they are considered higher order cognitive-communicative and/or language-related functions and, thus, are not included in the definition of AP. (p. 4)

Dawes and Bishop (2009) also point out that 50% of children meeting criteria for APD also meet criteria for other developmental disorders such as ADHD, which may affect performance on diagnostic tests of APD. This reinforces the need for specific measures that are unconfounded by language and/or attentional demands. This also raises issues about APD as a coherent diagnostic entity, or whether the label reflects the conceptualization of the problem by the professional assessing the child (Bishop & Dawes, 2009). In other words, a child with poor attention and language delay may be diagnosed with APD by an audiologist, DLD by a speech-language pathologist, or ADHD by a clinical psychologist. Dawes and Bishop (2009) conclude that there is no evidence that APD is a coherent diagnostic category, but that there is evidence that many children with a range of developmental diagnoses experience problems with auditory processing. The causes and consequences of these auditory difficulties are a matter of debate and much more research is needed to resolve these issues. In the meantime, improving methods of assessment and consensus on diagnosis is a top priority. Critically, measures should be selected that do not involve speech or language stimuli and so do not confound poor performance with poor attention.

Even when a problem is diagnosed, there remains no clear consensus about how this should be managed. Bamiou et al. (2006) highlights the dearth of studies investigating treatment efficacy for APD. These authors further indicate that current clinical practices do not aim to treat the auditory deficit directly, but rather aim to reduce the impact of auditory processing deficits through environmental modification or signal enhancement, such as the use of auditory trainers in classrooms.

Deaf-Blind

Children with significant deficits in both hearing and vision are considered *deaf-blind* even though some may have useful residual vision and/or hearing. There are two major causes of deaf-blindness. One is Rubella syndrome, a congenital condition that arises when the mother contracts rubella, or German measles, during the first months of pregnancy. Thanks to wide-spread immunization for Rubella, deaf-blindness attributable to this syndrome has been greatly reduced. The second major cause is Usher's syndrome (Shprintzen, 1997), a rare genetic disorder.

Because of the multisensory deprivation that children with deaf-blindness experience, Nelson (1998) recommended using contextualized and dynamic assessment techniques to evaluate skills and identify communicative needs in this population. It is worth remembering, too, that although these children have complex and severe disabilities, they may have normal cognition. When accurate cognitive assessment is not available or feasible, it is best to set aside questions of basic intelligence and work to expand conceptual, social, and communicative skill as far as possible. Some form of augmentative and alternative communication (AAC) is almost always useful in these cases. Communication devices that emulate the receiving and transmitting modes of tactile finger spelling have been shown to be useful with this population and activate neural circuitry involved with language processing (Obretenova et al., 2010). Some examples of AAC interventions that may be used with deaf-blind children are outlined in Box 4-1.

BOX 4-1   AAC Intervention Techniques for Children with Deaf-Blindness

UNAIDED TECHNIQUES

Signalling: simple body signals such as coordinated rocking with reciprocal cues to start and stop

Gestures: conventional gestures such as hi, bye-bye, or head nods

Anticipatory cues: cues used to signal an upcoming action so the child may anticipate events, such as rubbing the child's cheek with a washcloth to signal bath time

Adapted signs: the child's hand can be shaped to produce signs, and the child can be encouraged to feel the clinician's hand shape to perceive signs. At first, gross approximations can be accepted and then gradually shaped to more conventional signing.

Finger spelling: finger spelling can be introduced by first manipulating the fingers in playful, interactive games. Eventually, familiar objects and actions within routines can be labelled with finger-spelled words.

Speech: children with residual hearing may be taught speech, but other modes of communication can co-exist with speech instruction.

Print/Braille: children with significant residual vision can be introduced to print when level of functioning appears appropriate. Braille may be appropriate for those who can make fine tactile discriminations.

AIDED TECHNIQUES

Opticon: this device changes print to a tactile representation and may assist higher functioning deaf-blind students who rely on Braille for academic instruction.

Teletouch: this device allows sighted people to type messages on a standard keyboard, so that each letter is reproduced as Braille.

Communication boards: pictures of symbols can be labelled with Braille or more concrete tactile cues and used for both receptive and expressive communication.

Typing and writing: computers and dedicated electronic augmentation devices can be used and coupled with speech synthesis software to allow an individual's message to be written out and spoken.

Finger spelling is one means of communication used with students who are deaf-blind.

DLD ASSOCIATED WITH ACQUIRED NEUROLOGICAL DISORDER

Freddie had been a precocious preschooler. In fact, he was so bright that his parents had him tested to determine whether he could enter school a year early. The results of the assessment, copies of which his parents kept and showed to every clinician who saw Freddie later, indicated an IQ in the superior range and very advanced verbal skills. When Freddie was 7, he experienced a series of seizures for no apparent reason. After Freddie was hospitalized several times, including extensive experimentation with drug treatments in order to determine appropriate dosage, the seizures were partially, but not fully, controlled. His parents began to notice that Freddie's speech was beginning to deteriorate; his sentences got shorter and he couldn't think of the words he wanted to use. His concentration was poor and he became increasingly impulsive, so much so that his parents had to lock cabinets and keep dangerous substances well out of reach. Even when the seizures were fairly well controlled, the language and cognitive problems did not go away. His parents struggled for years to find a way to release the real, bright Freddie they had known before the seizures started. They firmly believed that Freddie was just as clever as he had been, but was locked inside his own body. Indeed, his nonverbal IQ scores were age appropriate, but his expressive language was telegraphic and he had severe comprehension deficits. He had a terrible time at school and, eventually, his parents reluctantly agreed to place him in a special educational setting so that his language and learning needs could be met.

As Freddie's case illustrates, acquired brain damage can have severe and long-lasting effects on language, communication, and academic success. In this section, we'll review three types of acquired neurological insult that can result in a DLD, before considering implications for clinical practice.

Traumatic Brain Injury

Traumatic brain injuries (TBIs) can be focal in nature. When they are, they are usually open-head injuries, such as gunshot wounds, and their impact on language development is similar to that described for other focal lesions (see "Focal Brain Lesions"). Closed-head injuries, such as those resulting from blows or collisions, tend to involve diffuse damage, affecting large areas of the brain and are the more common type of TBI in childhood. Road accidents and falls account for the largest proportion of cases, though child abuse is an important consideration, accounting for approximately 10% to 15% of cases (Blosser & DePompei, 2001). Boys are more likely to experience TBI than girls. Immediately following injury, children with TBI experience a great deal of spontaneous recovery. Recent research suggests that age of injury significantly predicts language and literacy outcome, with younger children showing more rapid initial recovery followed by poorer outcomes overall (Hanten et al., 2009). Poor prognosis is also indicated by the severity of injury, as measured the Glasgow Coma Index at hospital admission (Ewing-Cobbs et al., 2006) and by family factors such as socioeconomic status (Hanten

et al., 2009). There is considerable debate as to whether age at injury predicts outcome, with some researchers suggesting that earlier injury results in poorer prognosis and others arguing that injuries that occur later in development may be more debilitating. Comparisons across studies may be difficult due to differences in population ages and injuries, and the measures used to establish outcome. For example, Hanten et al. (2009) used standardized measures of reading comprehension and expressive language to measure outcome in children experiencing TBI between the ages of 4 and 15 years. On these measures, children injured at earlier ages had poorer overall outcomes. On the other hand, Ewing-Cobbs et al. (2006) studied a smaller, more homogeneous group of children injured between the ages of 4 and 71 months and measured outcome using standardized tests of academic attainment some 5 years later. At this age, using these measures, age of injury did not significantly predict outcome, whereas severity of initial injury did. In terms of adaptive outcomes, severe injury earlier in childhood results in poorer quality of life and community reintegration outcomes (Chevignard, Brooks, & Truelle, 2010).

Cognitive Characteristics

Cognitive outcomes after TBI are variable, but are important predictors of language ability and adaptive behavior. For example, Ewing-Cobbs et al. (2006) reported that 48% of children with TBI had nonverbal IQ scores in the bottom 10th percentile. Reduced cognitive ability may affect speed of information processing and pragmatic skills such as narrative and discourse competence (Chapman et al., 2006). Deficits in executive function also may be evident after TBI, with consequent difficulties with attention, concentration, and impulsivity.

Language Characteristics

Gerring and Carney (1992) detailed the language recovery process in the immediate aftermath of trauma. At first, children tend to be mute and may only follow simple commands. Early language productions often reflect the confused state that the child is in and are often dysarthric or nonfluent. Speech may be slow, and prosody may be affected so that speech sounds monotonic and "flat." Swallowing disorders are also common during this phase of recovery. During this period, two types of language patterns may emerge; the first is "sparse language production" in which the child does not initiate communication and will only answer questions with single words or short phrases. The second is "excess speech production" in which the child talks too much and makes tangential statements that are off-topic, irrelevant, and sometimes inappropriate.

From this point, language function can show rapid improvement, even in severe cases, though full recovery of language function is rare (Ewing-Cobbs et al., 2006). Factors that further contribute to language and literacy difficulties are marked impairments in attention and other aspects of executive control, such as working memory, and broader cognitive deficits. In general, sentence repetition and tactile naming are not impaired in individuals with TBI. However, mild deficits in naming, word fluency, and expressive/receptive grammar are probable (Sullivan & Riccio, 2010).

Use

Pragmatic language skills are particularly vulnerable in TBI. Marked deficits in discourse processing are common and may include problems with turn-taking, topic maintenance, generating verbal responses, and understanding the intentions of others (Ewing-Cobbs & Barnes, 2002). More formal assessment of pragmatic language may also reveal difficulties understanding non-literal language, generating inferences, resolving ambiguous messages, and a heavy

reliance on verbatim memory, rather than interpretation, in narrative tasks (see Sullivan & Riccio, 2010, for review).

Literacy

The extent of literacy impairment may depend crucially on the age of injury and the extent to which the child was already literate prior to injury. As with most other disorders, reading comprehension is more likely to be impaired relative to word reading and decoding skills (Hanten et al., 2009). This is perhaps not surprising given that skilled reading comprehension requires many of the pragmatic language abilities known to be impaired in TBI. Oral language deficits may not be the only factor contributing to literacy outcome, however. While word reading *accuracy* may be at the expected level, many children demonstrate reduced reading *fluency* following TBI. Slowed word recognition in connected text may tax already limited memory capacity, further interfering with reading comprehension (Sullivan & Riccio, 2010).

Implications for Clinical Practice

As Freddie's story demonstrates, often the hardest thing for families and teachers to accept after an acquired brain injury is that, in many ways, they are dealing with a different person than the one they knew before the neurological damage took place. Both the child and the adults may feel confused and frustrated that things that came easily before seem impossible now. The child may seem to be less compliant, to be "lazy" or unmotivated, to be scattered and inattentive, to have a different personality entirely. Freddie's family's response exemplifies this problem. They keep trying to find the "old" Freddie, and think that, if only they could get the right kind of help, they'd "unlock" him. One challenge for clinicians therefore is to work with families to deal with the Freddies as we find them today, enabling them to establish the maximum levels of functional skill and independence.

Assessment Needs

Identifying a child's stage of recovery from brain injury can be important for assessing needs and planning programs. Blosser and DePompei (2001) suggested that there are three stages to the assessment process in this population:

Phase I: the child is recovering medically, usually in an acute-care facility

Phase II: the child is medically stable and ready to begin rehabilitation

Phase III: ongoing assessment is needed in the child's educational and daily living settings

During phase I, assessment will focus on the physical care needs that affect treatment, such as respiratory, swallowing, or motor control problems. This also is a time to collect case history data from the family about premorbid functioning—the child's communication and academic strengths and weaknesses prior to the accident—and to help families understand the child's current condition. In phase II, assessment focuses on determining the child's functional strengths and needs in behavioral, cognitive, and communicative domains. Phase III entails using formal and informal methods, as we discussed in Chapter 2, to establish baseline functions, identify goals for intervention, and evaluate change in the therapy program. Hotz et al. (2009) provide an overview of a criterion referenced assessment that is currently being standardized for use with this population. The Pediatric Test of Brain Injury has ten subscales and is designed to assess neurocognitive, language, and literacy abilities that are relevant to the school curriculum of children and adolescents recovering from brain injury. As the child continues to recover, it will also be important to include assessment of higher level language functions known to be vulnerable in children with TBI.

During Phase III, an assessment of the child's environment will also be necessary, in order to identify the demands and expectation of the child's daily living situations (Blosser & DePompei, 2001). This assessment can be used to develop a profile of the most important environmental requirements that should serve as the focus for treatment. For example, it may involve helping to sensitize communication partners to the child's needs and eliminating barriers in the environment to successful communication. Apparently good performance on a standardized test may not translate into effective communication in everyday environments because standardized test procedures provide support that helps children compensate for the impairments in executive functions that frequently disrupt performance in less-structured settings. Looking at language competence in both structured and more unpredictable settings will give us a broader picture of the client's abilities (Sullivan & Riccio, 2010).

Finally, clinicians will need to take account of the child's premorbid levels of functioning in developing assessment and treatment plans, something that is unique to this population. Assessment in the rehabilitation setting should include obtaining school records and discussing the child's academic status with teachers and parents. Skills in which the child was very proficient before the injury could provide good targets for retraining, because overlearned skills may be better preserved. However, inconsistent performance is a hallmark of TBI; we can't assume that just because the child was able to do long division before the injury he or she will be able to do simpler arithmetic problems post-injury. Assessment principles and specially designed tools for children with TBI are outlined in Box 4-2.

Intervention Issues

As we've seen with most of the disorders reviewed in this chapter, developing an intervention program with TBI will involve close collaboration with both families and the multidisciplinary team managing the child's care. In TBI, interventions can be divided into two classes: those that seek to retrain or develop cognitive skills, and those that teach compensatory strategies (Semrud-Clikeman, 2010). Application of these approaches is likely to depend on the phase of recovery the child is in. Unlike other disorders, in the early stages of recovery, the setting for intervention is likely to be in a hospital or rehabilitation setting, and the medical needs of the child at this stage will obviously place constraints on the nature of therapy offered. At this time the child is also in a period of spontaneous recovery and the goal of intervention will be to improve levels of residual function maximally. Sessions should be short and aimed at stimulating one modality at a time, with tactile and motor stimulation preceding visual and auditory stimulation. Once a response to stimuli has been established and is more reliable, more functional activities can be introduced. These may involve physical response (nodding or other nonverbal gesture) to questions aimed at orienting to the child to his or her current circumstances (i.e., date, time, place), basic self-care, and simple visual motor activities.

Once the child has moved into Phase II, intervention should emphasize structured tasks. Because of frequent difficulties with attention, concentration, and impulsivity in TBI, the context of these activities should be free of distractions, repetitive, predictable, and intrinsically rewarding. Their goal would be to develop functional and adaptive behaviors, and may include work on language comprehension, simple verbal problem solving, and the use

BOX 4-2   Assessment Strategies for Traumatic Brain Injury Using WHO (2001) Framework

IMPAIRMENTS IN BODY STRUCTURE AND FUNCTION
- Use standardized tests to examine all major areas of cognitive and communicative functioning
  - Intelligence
  - Executive function
  - Judgement and reasoning
  - Problem solving
  - Attention and concentration
  - Memory
  - Perceptual and perceptual motor skill
  - Academic achievement
  - Speech
  - Language form and content
  - Language use (pragmatics)
- Systematically manipulate test variables to identify factors that influence success or failure on standardized tests

ACTIVITIES AND PARTICIPATION
- Use structured assessment/observations of individual performing functional activities
- Obtain informant data, such as interviews and rating scales (e.g., *Vineland Adaptive Behavior Scales—II*, Sparrow, Cichetti and Balla, 2005)
- Identify successful/unsuccessful participation in real-world activities
- Systematically explore factors that influence performance on everyday activities, including possible compensatory strategies

CONTEXTS AND ENVIRONMENTS
- Document the cognitive and communicative demands of everyday environments (e.g., "curriculum based assessments")
- Evaluate the communication and support abilities of relevant people in the child's environment
- Systematically manipulate environmental factors, including supports/behaviors of key communication partners, to identify context-specific features that support successful participation

Adapted from Turkstra et al. (2005). Practice guidelines for standardized assessment for persons with Traumatic Brain Injury. *Journal of Medical Speech-Language Pathology, 13,* 2, pp. ix-xxxviii. Available at: www.ancds.org/pdf/articles/Turkstra_Standard_classes.pdf

of self-monitoring to detect and self-correct errors or request clarification from others when needed.

In phase III, the child will be returning to home and school and the clinician will need to work more closely with school staff to facilitate the child's transition back to the learning environment. Here, the clinician may serve in a consulting role, helping the classroom teacher reintegrate the student into the mainstream program, as well as providing collaborative lessons that focus on integrating communication skills within class lessons. For children with more severe DLD following a TBI, the clinician may need to provide an individualized language program, as well as consulting with education staff to ensure generalization of skills learned in therapy sessions to the classroom environment. Semrud-Clikeman (2010) has provided some suggestions for helping students with TBI reintegrate into the school setting, summarized in Box 4-3.

Intervention may focus on developing metacognitive strategies, or retraining clients to use executive control to monitor their own cognitive processes and regulate learning behavior; many strategies for this population are similar to those we will use for children with language-learning disorders. Table 4-2 summarizes some similarities and differences between these two conditions. We'll talk much more about developing metacognitive and other learning strategies in later chapters; many of the techniques we use to develop these skills with children who have more specific DLDs, children with ASD or ADHD, will be appropriate to use with children who have experienced TBI. In addition, language use is most likely to be disrupted in individuals with TBI and therapies that target pragmatics and social language use may also be appropriate to use with this population. However, it is always important to bear in mind that children with TBI will have particular learning needs that are not always present in other disorders and that these will need to be taken into account when adapting therapy approaches. These may include: more marked memory deficits for recent events, potential for physical impairments (paresis or weakness), cognitive impairment, poor retention of new information, visual deficits, rapidly changing behavior, internal as well as external distractions, adverse effects on learning due to trauma-induced sluggishness or medication, reduced insight into his or her own learning problems, and labile and sometimes unpredictable emotions not always linked to immediate context (Blosser & DePompei, 2002; Semrud-Clikeman, 2010).

Focal Brain Lesions

Lesions that are focal, or localized to a specific area of the brain, are usually caused by cerebrovascular accidents (CVAs) such as strokes, and are relatively rare in children; however, children with congenital heart defects are particularly vulnerable to CVAs and premature babies may suffer focal damage as a result of intracranial bleeding during their first weeks of life outside the womb. A body of work by researchers in San Diego has prospectively followed the developmental trajectories of language and cognition in children with focal lesions, considering outcomes in relation to side and site of lesion and developmental timing of lesion (Bates, 2004; Dick et al., 2004; Reilly et al., 2004; Wulfeck et al., 2004). These studies revealed remarkable language plasticity in the developing brain and suggested altered developmental trajectories. These were characterized by early delays in word comprehension and gesture (though deficits are more likely following right hemisphere lesions than following left hemisphere lesions) and delays in word and sentence production (though these deficits were more pronounced if lesions occurred in left temporal brain regions, as opposed to more frontal areas). These delays were followed by rapid acceleration of language function such that, by school-age, children with focal lesions were largely indistinguishable from typical peers on measures of vocabulary, grammar, tense-marking, and narrative production (Bates, 2004; Reilly et al,. 2004; Wulfeck et al., 2004). More recent studies have suggested that, although language performance on standardized tasks may be within normal limits, children with early left hemisphere lesions may have subtle deficits in language processing relative to peers (Raja et al., 2010) and that measures of narrative may be particularly sensitive to subtle language differences (Demir, Levine, & Goldin-Meadow, 2010). With regard to narrative, Demir et al. reported that children with early focal lesions produced shorter stories that were structurally less complex, used less diverse vocabulary, and made fewer

BOX 4-3 Reintegrating Students with Traumatic Brain Injury into the Classroom*

- Plan small group activities to help develop interaction skills
- Clarify verbal and written instructions by reading written instructions out loud and accompanying verbal instructions with written ones. Repeat and paraphrase often, define unknown terms
- Explain core vocabulary and concepts; pre-teach this information in individual sessions
- Pause when giving instructions to allow extra processing time
- Give the student extra time to respond, since processing speed may be slow
- Avoid figurative language, or explain it when used
- Give the student a classroom "buddy" to help him or her keep on top of instructions, assignments, and classroom transition times
- Let the student use assistive devices, such as a computer or iPad
- Help the student "get organized" by having him or her keep a written (or computer based) log of classes, assignments, due dates, etc.; monitor the log regularly
- Set aside time for the student to talk to a trusted adult about feelings and frustrations
- Plan extracurricular activities based on interests before the injury as well as on current abilities
- Avoid direct, confrontational questions in class; ask leading or indirect questions ("tell me about . . . ") to encourage responsiveness
- Decrease distractions in the classroom; if mobility problems are present, carefully arrange classroom furniture to allow freedom of movement
- Modify assignments by reducing the number of questions to be answered, or material to be read; let student record lectures, give test answers verbally to a scribe; go over tests and explain answers
- Augment textbooks with pictures and vocabulary lists, highlight key information; provide a "podcast" with a summary of textbook information; assign review questions and use reciprocal teaching techniques
- Teach compensatory strategies
- Announce and clarify conversational/lesson topics
- Support communication with gesture, pictures, print, etc.
- Require and expect communication, reinforce all communicative attempts; construct opportunities to communicate (e.g., lunch buddies, paired classroom activities)
- Practice higher level reasoning skills in small groups with peers engaged in problem-solving activities
- Encourage memory skills by teaching strategies such as categorizing, association, rehearsing, visualizing, and chunking

*Adapted from Semrud-Clikeman (2010). Pediatric traumatic brain injury: Rehabilitation and transition to home and school, *Applied Neuropsychology, 17(2),* 116-122.

inferences regarding the cognitive states of the story characters. These deficits occurred despite the fact that the children with focal lesions did not differ from the comparison group on standardized measures of grammar and vocabulary. Thus, most children with focal lesions make more or less complete recoveries in terms of speech, language, and communication, though the clinician should be alert to subtle deficits in higher-level language tasks that may interfere with academic achievement.

Seizure Disorders (Landau Kleffner Syndrome)

Some children, like Freddie, go through a period of normal development, then suddenly or gradually lose language skills in association with a seizure disorder. Landau-Kleffner syndrome (LKS), also known as acquired epileptic aphasia, is a rare seizure disorder that causes severe language disorder. Onset is usually between 3 and 6 years of age, though it can occur any time in childhood. It is often misdiagnosed because overt epileptic seizures are uncommon. The typical clinical picture is of a child who loses language skills rapidly after a period of normal development, and comprehension is usually most severely affected. The difficulties in language understanding are variable; some children may be able to understand single words or short phrases but others may no longer understand any spoken language, not even their names. Deafness may be suspected, but ruled out after a hearing test is conducted; the problem is not with hearing, but with making sense of the auditory input. Difficulties with comprehension often occur along with difficulties speaking. In the most severe cases, children may lose

speech altogether and may resort to gesture to convey meaning. Selective mutism may therefore also be considered given the child's history of verbal communication. However, in the case of LKS, there is a genuine loss of language. While the language impairment may be relatively circumscribed with nonverbal cognitive abilities intact, LKS may be associated with behavioral difficulties and stereotypes that resemble autism and may further confuse the clinical picture (Deonna & Roulet-Perez, 2005). Thus, when a child presents with severe comprehension deficits and language regression, referral to a pediatric neurologist is warranted so that a sleep electroencephalogram (EEG) may be carried out in order to demonstrate EEG abnormalities.

All children with LKS have language disorders and will require assessment and support from the speech-language pathologist. Prognosis is more optimistic for children in whom onset occurs after the age of 6, after language has been established. However, outcomes for children with onset in the preschool years are particularly poor and significant language deficits may persist into adulthood. Pharmacological treatments may be effective, and there is some evidence that early diagnosis and prompt medical intervention is important for improved prognosis, but outcome is variable and controlled clinical trials are lacking (Mikati & Shamseddine, 2005). When language has regressed and comprehension deficits persist for more than a few weeks it is essential to provide children with alternative means of communication, such as Sign language, which can be used in conjunction with verbal language (Deonna et al,. 2009). Some children with LKS may develop problems with behavior and social interaction that are similar to autism spectrum behaviors (Deonna & Roulet-Perez, 2010). For these children, an emphasis on developing social

TABLE 4-2 Differences Between Language-Learning Disabilities and Acquired Language Disorders

Language-Learning Disability	Acquired Language Disorder
1. Mild memory problems	1. Severe, recent memory problems, with difficulty carrying over new learning
2. Early onset	2. Later onset
3. Central damage can only be assumed from "soft neurological signs"	3. Direct evidence of neurological impairment
4. No pre/post contrast	4. Marked pre/post contrast of abilities, self-perception, and perception of self by others
5. Skills and knowledge show uneven development	5. Some old skills and knowledge remain, but there are inconsistencies of performance
6. Physical problems usually include only mild motor uncoordination	6. Physical disabilities may include paresis (weakness) or spasticity
7. Basic cognitive skills may be intact	7. Basic cognition is commonly disrupted
8. Acquisition of new skills is slow, but what is learned is usually retained	8. What is learned may not be retained; much repetition and practice using compensatory strategies are needed
9. Status changes slowly	9. Status may change rapidly during recovery
10. Visual perceptual problems often unaccompanied by visual impairment	10. Visual problems often include double vision, poor depth perception, inability to adjust from near (book) to far (black-board) vision, partial loss of vision
11. Client is distracted by external events	11. Client is distracted by both external and internal events, with internal events related to the brain damage
12. Normal or high activity level	12. Recovery from coma may include slowness or lethargy
13. Seizure medication, which can cause dulling of cognitive function, used only if frank seizures are present	13. Seizure medication may be used to prevent seizures, even if they have never occurred, and their cognitive dulling effects may influence learning
14. Usually aware of own learning problems	14. Injury may cause lack of awareness of learning problems in some cases
15. Behavior modification strategies are often effective	15. Organic dysfunction and memory losses may decrease the success of behavior modification
16. New learning can often be linked to past learning, although memory problems are present	16. Loss of some long term memory may make linking new learning to old more difficult
17. Emotional reactions connected with present situation	17. Emotions can be labile and unpredictable and may not be linked to immediate situation

Adapted from Blosser, J., and DePompei, R. (Nov., 1992). *Serving youth with TBI: Circumventing the obstacles to school integration.* Mini-seminar presented at the annual convention of the American Speech-Language-Hearing Association, San Antonio, TX; Blosser, J., and DePompei, R. (2002). *Pediatric traumatic brain injury* (2nd ed.). San Diego, CA: Singular Publishing Group.

communication skills, imaginative play, and emotional understanding of self and others may be high priorities. Developing language and conversational skills in everyday social settings is also recommended.

In LKS, visual processing is still relatively normal and can therefore be used to support oral language. In addition to Sign language, symbol systems may be used for communication, or to provide visual cues to help structure the learning environment (i.e., classroom and therapy timetables). Reading may also be possible, though children acquiring literacy after LKS may benefit more from whole word strategies as opposed to more typical phonics based approaches (GOSH NHS Trust, 2010).

DLD ASSOCIATED WITH PSYCHIATRIC DISORDERS

Language disorders have long been associated with risk for psychiatric disorder; an early population study in Canada indicated that preschool language impairment was a strong predictor of psychiatric outcome in the middle school years, with ADHD and emotional disorders the most common psychiatric diagnoses (Beitchman et al., 1996). Convergent evidence from child psychiatry clinics indicates that approximately one-third of children referred for assessment of socio-emotional disturbances may have previously undiagnosed

language impairments (Cohen, Barwick, Horodezky, Vallance, & Im, 1998). When combined with children whose language impairments had already been identified, some 50% of school-aged children referred to psychiatric clinics have significant language difficulties (see Im-Bolter & Cohen, 2007, for review). Although there is little doubt that rates of co-morbidity are higher than would be expected in the general population, there is much debate surrounding the causal relationships between DLD and psychiatric disorders such as ASD and ADHD. It would seem likely that at least some of the genetic factors that confer risk for language impairment are shared across developmental disorders; a prudent approach would therefore be to assess language functioning in any child referred for psychiatric evaluation, even if behavior is the primary presenting complaint.

Autism Spectrum Disorders

ASD is an umbrella term that encompasses a range of disorders that are characterized by core impairments in social communication and a restricted repertoire of interests and behaviors (APA, 2010). In the past, terms such as Asperger syndrome, pervasive developmental disorder-not otherwise specified, autism, and autistic disorder all came under this umbrella. However, the most recent revision to the Diagnostic and Statistical Manual of the American

Children with ASD have difficulty developing communication skills.

Psychiatric Association (DSM-V; APA, 2010), is recommending abolishing these labels in favor of one diagnostic term: ASD. Changes to the core symptom structure and the introduction of severity criteria, to help families and practitioners make sense of where a particular child sits on this very broad spectrum, are outlined in Boxes 4-4 and 4-5.

Leo Kanner (1943) first described 11 case studies of children with this disorder, highlighting profound social disturbances, qualitative differences in language development and language use, and remarkably good memory for details and rote learning (see Donovan & Zucker, 2010 for a fascinating account of the life of Donald T, the first case study: www.theatlantic.com/magazine/archive/2010/10/autismand8217s-first-child/8227).

Kanner suggested a biological basis for the disorder, but also remarked that the most of the mothers of these autistic children had

university educations (unusual at the time) and that the disorder might at least partially result from the care received by these "refrigerator" mothers. It took years of grassroots efforts on the part of devoted parents, and research that demonstrated that parents of children with ASD are no different from parents of other children with disabilities (Anderson & Hoshino, 2005; Volkmar, Carter, Grossman, & Kline, 1997) to dispel this myth. Today we know that ASDs are strongly influenced by complex genetic risk factors that alter neurobiological development (Abrahams & Geschwind, 2010). Parents are important people because they can positively influence the language and communication development of their children, but are in no way responsible for causing the disorder.

Of all the developmental disorders we've talked about, ASD is probably the most deeply researched, and the most variable in terms of cognitive profile, language ability, co-morbid diagnoses, and eventual outcomes. This variability makes it extremely difficult to identify proximal causes of disorder, and especially challenging to develop and evaluate treatment approaches for this population. The descriptions that follow will give you a flavor of this heterogeneity and highlight some key cognitive and language characteristics of children with ASD. However, it is important to remember that, for this population, as with many others we've talked about so far, differences between children are as striking as the similarities and an assessment or intervention approach that works well with one child may be completely inappropriate for another child with the same ASD diagnosis.

Early Communication

There is increasing interest in identifying the earliest signs of autism in infancy. A research strategy that has really taken off in the last few years is to recruit babies who are at genetic risk of developing ASD, by virtue of having an older sibling with the disorder (Elsabbagh & Johnson, 2010; Tager-Flusberg, 2010). These studies have yielded

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BOX 4-4 Diagnostic Criteria for Autism Spectrum Disorders

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BOX 4-5 Severity Levels of ASD*

SEVERITY LEVEL FOR ASD	SOCIAL COMMUNICATION	RESTRICTED INTERESTS AND REPETITIVE BEHAVIORS
Level 3 "Requiring very substantial support"	Severe deficits in verbal and nonverbal social communication skills cause severe impairments in functioning; very limited initiation of social interactions and minimal response to social overtures from others.	Preoccupations, fixated rituals, and/or repetitive behaviors markedly interfere with functioning in all spheres. Marked distress when rituals or routines are interrupted; very difficult to redirect from fixated interest or returns to it quickly.
Level 2 "Requiring substantial support"	Marked deficits in verbal and nonverbal social communication skills; social impairments apparent even with supports in place; limited initiation of social interactions and reduced or abnormal response to social overtures from others.	Rituals and repetitive behaviors (RRBs) and/or preoccupations or fixated interests appear frequently enough to be obvious to the casual observer and interfere with functioning in a variety of contexts. Distress or frustration is apparent when RRBs are interrupted; difficult to redirect from fixated interest.
Level 1 "Requiring support"	Without supports in place, deficits in social communication cause noticeable impairments; difficulty initiating social interactions and demonstrates clear examples of atypical or unsuccessful responses to social overtures of others; may appear to have decreased interest in social interactions.	RRBs cause significant interference with functioning in one or more contexts. Resists attempts by others to interrupt RRBs or to be redirected from fixated interest.

*APA (2010) proposed criteria as of 1/26/2011.

some surprising findings; for the most part, within the first year of life infants who later receive a diagnosis of ASD are indistinguishable from low-risk peers in terms of social behavior (Rogers, 2009). Instead, subtle differences in motor development, visual attention, and interest in objects may be the earliest signs of atypical development, though these behaviors may be markers of other developmental disorders as well. However, sometime between the end of the first year and the child's second birthday, differences in social interaction behaviors become more apparent and some children show signs of regression (Ozonoff et al., 2010). These aberrant social behaviors include reduced eye contact, social smiling, social interest, and social imitation, reduced response to their own name and fewer responses to bids for joint attention (see Tager-Flusberg, 2011, for review). This combination of social behaviors often co-occurs with delays in gestural communication and language, though some children appear to develop language typically and then experience regression of those language skills (Pickles et al., 2009). These studies suggest that by the first year, infants at high risk for autism are developing in a way that limits opportunity for language development in social interaction contexts. A failure to develop joint attention may be particularly detrimental to language acquisition (Mundy, Sullivan, & Mastergeorge, 2009).

Cognitive Characteristics

The popular media often depicts individuals with ASD as possessing super abilities in skills such as music, math, or drawing. Unfortunately, individuals with these "splinter skills" form a minority of the ASD population, and, as many parents will tell you, these amazing abilities rarely contribute to better academic or adaptive outcomes. The more typical picture is that many children with ASD also have ID, with 50% to 70% of children with ASD obtaining scores on nonverbal IQ measures of less than 70 (Matson &

Shoemaker, 2009). Increasingly, ASD is diagnosed in children with IQ ranges in the average (28%) or above average range (3%) (Charman et al., 2011). While IQ is a good indicator of prognosis, in that those with lower overall cognitive abilities tend to have less favourable outcomes (Howlin, 2005), two issues should be borne in mind. First, very low IQ often occurs in the context of a co-morbid disorder that may also adversely affect outcome. Second, high IQ scores do not always predict outcome; recent studies have found poor correlations between IQ and academic achievement (Estes et al., 2010) or adaptive behavior (Charman et al., 2011).

Numerous cognitive theories have been put forward in an attempt to explain the core behavioral features of ASD. None have directly attempted to explain variation in language skill, though cognitive deficits in these areas would likely have a negative impact on language development and language processing. As in many other disorders we've seen, executive functions (EF) are very often impaired in children with ASD, though working memory may be an area of strength. Intriguingly, measures of EF do not always neatly map on to the symptom profile we'd expect; for example, problems with cognitive flexibility are clearly an issue for many individuals with ASD, and should be related to restricted interests and rigid behaviors. However, correlations between symptom profiles and standardized measures of EF are disappointingly low (Geurts, 2010). Weak central coherence (Happe & Frith, 2006) has been put forward as an explanation of cognitive differences seen in ASD. For example, success on measures of visual processing that require attention to detail in the context of poor integrative functioning are often seen. Problems integrating information in context could lead to many problems with discourse processing, though other explanations have also been put forward (cf. Norbury, 2005). Finally, deficits in social cognition, or in understanding other minds, are the most well known and

well supported cognitive deficits that distinguish children with ASD from children with other developmental disorders. Problems understanding the intentions of speakers have also been explicitly linked to problems learning new words (Parish-Morris et al., 2007) and understanding non-literal language (Martin & McDonald, 2004).

Recent evidence from twin studies has suggested that there is unlikely to be a single cognitive impairment that can explain the range of strengths and deficits observed in ASD (Happe, Ronald, & Plomin, 2006), though few studies have taken a developmental approach to exploring the relationships between areas of cognitive development, and how they influence one another, over time (Pellicano, 2009). The clinician should therefore be aware of the different cognitive challenges that may be present when making assessment and intervention plans for children with ASD, as these additional impairments may influence task performance.

Language Characteristics

Structural language skills are extremely variable in ASD. The range of abilities across all age groups extends from nonverbal to verbose; it is not unusual to find standardized scores on verbal measures spanning 50-70 points even within the same study (cf. Toichi & Kamio, 2003). Another important finding from recent longitudinal research suggests that a significant percentage of children with minimal language skills in early life develop at least some spoken language skills by the age of nine (Lord, Risi, & Pickles, 2004), with only 9% of children remaining nonverbal in later childhood (Hus, Pickles, Cook, Risi, & Lord, 2007).

The degree of language variability within the autism spectrum has led some to question whether there are distinct subgroups of children with ASD, who may be distinguished by different "neurocognitive phenotypes" (Tager-Flusberg & Joseph, 2003). Remember that a phenotype is the set of observed characteristics that are associated with a particular genetic profile; "neurocognitive" suggests that particular patterns of brain development and cognition may also be associated with a particular genetic profile. Tager-Flusberg et al. (cf. Tager-Flusberg, 2006) have argued there are at least two distinct phenotypes within ASD, an Autism Language Normal (ALN) phenotype, in which language form is unimpaired and typical patterns of neuroanatomical asymmetry are observed, and Autism Language Impaired (ALI), in which language form impairment is seen in association with anomalies in left hemisphere brain structure and function (De Fosse et al., 2004). The degree to which ALI and more specific DLDs overlap at behavioral, cognitive, neurological, and genetic levels is a matter of intense debate (Tomblin, 2011). For our purposes, the underlying source of this variability matters less than our knowing that in addition to the social, cognitive, and behavioral challenges a child with ASD may face, a large percentage of children with ASD (approximately 47%, Loucas et al., 2008) will have additional impairments in phonological processing and grammar that resemble non-autistic children with more specific DLDs.

Form

One consistent finding in the autism literature is that, once some verbal language is acquired, articulation of speech sounds is relatively unimpaired across language phenotypes (Kjelgaard & Tager-Flusberg, 2001; Jarrold et al., 1997). However, performance on more complex tests of phonological processing is less clear-cut. Numerous investigators have reported that a significant proportion of children with ASD perform poorly on measures of nonsense word repetition, which taps phonological short-term memory

(Bishop et al,. 2004; Kjelgaard & Tager-Flusberg, 2001; Tager-Flusberg, 2006; Tager-Flusberg & Joseph, 2003; Whitehouse et al., 2008). Other aspects of phonological processing appear to be more universally challenging for individuals with ASD. For example, performance on more meta-linguistic tasks of phonological awareness, such as rhyme awareness, is very poor (Nation et al., 2006). In addition, atypical patterns in processing speech prosody are seen across the range of speakers with ASD from childhood to adulthood (Peppe et al., 2007; Shriberg et al., 2001), though these may be more prominent at the sentence level than at the level of an individual word (Jarvinen-Pasley, Peppe, King-Smith, & Heaton, 2008). Finally, although sound substitutions are rare, distortions of speech sounds and voicing patterns have been noted to affect intelligibility in adult speakers with ASD (Shriberg et al., 2001).

Relative to phonology and lexical knowledge, deficits in morphosyntax and grammar are more pronounced for children with ASD in general (Landa & Goldberg, 2005) and for those with the ALI phenotype in particular. Children with ASD use fewer grammatical morphemes than non-ASD peers to mark verb tense and agreement (Roberts et al., 2004), though errors of comission are rare (Eigsti, Bennetto, & Dadlani, 2007; Roberts et al., 2004). Analyses of spontaneous language samples indicate that many children with ASD produce short and grammatically simple sentences relative to non-ASD peers, despite producing equivalent numbers of utterances (Eigsti et al., 2007). More structured tasks involving sentence repetition also reveal poorer performance for individuals with ALI (Norbury et al., 2009; Riches et al., 2009), highlighting the utility of this task as a marker for language impairment in ASD. Impaired sentence comprehension is particularly striking in ALI (Loucas et al., 2008), though studies exploring comprehension of particular syntactic structures are lacking.

Content

At the broadest level, vocabulary scores are consistently depressed in a large proportion of children with ASD across a number of studies, relative to typically developing peers (Kjelgaard & Tager-Flusberg, 2001; Norbury, 2005; Loucas et al., 2008; Lindgren et al., 2009). On the other hand, for a substantial minority of individuals with ASD, receptive vocabulary is considered to be a "peak of ability" (Mottron, 2004). However, what these children know about the words in their vocabularies may be qualitatively different relative to typical peers. For example, Norbury, Griffiths, and Nation (2010) found that children with ASD, matched to a comparison group on both raw scores and standard scores of the British Picture Vocabulary Scales (BPVS), scored more than 1 SD below the comparison group on a measure of verbal definitions. Other investigators have suggested that, in general, the underlying organization of the semantic system in ASD is atypical and impoverished. For instance, individuals with ASD show reduced priming effects for semantically related words (Kamio et al., 2007) and do not use semantic information to facilitate encoding and recall (Bowler et al., 1997; Tager-Flusberg, 1991). However, the findings of many of these studies are somewhat hampered by large within group variation and have failed to distinguish semantic profiles within ASD that might align with specific neurocognitive phenotypes.

Use

Pragmatic deficits are universal within ASD (Tager-Flusberg, Paul, & Lord, 2005) and may be particularly evident in higher level discourse processing and narrative tasks. Individuals with ASD have significant deficits in conversational skill (Adams et al., 2005; Hale & Tager-Flusberg, 2005; Nadig et al., 2010; Paul et al.,

2009), demonstrating either too many or too few initiations, poor topic maintenance, fewer contingent conversational responses, and non-contextual or socially inappropriate utterances. Such deficits are also evident in narrative tasks with ASD individuals producing higher proportions of contextually irrelevant propositions (Norbury, Gemmell, & Paul, 2011), poor referencing throughout the narrative (Diehl et al., 2006; Losh & Capps, 2003; Norbury & Bishop, 2002), and ignoring the motivations of characters or events (Tager-Flusberg, 1995). Understanding of language in context is regarded as particularly problematic for individuals with ASD as evidenced by poor understanding of figurative and metaphorical language (Happe, 1997; Norbury, 2004, 2005), poor inferencing skills (Jolliffe & Baron-Cohen, 2000; Norbury & Bishop, 2003), and reduced ability to resolve ambiguous language (Happe, 1997; Norbury, 2005). Few studies have explored the extent to which language-based pragmatic deficits align with core language profile; those that do so report that children with ALI are more likely to have difficulties with higher level pragmatic language skills than ALN peers (Hoy et al., 2004; Norbury, 2005).

Literacy

Given the pronounced difficulties with social-interaction and oral language development experienced by many children with ASD, it is perhaps not surprising that much less attention has been paid to the reading abilities of children with this diagnosis. Early reports centered on the surprising abilities of some young children with ASD to read words given limited verbal and cognitive abilities. Such children were given the label "hyperlexia," and there is continued debate over the definitions of hyperlexia and the extent to which hyperlexic reading profiles are specific to ASD, or may occur in other developmental disorders (Grigorenko, Klin, & Volkmar, 2003; Nation, 1999). More recent investigations have revealed much more varied reading patterns in larger cohorts of children with ASD; for example, Nation et al. (2006) found that approximately 30% of the children with ASD they studied were impaired on both word and non-word reading measures, while most of the children had deficits in reading comprehension. Norbury and Nation (2011) found that, although younger children with ASD and good oral language skills had age-appropriate word reading abilities, standard scores reduced over time such that significant differences between individuals with ASD and their typically developing peers were evident by adolescence. One possible reason is that many of these children had reading comprehension difficulties and so, as they grow older, may not have been able to use written text to learn new words to the extent that their peers could (Cain, Oakhill, & Elbro, 2003).

In most of the disorders we've talked about, you'll have noticed strong links between oral language skills and aspects of reading; those with poor phonological skills tend to have problems with decoding text (i.e., non-word reading and spelling), while those with poor semantics and grammar tend to have greater difficulty with reading comprehension. In ASD, those links are not quite so strong. Norbury and Nation (2011) divided an ASD cohort into different language phenotypes (ALI and ALN); though the ALN children as a group had better literacy skills than the ALI group, there were children in each group who had difficulties with word/ non-word reading and children in each group with above average performance. In addition, despite age-appropriate language scores, children in the ALN group were not as skilled as typically developing peers in making inferences and monitoring their reading comprehension. It would seem that, in addition to language, aspects of autistic cognition may also influence literacy development. For example, most stories require the reader to draw inferences about characters' mental and emotional states in order to understand why they do the things they do. Skilled readers are also required to maintain this narrative thread over hundreds of pages, integrating information across text and with their own experiences and world knowledge. Finally, skilled readers recognize when a passage does not make sense or cohere with what they've been reading, and have strategies for recovering uncertain meaning. All of these are skills most people employ effortlessly when reading and yet are likely to pose significant challenges for readers with ASD.

Implications for Clinical Practice

Special considerations for assessment and intervention with ASD are considered throughout this text. Here, we will only stress that, as with hearing impairment and cochlear implants, there is considerable effort now to identify children with ASD at younger ages, so that appropriate interventions and family support can be put in place. There is some evidence that early intervention works (Sutera et al., 2007), but evidence for interventions in infancy are currently lacking, perhaps in part due to the challenges involved in accurately diagnosing children with ASD at this age and the rapidly changing social and communication profiles of children younger than 3 years (Zwaigenbaum et al., 2009). Wallace and Rogers (2010) reviewed evidence-based practices for intervening with infant populations in other disorders and have highlighted essential components of treatment programs for infants and toddlers that could be applied to intervention programs for infants with ASD. These are (1) parent involvement in intervention, including parent-child interaction therapies that involve coaching parents to alter their own communication and responses to the child in order to maximize language and communication opportunities (cf. Green et al., 2010); (2) individualization to each infant's developmental profile; (3) focusing on a broad rather than a narrow range of learning targets; and (4) temporal characteristics involving beginning as soon as the risk is detected and providing greater intensity and duration of the intervention. These developments will require clinicians to be alert to the early warning signs of disorder and develop skills in working with and through parents as children are diagnosed at ever earlier ages.

Conditions Associated with ASD

Pragmatic Language Impairment (PLI) or Semantic-Pragmatic Disorder

Rapin and Allen (1983) were the first to describe a communication profile in which children with DLD did not have a primary deficit with language *form,* but substantial impairments in language *content* and *use;* these children were labeled with "semantic pragmatic disorder" (see also Bishop & Rosenbloom, 1987). Bishop (1998) later proposed the term "pragmatic language impairment" (PLI) because semantic and pragmatic deficits did not always co-occur. Children with PLI are those with intermediate symptom profiles that are not severe enough to warrant a diagnosis of autism, but whose language difficulties affect communication, social interaction, and use of language in context. From the beginning, there has been significant clinical and theoretical debate as to whether these children constitute a unique diagnostic entity or whether they have a social-cognitive deficit that is more consistent with a diagnosis of ASD. Part of the difficulty in resolving this debate is that diagnostic criteria for ASDs are constantly evolving, and many would argue are more inclusive than they once were (Bishop, Whitehouse, Watt, & Line, 2008). Interestingly, the new DSM-V criteria would almost certainly preclude a diagnosis of ASD to most children with

PLI, as these children do not generally show evidence of restricted or repetitive patterns of behavior, interests, or activities (Bishop & Norbury, 2002). Nevertheless, children with ASD will have pragmatic language impairments, it is just that other diagnostic groups may also experience pragmatic language difficulties (Martin & McDonald, 2003).

It may be most helpful to think of pragmatic language impairment as a descriptive term rather than a diagnostic category, which can be applied to children with DLD and ASD alike (cf. Rapin & Allen, 1983). Indeed, Norbury et al. (2004) found that children with DLD who were not thought to have significant pragmatic deficits nevertheless achieved lower scores on pragmatic sub-tests of the CCC-2 (Bishop, 2003) than typical peers. However, these low pragmatic scores were entirely in keeping with their low scores on structural language scales; children with PLI profiles who do not have ASD will have problems with conversation, using language context to resolve ambiguity, and difficulties with narrative that are out of keeping with their structural language impairments. Those individuals with ASD who did not have structural language impairment showed disproportionate weaknesses on pragmatic measures. Finally, most children with ASD will have social communication deficits that are far worse than would be predicted given language ability. However, it is important to remember that many children with ASD have additional language difficulties, and that these children also have rigid interests and behaviors that will interfere with pragmatic language development.

Nonverbal Learning Disability

Byron Rourke et al. (Rourke, 1995; Rourke et al., 2002) advanced the idea that there is a distinct clinical syndrome in which children show a profile of skills that is opposite of the one seen in DLD. Children with nonverbal learning disabilities (NLD) have normal verbal IQs, but nonverbal IQs that are significantly below verbal scores. You will probably recognize that this is quite an unusual cognitive profile; of all the disorders we reviewed so far, apart from Williams syndrome, if verbal and nonverbal abilities are discrepant, it is usually verbal abilities that are more impaired. Investigators have reported that children with NLD have particular difficulties with visual-spatial, visual-motor, and fluid reasoning measures compared to children with other developmental disorders (Semrud-Clikeman, Walkowiak, Wilkinson, & Christopher, 2010). Other reported deficits include bilateral tactile-perceptual and coordination deficits, deficits in novel problem solving and concept formation, poor mechanical arithmetic skills in the context of well developed rote verbal capacities, proficient single word reading, and fluent speech. Behavioral descriptions have highlighted deficient social perception and judgment, verbosity, repetitive speech, and problems adapting to novel situations (Rourke & Tsatsanis, 2000).

These descriptions highlight difficulties with pragmatic aspects of language (Volden, 2004) and have invited comparisons with children diagnosed with "high-functioning" autism or Asperger's syndrome (Klin et al., 1995; Williams et al., 2008). There is an assumption that the pragmatic deficits of both groups stem from deficits in right hemisphere brain functions, but neurobiological evidence for this view in children is lacking. There is considerable controversy about whether NLD is a distinct diagnostic entity, Williams et al. suggest that, for children with obvious social-communication impairments; diagnosis often hinges on the profile of discrepancy seen on a Wechsler IQ test; if VIQ is less than PIQ, children may be more likely to receive an ASD diagnosis, if the opposite pattern is seen, children may receive an NLD diagnosis.

This is clearly not ideal and there are no longitudinal data to assess the stability of this IQ pattern over time. It is also clear that children may well have an NLD profile without having NLD (Williams et al., 2008). When VIQ is greater than PIQ, we need to ensure that children with this profile are properly assessed for pragmatic function, so that they may qualify for SLP services. To this end, measures such as the Children's Communication Checklist—2 (CCS-2; Bishop, 2003) may be most effective in highlight pragmatic language impairments in children with good structural language skills (Volden & Phillips, 2010).

ADHD

In recent years, the number of children receiving services for ADHD, and the amount of research relating to this disorder has grown exponentially (Bishop, 2010). This is not surprising; ADHD is a debilitating and chronic condition that affects the child's ability to control attention and behavior in an optimal and adaptive manner (Hulme & Snowling, 2009). Revisions to DSM-V (APA, 2010, see www.dsm5.org) suggest two components to the disorder: inattention and hyperactivity/impulsivity. Children can have predominantly Inattentive or Hyperactive subtypes, or they can have a combined subtype, in which criteria are met in both domains (Box 4-6). The symptoms of ADHD must be present for at least 6 months, with an onset before the age of 12, be present in two or more contexts (i.e., both at home and at school), and significantly interfere with social, academic, or vocational functioning before a diagnosis can be made. According to DSM-IV, the prevalence rate is approximately 3% to 5% of school-aged children with boys outnumbering girls 3:1. When ADHD is primarily of the inattentive type, problems with poor attention and concentration, distractibility, poor organizational skills, and difficulty completing tasks without close supervision occur. Children with the hyperactivity/impulsivity type may be described as fidgety, always on the go, interrupting and talking incessantly, and acting without thinking.

Cognition

The majority of children with ADHD will have nonverbal IQ scores within the normal range, though ADHD has also been observed in children with ID and children with exceptional IQs (above 120; Katusik et al., 2011). Interestingly, Katuisik et al. (2011) did not find any differences between children with high, low, and average IQ scores with respect to severity of ADHD symptomatology, rates of stimulant medication, or rates of co-morbid disorder. Children with high IQs were more likely to have highly educated parents, and as a group had significantly higher scores on measures of literacy. It is also important to remember that, across developmental disorders, rates of co-morbidity with ADHD are high and the interactions between ID and ADHD in these populations have not been fully explored.

Despite normal range IQ, there are differences in the cognitive profiles of children with ADHD that may affect language learning and language processing. For a long time, disruptions in the development and deployment of executive functions were thought to be the core cognitive deficit in ADHD (Barkley, 1997). You'll remember that executive functions (EF) are cognitive processes associated with the frontal lobes of the brain that enable us to remember, plan, organize, and inhibit irrelevant information/responses in order to achieve our goals. However, not all children with ADHD demonstrate impairments on measures of EF (Wilcutt et al., 2005). EF functions that

BOX 4-6   Diagnostic Criteria for ADHD*

1. **Inattention:** Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that directly affects social and academic/occupational activities.
    a. Often **fails to give close attention to details** or makes careless mistakes in schoolwork, at work, or during other activities
    b. Often has **difficulty sustaining attention** in tasks or play activities
    c. Often **does not seem to listen** when spoken to directly
    d. Frequently **does not follow through** on instructions
    e. Often has **difficulty organizing tasks** and activities
    f. Characteristically avoids, seems to dislike, and is **reluctant to engage in tasks that require sustained mental effort**
    g. Frequently **loses objects** necessary for tasks or activities
    h. Is often **easily distracted** by extraneous stimuli
    i. Is often **forgetful** in daily activities, chores, and running errands
2. **Hyperactivity and Impulsivity:** Six (or more) of the following symptoms have persisted for at least 6 months to a degree that is inconsistent with developmental level and that directly affects social and academic/occupational activities.
    a. Often **fidgets** or taps hands or feet or squirms in seat
    b. Is often **restless** during activities when others are seated
    c. Often **runs about** or climbs on furniture and moves excessively in inappropriate situations; in adolescents or adults, may be limited to feeling restless or confined
    d. Is often **excessively loud** or noisy during play, leisure, or social activities
    e. Is often **"on the go,"** acting as if "driven by a motor." Is uncomfortable being still for an extended time, as in restaurants, meetings, etc.; seen by others as being restless and difficult to keep up with
    f. Often **talks excessively**
    g. Often **blurts out an answer** before a question has been completed; older adolescents or adults may complete people's sentences and "jump the gun" in conversations
    h. Has **difficulty waiting his or her turn** or waiting in line
    i. Often **interrupts or intrudes** on others
    j. Tends to **act without thinking,** such as starting tasks without adequate preparation or avoiding reading or listening to instructions; may speak out without considering consequences or make important decisions on the spur of the moment, such as impulsively buying items, suddenly quitting a job, or breaking up with a friend
    k. Is often **impatient,** as shown by feeling restless when waiting for others and wanting to move faster than others, wanting people to get to the point, speeding while driving, and cutting into traffic to go faster than others
    l. Is **uncomfortable doing things slowly and systematically** and often rushes through activities or tasks
    m. Finds it **difficult to resist temptations or opportunities,** even if it means taking risks

*American Psychiatric Association. (2010). Proposed criteria for ADHD. *Diagnostic and Statistical Manual of Mental Diseases—V.* Washington, DC: Author.

are most likely to be impaired in ADHD include inhibition, working memory, and planning. Cognitive theories of ADHD are being refined and researchers and clinicians are recognizing the role of reward processing and motivation, as well as delay aversion in understanding ADHD behavior. In other words, children with ADHD find it difficult to wait for something desirable, even if the pay off for waiting brings greater reward; if given the choice between $2 now or $20 tomorrow, children with ADHD are far more likely than peers to take the money and run (Aase & Sagvolden, 2006)! The ability to defer gratification underlies our ability to sustain attention and work consistently; without this ability it is very difficult to learn to control impulses, and distracting behavior results. These problems may be exacerbated with lower levels of arousal, which may lead to "sluggish" performance and a lack of effort (Sergeant, 2005). In reality, it is likely that the complex behavioral profile that characterizes ADHD can only be explained by multiple cognitive deficits; from our point of view, we need to know how deficits in EF, motivation, and arousal may affect language development, and how these cognitive deficits will influence service delivery.

Language

Although many children with ADHD do not present with any additional language impairments, language profiles are variable and rates of co-morbidity are higher than would be expected in the general population (Im-Bolter & Cohen, 2007), though others have reported that it is only when language impairments and

speech sound disorders occur together that there is an increased rate of co-morbid ADHD (McGrath et al., 2008). The nature of the relationship between DLD and ADHD is a matter of debate. One possibility is that the two disorders may have at least some biological risk factors in common. For example, neural circuits in the frontal lobe of the brain have been implicated in ADHD, and at least partially overlap with neural circuitry involved in language production (Nicolson & Fawcett, 2007). Another possibility is that the cognitive and behavioral deficits associated with ADHD can disrupt language learning and/or language processing. Imagine the toddler who is irritable, disruptive and constantly on the go— opportunities for engaging and interacting with this child in a way that supports language growth may be limited (not to mention the exhausted and frustrated parent may struggle to communicate optimally)! However, poor language skills may lead to behaviors that are reminiscent of ADHD. For instance, if you were asked to sit through a lecture on particle physics, it wouldn't be long before your mind began to wander and you started fidgeting. Regardless of the causal relationship between the two, the clinician needs to be alert to the fact that many, though not all, children referred because of problematic behavior may have additional language impairments. Let's consider what the pattern of impairment is likely to be.

Form

There is no evidence that children with ADHD as a group have disproportionate difficulties with phonology or speech sound production. Redmond et al. (2011) reported that clinical markers of

specific language impairments, such as tense marking, sentence repetition, and narrative, reliably distinguished children with ADHD from those with primary DLDs. However, the ADHD group did not differ from typical peers on overall levels of verbal ability; it is not clear whether those with co-morbid ADHD and language impairment would have distinctive profiles of grammatical impairment, or whether they would be phenotypically similar to children with DLD. Using a similar participant design, Cardy et al. (2010) found that both ADHD and DLD groups had difficulties with rapid temporal processing of auditory stimuli, but that the children with ADHD had greater difficulty on nonverbal tests of processing speed than DLD counterparts.

Content

Studies involving in-depth assessment of the vocabulary and semantic skills of children with ADHD are lacking. In contrast, studies of adults with reported histories of attention difficulties has revealed those with ADHD were less accurate at mapping semantic features and slower to respond to lexical labels than both typical adults and adults with a history of language impairment only (Alt & Gutmann, 2010). These results suggest that it is likely that receptive vocabulary scores will be in the average range, but that children with ADHD may have subtle difficulties rapidly accessing the lexicon, or making connections between words. Such difficulties may be most evident when flexible word knowledge is needed, for example, in understanding humor and non-literal language, making inferences, and understanding metaphor.

Use

The ability to use language in socially appropriate ways is most likely to be a problem for children with ADHD. Using the Children's Communication Checklist (Bishop 1998, 2003), researchers have found that children with ADHD are reported to have significant pragmatic language difficulties, sometimes indistinguishable from peers with ASD (Bishop & Baird, 2000), though unique profiles have also been reported (Geurts et al., 2008). Problems with inappropriate initiation, interruption, difficulty maintaining a topic, and responding with appropriate amounts of information are more likely to be evident in the conversations of children with ADHD relative to comparison groups (Bishop & Baird, 2000; Mikami et al., 2010). Difficulties with pragmatic aspects of language have been found to mediate social skills deficits in this population (Leonard, Milich, & Lorch, 2011).

Literacy

Rates of co-morbidity between ADHD and reading disorders (RD) are extremely high; the prevalence rates for each disorder alone in the general population is approximately 5%, while the rates of co-morbid disorder are 25% to 40% (Wilcutt & Pennington, 2000). Numerous studies have attempted to identify the genetic and cognitive risk factors that are specific to each disorder and those that are potentially shared. Recently, McGrath et al. (2011) reported that processing speed was the only cognitive variable with significant unique relationships to both RD and ADHD dimensions, particularly inattention aspects of ADHD. Notably, naming speed and working memory were not associated with both dimensions. This pattern of findings highlights the multiple cognitive skills that are necessary for skilled fluent reading; limitations in processing speed may result in slow and labored reading of single words in connected text.

As in all other populations, reading comprehension is influenced by both word recognition skills and oral language skills, however aspects of ADHD behavior also seem to predict differences in reading comprehension skills (Cutting et al., 2009). In

particular, deficits in EF can adversely affect how the child approaches the reading task itself, particularly in the child's ability to effectively plan and organize reading tasks (reading headings, linking pictures with text, reading introductions and summary paragraphs, predicting what might happen) as well as monitoring comprehension (realizing when a word or passage doesn't make sense and taking steps to improve comprehension through utilizing surrounding context, use of a dictionary, etc.) (Locasio et al., 2010).

Finally, many studies exploring the relationship between ADHD and RD have focused on the overlapping genetic contributions to disorder, but such studies tell us important things about environmental influences as well (Hart et al., 2010). For instance, the child's disruptive behavior can have implications for the learning environment; sitting quietly with a book is something the child with ADHD may find particularly challenging, reducing opportunities for exposure to text. Remember, too, that level of maternal education has been associated with reading outcomes for children with ADHD (Katusik et al., 2011), suggesting that early and consistent exposure to books and literacy as a pleasurable experience may help to increase motivation to read in these children.

Implications for Clinical Practice

You may have noticed that ADHD diagnosis is on the rise and almost every classroom will include a child with ADHD. Most of these children will be receiving pharmacological interventions; drug treatments of choice include methylphenidate (Ritalin), dextromaphetamine (Dexedrine) Adderall, and pemline (Cylert). There is considerable evidence that drug treatments are successful in reducing the adverse behaviors associated with ADHD, at least in the shorter term (MTA, 2004). Their success over the longer term appears to be influenced by drug compliance; the SLP should therefore be prepared to work closely with the child's family, physician, and school nurse about the medication regime and any changes in prescription or behavior. The effectiveness of behavioral interventions is decidedly more mixed (Young & Amarasinghe, 2010), though most guidelines for best practice advocate treatment protocols that combine medication with behavioral interventions (NICE, 2008). Behavioral treatments will include family therapy and support to deal with challenging behavior and to foster good language and communication experiences, interventions aimed at modifying the environment at home and at school to maximize attention and minimize distraction, and direct behavioral interventions with the child to help him or her internalize rules, develop strategies for planning and organizing work and managing his or her own behavior. Specific strategies for the school-aged child with ADHD are outlined in Box 4-7.

Selective Mutism

The SLP is usually the first professional consulted when a child is not speaking at school. Selective mutism (SM) may be diagnosed in a child who consistently does not speak in certain situations, such as school, where there is an expectation for speech, but does speak normally in other situations, like at home (Steinhausen, Wachter, Laimbock, & Winkler-Metzke, 2006). The text revision of the DSM-IV (DSM-IV-TR) (APA, 2000) further stipulates that SM must persist for more than 1 month (not including the first month of school), and cannot be accounted for by a DLD or by unfamiliarity with the language environment. It is also recommended that bilingual children are not diagnosed with SM unless the mutism persists

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BOX 4-7 Classroom Strategies for Children with ADHD

UNIVERSAL LEVEL OF INTERVENTION
- Model and practice explicit strategies for memorization, test-taking, study, and active reading
- Verbal and written practice focused on reading comprehension instruction
- Monitoring of how to organize notebooks and binders and written work
- Use planners and calendars
- Develop and teach clear school-wide or class-wide expectations
- Teachers use prompts and signals to remind students to follow rules
- Staff practice active supervision, scanning for problem areas or interactions, and interacting frequently with students to reduce problem behaviors

SECONDARY (TARGETED) LEVEL OF INTERVENTION
- Peer tutoring: benefits children with ADHD by providing individual attention, a self-determined pace, and frequent prompting and feedback
- Providing choices: can increase engagement and work completion for children with ADHD
- Note-Taking: teach students to create an outline based on lecture materials, including main idea and supporting details, and to teach the effective use of self-questioning
- Parent Involvement: provide frequent, brief home-school communication focused on progress toward goals and on solving problems before they grow

TERTIARY (INDIVIDUALIZED) LEVEL OF INTERVENTION
- Computer-assisted instruction provides students with ADHD immediate feedback, one-to-one attention, and content presented in an interesting way
- Well-constructed computerized instruction uses color and design to help the student focus on critical information, breaks material down into smaller chunks to promote mastery, provides immediate feedback, and addresses specific instructional objectives
- Functional behavioral assessment to identify behavior(s) of greatest concern and the triggers for those behaviors
- Implement plan to reinforce positive or pro-social behavior and reduce problems
- Encourage self-monitoring by teaching children to observe and record their own behaviors (such as on-task behavior)
- Use a reminder system such as the Motiv-Aider (www.habitchange.com), an electronic pager-type device that sends a silent pulsing signal and does not require verbal teacher reminders
- Provide checklists of important tasks or steps for students to complete tasks

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beyond 6 months or is evident in both languages (Toppleberg, Tabors, Coggins, Lum, & Burger, 2005). It is a relatively rare disorder, with prevalence rates of 0.3 to 0.8 per 1000 (DSM-IV-TR, APA, 2000) and, unlike other DLDs, it is much more common in girls, with a gender ratio of 2:1 (McInnes et al., 2004).

SM is generally regarded as an anxiety disorder, rather than a variant of DLD (Steinhausen et al., 2006; Vecchio & Kearney, 2005). However, social anxiety is rarely the only problem and language impairments are frequently present in children with SM; 60% to 75% of children with SM have some form of language impairment (Sharkey & McNicolas, 2010). This strongly suggests that self-consciousness about communicative abilities plays a part in maintaining the disorder. Assessment of language in a child with SM is likely to be challenging, as most children are reticent to speak when they feel they are under the spotlight. Initial investigations may therefore centre on taking a detailed case history from the parents detailing where, when, and with whom the child does speak and obtaining examples of the child's communicative efforts in different contexts for transcription of spontaneous speech (McInnes et al., 2004). Unobtrusive observation of the child playing alone, or with parents and siblings, may also give an indication of the child's language abilities.

The most successful treatments are reportedly those that combine behavioral and pharmacological interventions, though there is limited research on the efficacy of this approach (Cline & Baldwin, 2004; Sharkey & McNicolas, 2010). Behavioral interventions should always be considered with input from a multidisciplinary team (psychologist, psychiatrist, SLP, teacher) in close collaboration with families. Strategies may include language therapy, positive reinforcement for speaking, desensitisation to anxiety-provoking situations, family therapy, and self-modeling techniques, in which the child listens to him or herself speaking in situations in which he or she is usually mute (these and other therapeutic techniques are outlined in Johnson & Wittgens, 2001). McInnes and Manassis (2005) suggested that intervention should take into account the child's social anxiety and begin by encouraging the child to articulate rote language (numbers, days of the week) or answer simple, factual questions (what color is this?) rather than asking questions that involve self-disclosure (what is your favourite color?). In addition, public speaking should progress in stages, at first involving a parent or one person the child does talk to and increasing confidence with speaking to a familiar person (teacher), then group of familiar people (classmates) before tackling unfamiliar people (restaurant or shop). Techniques that have been used with this population are summarized in Box 4-8. Longitudinal studies report improvements in the core symptoms of SM over time, though rates of psychiatric disorder, especially social phobia, remain high and prognosis is particularly poor when there is a family history of SM (Steinhausen et al., 2006).

DLD ASSOCIATED WITH EXTREME ENVIRONMENTAL DISADVANTAGE

DLDs that result from maternal substance abuse, such as alcohol, or from parental maltreatment, such as abuse and neglect, are some of the most tragic aspects of our clinical practice because these kinds of disorders could have been prevented. As Joseph's story indicates, these factors often operate in concert to produce a range

BOX 4-8	Strategies for Intervening with Selective Mutism

1. Stimulus fading: audience or setting changes, rather than the child
   a. Child talks alone with trusted adult (parent) and anxiety is introduced; e.g., clinician stands outside leaving the door ajar so that the child may be heard. Child is encouraged to keep talking.
      i. Gradually increase proximity to child
      ii. Avoid direct eye gaze
      iii. For older children, make a specific, non-threatening speech target such as counting, or days of the week, until comfortable with other person present
2. Shaping: child's behavior starts to change
   a. Start with nonverbal communication with clinician (or key-worker) in minimal anxiety situation
   b. Gradually increase child participation
      i. Increase eye contact
      ii. Increase voicing and volume
      iii. Increase number/length of words and messages
   c. Create communication games to elicit speech from child, for example, barrier games or Simon says
   d. Positively reinforce all verbal communication
3. Desensitization: child gets used to thought of doing something that he or she would not previously have considered
   a. Child allows others to hear recording of voice
   b. Child speaks to friends/family on telephone, before face-to-face meeting
   c. Child speaks to class teacher in person in whispered voice
   d. Ensure child is aware of targets and can monitor successes
   i. Use motivators such as stickers
   e. When progressing, change only one thing at a time; if child is comfortable speaking with a friend at home, try speaking with teacher at home OR speaking to friend in class, but not speaking to teacher in class

Adapted from Johnson, M., and Witgens, A. (2001). *The selective mutism resource manual.* Milton Keynes: Speechmark Publishing.

of long-term developmental problems. In this section, we will outline the communication patterns seen in children exposed to these hazards to understand how they might influence clinical decision making. We'll talk about two major types of environmental disadvantage: maternal substance abuse and maltreatment.

Joseph was born to a mother who had been severely alcoholic during her pregnancy. During his stay in the hospital it was noted that he had some dysmorphic facial features, including microcephaly (small head size), micrognathia (small jaw), a thin upper lip with an indistinct philtrum, and a flat midface. He was extremely irritable as an infant. During his preschool years, Joseph's mother continued to drink and she also began using cocaine. She was often absent, leaving Joseph with whatever neighbor would take him, while she earned money by prostitution to buy drugs. Joseph grew slowly in size. He experienced many developmental delays, including late motor milestones, slow language development, and eventually poor reading and spelling. When his mother enrolled herself in a drug treatment program when he was 3, he was assessed and diagnosed with Fetal Alcohol Syndrome (FAS). His IQ was in the low average-borderline range and he was enrolled in an intervention program while his mother completed the drug rehabilitation program. Both made significant progress and, by age 5, Joseph was enrolled in a mainstream classroom. He was very personable and chatty, but still required special educational support. He had difficulty understanding classroom instructions and struggled with reading lessons and arithmetic. In high school, his poor judgement and impulsive behavior often got him in trouble. At 16, he dropped out.

Recent research using brain imaging techniques reveals that environmental disadvantage can have a profound effect on structural and functional brain development, especially in the domains of language and prefrontal executive control (Tomalski & Johnson, 2010). It is important to remember that it is not necessarily the substance itself or the lack of parental warmth and contact that can lead to these changes, but the environmental circumstances that are not conducive to child development. Other factors include poor diet, increased exposure to accidents and other risks, and a lack of stimulating opportunities and experiences. Individuals from deprived backgrounds are also less likely to seek help from professional services, or to comply with clinical or educational recommendations, making this a particularly challenging client group.

Abuse/Neglect

The World Health Organization (WHO) estimates that 40 million children below the age of 15 experience abuse and neglect requiring health and social care. Types of maltreatment may include physical abuse, sexual abuse, emotional abuse (excessive belittling, verbal attack, or overt verbal rejection), and neglect (abandonment, inadequate supervision, failure to provide necessary items such as adequate nutrition or clothing). Children experiencing abuse and neglect are likely to be on clinical caseloads because children with developmental disorders and language impairments are more likely to be abused than typically developing children (Sullivan & Knutson, 2000), and because, as we have seen, abuse and neglect may disrupt development, especially for language and executive control processes (Tomalski & Johnson, 2010).

Specifically, maltreatment interferes with normal social-interaction processes and thus reduces the opportunities for language learning in socially meaningful exchanges. As a result young maltreated children may have reduced rates of vocabulary growth and shorter

MLUs than nonabused peers (Coster, Gersten, Beeghly, & Cicchetti, 1989). Deficits in expressive syntax persist into school age (Eigisti & Cicchetti, 2004) and adolescence (McFayden & Kitson, 1996), though vocabulary scores may improve to near normal levels in the oldest groups. Less has been reported about the social communication skills of children experiencing maltreatment, but such children are reported to have difficulties using language to articulate their feelings and needs as necessary for self-regulation; to convey abstraction, which is necessary for advanced literacy and reading comprehension; and to sustain coherent narrative dialogue, which is key to social exchange (Coster & Cicchetti, 1993). In addition, maltreated children are more likely than peers to engage in challenging behaviors that are likely to elicit further negative reactions from teachers and peers (Westby, 2007).

Fetal Alcohol Spectrum Disorder (FASD)

Maternal substance abuse can affect a child's development in at least two ways:

1. Substances such as alcohol and cocaine can have negative effects during prenatal development. These substances can cross the placental barrier and affect the intrauterine environment. In the case of alcohol, the fetus is unable to metabolize the alcohol as an adult can. Alcohol acts as a teratogenic agent and interferes with chemical processes in fetal cells. Abuse of other drugs, such as cocaine, can increase the probability of a premature birth, which carries its own set of developmental risks.

2. Language and communication development is also influenced by the effects of substance abuse on the caregiving environment. A mother (or father) who is frequently drunk, high on drugs or driven to get drugs by any means necessary is not a person who can devote much energy to childrearing. These parents often have difficulty understanding their children's communication attempts and may not respond appropriately to them, often rejecting or criticizing their efforts (Sparks, 2001).

In fact, Coggins, Timler, & Olswang (2007) refer to this as a "double jeopardy," pointing out that it is often challenging to separate the effects of the substance itself from the chaotic environments that are prevalent in maternal substance abuse. Understanding cognitive and language outcomes in these children requires exploration of both.

FASD is a syndrome of birth anomalies associated with excessive alcohol intake during pregnancy. Originally referred to as Fetal Alcohol Syndrome, the change in diagnostic label reflects the differing degrees of impairment and outcome associated with the disorder. Different diagnostic criteria are employed in different countries, but all include the following four criteria (Institute of Medicine, 1996):

1. Confirmed or unconfirmed maternal alcohol exposure.
2. Facial features—evidence of a characteristic pattern of facial anomalies that includes short palpebral fissures and anomalies in the premaxillary zone (e.g., flat upper lip, flattened philtrum, and flat midface).
3. Growth retardation—at least one of the following:
   - Low birth weight for gestational age
   - Decelerating weight over time not due to nutrition
   - Disproportional low weight to height

4. Central nervous system (CNS) abnormalities—at least one of the following:
   - Decreased cranial size at birth
   - Structural brain anomalies
   - Neurological hard or soft signs (age appropriate)

FASD is a lifelong disorder, and there is a predictable progression of maladaptive behaviors and communication disorders, outlined in Box 4-9. DLDs are universal in this population and may be related to overall cognitive achievements (Cone-Wesson, 2005). In reviewing a large body of research in this area, Kodituwakku (2009) concluded that children with FASD have a generalized deficit in the processing and integration of information, with resulting deficits in nonverbal IQ scores and measures of language processing, relative to their peers. Others have emphasized

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BOX 4-9 Characteristics of Fetal Alcohol Spectrum Disorder

INFANCY AND EARLY CHILDHOOD
- Sleep disturbances
- Poor sucking response
- Failure to thrive
- Prone to middle ear disease
- Poor habituation
- Delays in walking and talking
- Delays in toilet training
- Difficulty following directions
- Temper tantrums

SCHOOL YEARS
- Hyperactivity, distractibility
- Poor attention
- Delayed motor, cognitive, and speech development
- Difficulties understanding consequences of actions
- Temper tantrums and conduct problems
- Fine motor difficulties
- Learning and memory problems
- Lack of inhibition
- Interest in social engagement, but poor social skills
- Indiscriminate attachment to adults
- Withdrawal, depression
- Poor judgement, difficulty matching aspirations to ability, failure to learn from past experience
- Good verbal facility, giving appearance of strong verbal skills, but poor language comprehension
- Better performance in reading and writing than in mathematics
- Good performance on concrete tasks, poor abstract reasoning

ADOLESCENCE
- Reach academic ceiling
- Depression, social isolation
- Naive, childlike manner
- Sexual difficulties (inappropriate behavior, easily exploited)
- Poor impulse control
- Difficulty seeing cause-effect relationships
- Memory, learning, attention, activity, and judgment problems persist
- Pragmatic language difficulties
- Truancy and school dropout problems

deficits in social communication, particularly difficulties in producing narratives that have sufficient semantic elaboration and referencing (Coggins et al., 2007; Thorn & Coggins, 2008). Deficits in executive control are also likely to impact on pragmatic language skills.

Clinical Implications

Speech-language clinicians have a number of responsibilities and challenges when working with children experiencing extreme environmental disadvantage. First and foremost, clinicians have a legal duty to report maltreatment and prevent the child coming to harm. This can be tricky in culturally diverse communities where standards of discipline and parent-child interaction may differ from our own. Westby (2007) addresses these issues and stresses that any practice that causes a real and present danger to the child requires immediate action.

A second consideration is that the physical characteristics associated with FASD and the environments children are exposed to increase the risk of middle ear disease (Cone-Wesson, 2005). Thus, careful monitoring of hearing status is advocated. Maltreated children and children with FASD are also very likely to have challenging behaviors and may meet criteria for ADHD. Working as part of a multidisciplinary team will be necessary to reduce undesirable behaviors and encourage language for the purposes of reflection, negotiation, and behavioral control.

Numerous treatment approaches have been proposed; these cover skills such as executive function, language processing, and social communication skills (Jirikowic, Gelo, & Astley, 2010; Paley & O'Connor, 2009; Peadon et al., 2009). The most methodologically robust studies show treatment gains in language, literacy, and social skills. Intervention studies differ considerably in quality, in treatment content, context, and in dosage (i.e., amount of treatment offered). All of these factors are likely to influence outcome and clinicians should take these factors into account when planning intervention services.

THE NONSPEAKING CHILD

Some of the children SLPs treat have limited, if any, spoken language. For these clients, we have two immediate assessment priorities; first, to establish the child's level of comprehension and second, to establish whether any intentional communication is taking place, and if so how and for what purposes. Knowing how much a child understands will help both to structure our own input and to select among language goals in production. Criterion-referenced assessment methods may be useful here. In Chapters 6 and 7, we'll discuss in detail some assessment techniques that can be used to establish nonverbal, intentional communication. Knowing that a child has a desire to communicate can help us distinguish between language problems that arise from impairments to oral-motor structures and functions or sensory impairments from those that are associated with psychiatric conditions such as selective mutism or autism spectrum disorders. Here, knowing what is causing the problem is very important because we will need to tailor our interventions to the particular needs of the child. For many nonspeaking children AAC should be considered, even if only as a temporary bridge to other communication systems, in order to provide the child with a viable communication system of some kind. Let's take a look at some of the issues that arise when assessing and recommending AAC for the nonspeaking child.

Severe Speech-Motor Disorders

Many disorders can affect the orofacial structures or neuromotor functions that serve speech production. Some of these can leave the understanding and formulation of language, as well as general cognitive skill, more or less intact, resulting in more circumscribed speech impairments. Cerebral palsy, certain congenital facial anomalies, and brain injuries specifically affecting neuromotor tracts are some examples. In Chapter 3 we discussed some principles to use in making decisions about augmentative communication for children with severe speech and physical impairment (SSPI). We'll want to apply those principles when choosing an augmentative or alternative system for these clients. Many such disorders also affect feeding and swallowing. These problems require an intervention program beyond the scope of this text, but clinicians should be aware of the need for assessing and planning treatment (perhaps in collaboration with physical and occupational therapists) for these aspects of the disability in children with SSPI.

Sturm and Clendon (2004) discussed some of the reasons why children with SSPI may have trouble learning language. Some have to do with the external barriers they face. They cannot learn through the usual sensorimotor interactions with people and objects because of their physical disabilities. They don't have constant access to their mode of communication as speakers do; if they use a board or device, someone has to get it and set it up for them before they can communicate. Their limited mobility gives them fewer opportunities to interact with other people. They aren't able to develop from babble to speech by playing with sound and using sound as interaction tool; devices and ouputs are chosen for them and may not be the best match for their abilities and intentions. In designing language-learning systems for individuals who use AAC systems, we will need to modify our usual approach. Instead of focusing on the next developmental stage of language output, we need to focus more on the child's comprehension skills (Wilkinson & Henning, 2007). Miller and Paul (1995) provided a variety of techniques for comprehension assessment that can be used with this population. It is also important to assess pragmatic and cognitive skills in this population, since these assessments give some idea of the concepts and social interactions the client is using spontaneously. We can then follow the child's developmental profile by targeting words and word combinations that would be expected given the child's cognitive, comprehension, and communicative profile.

One research finding of particular relevance is that a communication device that provides voice output, in other words it "speaks" what the child selects to communicate, is very effective in stimulating speech and language growth (Millar et al., 2006). These voice output communication aids (VOCAs) should, whenever possible, be part of the AAC system for our clients with SSPI. Light et al. (2004) and Rispoli et al. (2010) have reviewed the advantages and disadvantages of various aids and the evidence for their treatment efficacy. Emerging technologies are making these systems much more accessible and less expensive. As just one example, Proloquo2go is a speech generating system that can be used on an iPhone, iTouch, or iPad. These devices are much more inclusive and less stigmatizing than traditional AAC devices.

Wilkinson and Henning (2007) discussed a number of different communication roles that the SLP should consider in relation to AAC. First, although AAC devices are often aimed at increasing language output, Wilkinson and Henning remind us that, for some children, these devices will also open doors to language

understanding as well as nonverbal communicative exchanges. Second, they highlight the importance of ensuring that the vocabulary targeted can be used for a range of communicative functions; users of AAC must be able to do more than request, protest, and answer questions, they must also comment, ask questions, express emotions, and build relationships. A third role of AAC is to reduce challenging behaviors by providing an alternative means of rejecting unwanted approaches and requesting help. Finally, AAC can provide a bridge into symbolic reasoning and later language development.

When introducing vocabulary, it will be important to offer not just single nouns, but "chunks" of language that the child can use as speech acts (e.g., "don't do that," "lemme see"). This diversity allows AAC users to choose from the range of language-learning styles seen in normal development. When introducing word combinations and sentences, it may be more important to stress the communicative functions of these utterances, rather than focusing strictly on the grammatical forms needed to express ideas. Still, since speech synthesis devices can be programmed with whole sentences, children using these devices might be given ways to produce sentences such as "I drank all my milk." These sentences might be possible through the device before the point at which irregular past forms would normally be acquired in developmental sequence. Paul (1997b) has suggested that programming the device with some "giant phrases" (e.g., see you later alligator), often used as gestalt forms by young children, can help the child using AAC to develop the analytical skills these forms facilitate in typical speakers. Wilkinson and Henning (2007) also point out that a combination of preprogrammed phrases alongside single words can also speed up message formulation and reduce cognitive demands for the speaker.

Gerber and Kraat (1992) suggested including talk about "then and there" in the intervention program. The focus on an AAC device may bias the intervention toward talk about the "here and now" for a longer period than would be typical in normal development. Interactive book reading may be a particularly naturalistic context in which such talk could take place (Kent-Walsh et al., 2010). It will be important for clinicians to begin to introduce some talk about past time, predictions about future events, discussions of pretend, and so on. Following some of the guidelines given in Chapter 9 for incorporating play contexts in language intervention can be helpful in achieving this goal. Finally, Wilkinson and Henning (2007) highlight the important role that communication partners may play in modelling the use of the AAC device, in much the same way that adults model language for typically developing children. This will require significant others to use the device themselves, which has the added benefits of enabling communication partners to become familiar with the words and messages available to the child, and reduces the stigma of using the device. As children typically learn language partially through the desire to emulate others, it is important that both adults and peers use AAC as a means of interacting with the child. Children using consumer electronic devices like iPads, rather than more unfamiliar dedicated devices, will find peer partners willing to communicate through the device with them, because of its "cool" factor.

Although for many years children with SSPI were given little access to literacy, much has changed in the last 25 years. Considerable research and clinical effort has been devoted to developing literacy skills and to providing a variety of AAC devices with which to transmit their written messages. This change has literally revolutionized the communicative capacity of many children with

AAC systems increase communicative opportunities for children with severe speech production impairments.

SSPI. Written output, which is understandable by most adults and older children in our culture, allows the child with SSPI to express the full range of meanings available in language to the broadest possible audience. Some children with SSPI will continue to perform below developmental expectations on literacy measures despite instruction, but there are methods that can be used to improve access to the written word. Improving basic language development is an important part of this picture, as is the provision of early, intensive exposure to story-book reading (Wood & Hood, 2004), opportunities for carefully scaffolded phonemic awareness, and letter-sound association. Light and colleagues (Light et al., 2008; Light & McNaughton, 2009) have developed an evidence-based literacy intervention program for users of AAC. Some of their recommended techniques for are outlined in Table 4-3 (see also http://aacliteracy.psu.edu/).

Childhood Apraxia of Speech

According to ASHA (2007), childhood apraxia of speech (CAS) is "a neurological childhood speech sound disorder in which the precision and consistency of movement underlying speech are impaired in the absence of neuromuscular deficits….The core impairment in planning and/or programming spatiotemporal parameters of movement sequences results in errors in speech sound production and prosody" (p. 1).

Unlike SSPI, the difficulty here is not the result of muscle weakness, paralysis, or obvious neurological impairment. Instead, in CAS there is a problem with motor planning; the child knows

TABLE 4-3   Strategies for Developing Literacy Skills in Children Using AAC

Literacy Skill	Example Target	Example Activity	Example Materials
Sound blending	Child will listen to sounds and blend them together Child will say word out loud, sign it, or select the correct picture or AAC symbol from a group of 4, with 80% accuracy	Clinician produces sounds in isolation, slowly: "mmmooommm" Child indicates target	Selection of four symbols including: Mom Mop Pot Man
Phoneme segmentation	Child will listen to a phoneme presented orally Child will indicate a word that begins with that phoneme by saying it out loud, signing it, or selecting the appropriate picture or AAC symbol from a choice of four with at least 80% accuracy.	Clinician says "m" Child indicates target word beginning with that phoneme	Selection of four symbols including: Mom Up Bat Pot
Letter-sound correspondences	Child will listen to a target sound presented orally Child will select the appropriate letter from a group of letter cards, an alphabet board, or a keyboard with at least 80% accuracy	Clinician says "m" Child indicates target letter representing that phoneme	Computer keyboard with various letters highlighted (depending on number of letter-sound correspondences child knows)
Decoding	When presented with a simple 3-letter word in print, the child will indicate the word by saying it out loud, signing it, or selecting the appropriate picture or AAC symbol with at least 80% accuracy	Child is presented with written word "big" Child must select the matching picture/symbol from choice of four	Selection of four symbols including: Big Pig Bug Bib
Shared book reading	When the instructor reads a sentence in a book out loud, pauses, and points to a regular 3-letter word in print, the child will indicate the word by saying it out loud, signing it, or selecting the appropriate picture or AAC symbol with at least 80% accuracy.	While reading a short book, clinician points to word so child can see Child points to picture/symbol from display of symbols relevant to the story	Commercially available books or personalized books Symbols representing key characters, events, emotions in the story
Sight word recognition	When a word is spoken aloud, the child will select the matching printed word from a choice of four with 80% accuracy	Clinician says word "big" Child points to matching printed word	Four printed words: Big Bib Bug Pig
Reading simple sentences and stories	When presented with simple written sentence, child will (a) read the sentence, sign the sentence, or match picture to sentence and (b) answer "who is it about?" "what happened" questions with 80% accuracy	Child reads sentence: "the boy has a dog" Child selects picture corresponding to "who is it about?"	Four pictures; Boy with dog Girl with dog Boy with cat Girl with bird Can tailor story/pictures to child's interest
Reading comprehension	Targets may include: Summarizing Generating questions Answering questions Semantic/graphic organizers Predict next words/sentences in text Activate prior knowledge	The clinician models or demonstrates the strategy The clinician provides scaffolding support The clinician gradually fades this support The child has repeated opportunities for independent practice The clinician, child, and family make a plan to ensure generalization and continued use of the strategy	Choose books of interest or curriculum related materials Adapt response options to child's skills and abilities These may include communication boards, symbol book, signing, computer keyboard, computer, or other consumer electronic device with speech output

Adapted from: Light, J., and McNaughton, D. (2009). *Accessible literacy learning: Evidence-based reading instruction for learners with autism, cerebral palsy, Down syndrome, and other disabilities*. San Diego, CA: Mayer Johnson. See also: http://aacliteracy.psu.edu/index.php/page/show/id/1

what he or she wants to say, but there is a deficit in the motor planning/coordination of the articulators necessary to say it. Alternative terms for this problem include *developmental verbal apraxia or dyspraxia.*

Assessment of volitional movement patterns for the purpose of performing an action (i.e., puckering lips for a kiss, blowing a bubble) has traditionally been a common clinical approach to identifying CAS. However, Shriberg et al. (2003a, b) compared children with suspected CAS to children with speech sound disorders to find out whether the two groups could be differentiated on the basis of behaviors directly related to speech praxis. They concluded that only two linguistic behaviors differentiated the groups: *inconsistent production of stress* in tasks involving the naming of two-syllable words, and the degree of *variation in the timing* of speech. These results led Shriberg et al. to develop automated speech recognition methods for distinguishing speech samples of children with and without CAS (Hosom, Shriberg, & Green, 2004), leading to more accurate diagnoses. Without these automated, instrumental techniques, however, it can be very difficult for a clinician to be definitive about whether a child is experiencing CAS or developmental speech sound disorder.

For these reasons, there are numerous controversies surrounding CAS. Like "developmental dysphasia" CAS was originally defined as an analogue to an adult acquired neurological disorder, apraxia of speech, or a neurologically based difficulty in programming speech movements, thought to take place at a prearticulatory motor planning level. Intensive investigation, however, has not been able to document any consistent neuropathology in children who show this speech pattern, even using the neuroimaging techniques we outlined in Chapter 1. The fact that the behavioral symptomatology identified with CAS overlaps so much with other conditions, such as speech sound disorder and expressive language

delays, contributes to this view and makes differential diagnosis problematic. Shriberg et al. (2011) reported that the population prevalence of CAS is estimated at 0.1%, and that false positive diagnostic rates run at 80% to 90%. In other words, CAS is a rare disorder and children with other kinds of speech problems are very often misdiagnosed as having CAS. One important fact to note is that CAS affects not only speech sounds, but prosody, particularly stress and timing, as well. And since prosody occurs only in connected speech, it does not make sense to make a diagnosis of CAS unless there is enough continuous speech to judge whether prosody is affected. For this reason, our approach is to counsel caution in diagnosing this disorder. For pre-verbal children, it is simply too early to know whether speech has failed to emerge because of CAS, some other motor speech problem, or a more pervasive communication deficit. In these cases, work on developing receptive language, encouraging vocal production and working toward a first productive lexicon (see Chapter 7) is appropriate, regardless of what the diagnosis turns out to be. A diagnosis should be deferred until there is enough connected speech to judge accurately whether criteria for CAS are met. For children who use connected speech but have poor intelligibility, inconsistent speech errors, and prosodic deficits, CAS can be considered as a diagnosis, but only after other conditions, such as hearing impairment, dysarthria, and more common speech delays have been ruled out; and it is important to remember how rare CAS is. For those few children who do meet criteria for CAS, intervention should focus on developing motor patterns that automatize speech production, primarily through repeated practice of words and phrases, rather than isolated sounds. Sample activities for addressing CAS are presented in Box 4-10. Williams and Stephens (2010) provide an alternative program. Still, it is important to remember that at present there is a woeful

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BOX 4-10   Intervention Approaches for Children with CAS

MOTOR APPROACHES
- Massed practice: schedule frequent, short sessions; use a small set of stimuli (5 to 7 words or phrases) practiced over and over before moving on to another small set.
- Use block practice schedules early on: practice each utterance or stimulus many times in a row in the early stages of learning, as these facilitate retention.
- Use random practice schedules later: when production is stabilized, use random practice, in which items are interspersed in random order, to facilitate generalization.
- Provide feedback: provide feedback after a small number, but not every, response. Provide the feedback quickly, within less than a second of the production. Fade the amount of feedback as the intervention proceeds, and encourage client self-monitoring.
- Provide slowed-down models: provide extra time for the client to process and program the target movement. As accuracy of movement increases, increase rate of presentation of stimuli gradually.
- Practice, practice, practice: the fundamental tenet of a motor approach is that learning takes place as a result of repeated successful trials that lead to habituation and automatization of processing. Develop strategies for imitation and practice that go beyond basic sit-and-drill to maintain interest and motivation.

PROSODIC APPROACHES
- Practice analyzing words into syllables: have clients clap out the syllables in a word, or have them use large blocks to represent stressed syllables in a word and small blocks to represent unstressed syllables. Be careful not to produce unnatural stress in word productions.
- Identify stressed syllables in words (which part of rhiNOSceros is the loudest?) and imitate multisyllabic words with appropriate stress. If necessary, use backward chaining to achieve this (e.g., have the child say y, city, tricity, lectricity, electricity).
- Match phrases with meaning according to stress patterns: have clients match BLACK-board to a picture of a chalk-board, and BLACK BOARD to a picture of a painted board, for example.
- Have children identify stressed words in sentences: initially use exaggerated stress, then gradually fade the exaggeration.
- Use "wh-" questions: have children use stress to contrast between answers to "wh-" questions such as: who ate the cheese? The MOUSE ate the cheese. What did the mouse eat? The mouse ate the CHEESE. What did the mouse do? The mouse ATE the cheese.

Aided AAC devices are sometimes used with children with severe CAS.

lack of research evidence for treatment efficacy for this condition (Morgan & Vogel, 2008).

For children with severe CAS, it may be necessary to supplement speech and vocalizations with AAC in order to facilitate communication for some period of time. But it will also be crucial for these children to receive appropriate, focused, intensive speech-language therapy, following guidelines like those in Box 4-11. Research suggests that speech disorders tend to improve in these children as they reach school age, while language and literacy problems may persist (Lewis et al., 2004). The danger of CAS as a diagnostic category lies in the tendency to lead clinicians to ignore the language needs of these children to focus on speech production or AAC exclusively. Thus, the clinician needs to ensure that adequate assessment of language content and use, as well as literacy is made, even if speech is the most obvious presenting complaint.

The Nonverbal Child with ASD

As we saw earlier, a small but significant proportion of children with ASD fail to acquire any verbal language. It is also the case that in the early school years many children with ASD may have limited expressive language, though this may improve with time and intensive intervention. What causes some children with ASD to be nonverbal is still a matter of debate, but it is likely that reduced motivation to communicate with others contributes to this problem. Our primary goals, therefore, will be to establish intentional and functional communication for a variety of purposes.

As with other disorders, a likely finding for this population will be that some requests and protests are expressed, but joint attention or social interactions are not. When this is the case, we'll want to do two things. First, we'll want to provide some conventional means—gestures, signs, vocalizations, words, or some form of augmentative communication such as a picture board—for expressing the intents the child is already producing. Second, we'll want to provide extensive support for eliciting joint attentional and social interactive behaviors. When these emerge in presymbolic form, we will need to find more conventional means of expression

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BOX 4-11 Intervention Approaches for the Child with ASD Who Is Nonverbal

Establish receptive joint attention. Use loud, exaggerated cues and intense reinforcement to encourage child to look at what the clinician points out or looks at.

Establish initiation of joint attention. Follow the child's lead AS IF the child were attempting to establish shared attention. Look at or touch object child is engaged with. Intrude so child's attention shifts toward adult, then provide exaggerated praise for looking at and sharing with the adult.

Work with parents to increase synchronous responses to child's behavior/communication attempts. Use video to help parents identify child's communicative signals and encourage immediate response.

Focus on language input. Help parents to adapt their language and communication to the child's developmental level. Encourage parents to talk about the child's current focus of interest.

Encourage imitation. Play "copy-cat" games in which reinforcement is provided for vocal or gestural imitation. Start by imitating the child; then reward the child's imitation of the adult.

Encourage development of social interactive routines. Use enjoyable routines (e.g., tickling routines, favourite songs, etc.) and require the child to say or do something and look at the adult before continuing with the game.

Use sounds the child is already producing to encourage first words. At first, associate the sound the child makes with a meaningful object or outcome. For instance, link "ooh" sound with a train, saying "choo-choo, yes it's a choo-choo." Reinforce and encourage approximations of adult input.

Replace unconventional communication. Replace maladaptive behaviors with gestures, vocalizations, or actions. Try to establish communicative function of challenging behaviors.

Expand range of communicative functions. Use communication "temptations" to provide opportunities for child initiation in socially meaningful contexts.

Develop strategies to maintain and repair breakdowns. Use highly motivating activities to keep the client focused. Create opportunities for repair by delaying responses or feigning misunderstanding.

Provide environmental supports to enhance social communication. Use visually cued instruction (PECS, visual schedules and calendars, sign) and modified linguistic input (exaggerated intonation and facial expression, simple, routine, and repetitive language).

Adapted from Aldred, C., Byford, S., Charman, T., Le Couteur, A., Howlin, P., et al. (2010) Preschool Autism Communication Trial (PACT) Intervention Procedure: www.medicine.manchester.ac.uk/pact/protocols/; Paul, R. & Sutherland, D. (2005). Enhancing early language in children with autism spectrum disorders. In F.R. Volkmar, R. Paul, A. Klin and D.J. Cohen (Eds). *Handbook of Autism and Pervasive Developmental Disorders* (pp. 946-976). New York: Wiley.

for them. Use of AAC maybe helpful, and may lead to small increases spontaneous speech production (Schlosser & Wendt, 2008). Some techniques for working with the child with ASD who is not producing speech are outlined in Box 4-11.

AAC in ASD

The issue of alternative modes of communication is often raised for nonverbal children with ASD. Although these children have no known motoric impediments to speech, advocates of AAC, using a "communication needs" model, recommend providing AAC to any nonspeaking child, regardless of the reason, because everyone needs some way to communicate (Beukelman & Mirenda, 2005). Signed language is one alternative often used, though evidence for its functional use in children with ASD is limited (Prelock et al., 2011). In current practice, AAC systems for people with ASD often begin with object or picture exchange systems (Bondy & Frost, 1998). Here the child is given an object (such as a spoon to represent a bowl of cereal to eat) or picture that represents the desired goal, and is taught to give it to the clinician (or parent or education personnel) to obtain the goal. One popular example of this approach is the picture exchange communication system (PECS; Bondy & Frost, 1998). Numerous studies have demonstrated positive effects in language and communication development for PECS users, though direct comparison with other AAC methods, or more direct speech elicitation has not been implemented. Importantly, the child's developmental level may predict the degree to which a child with ASD adapts to the PECS system; those with developmental levels of 16 months or greater are likely to benefit the most from PECS (Pasco & Tohill, 2011). Other forms of AAC, such as VOCAs, have been studied and appear to be helpful, but studies are few and small. Overall, we can say that AAC methods have been shown to be compatible with the development of speech, although benefit beyond that offered by direct speech-language therapy has yet to be established. Since we know that acquisition of meaningful speech by school entry is a powerful predictor of later outcome (Howlin, 2005), it is important to make every effort to elicit speech during the preschool period. Direct speech instruction, or methods focused on verbal imitation and speech production (cf. Koegel et al., 2006) can be combined with AAC as well as other therapy approaches designed to increase joint attention and social interaction behaviors. However, we know very little about the relative efficiency of these approaches and more research is needed to guide clinicians as to what mix of approaches will yield the most direct route to spoken language. For individuals with ASD, it would seem important to include direct attempts to elicit and develop spoken language so that they may have more opportunity to reach their potential (Helt et al., 2008)

CONCLUSION

This chapter has included a very long discussion of a range of developmental disorders that frequently involve impairments to speech, language, communication, and literacy. Is it necessary to know the ins and outs of all these disorders in order to assess and treat them? Yes and no. Yes, it is helpful to know about these disorders and their key features disorder because these will give us hints about assessment and treatment. We also need information about these disorders so that we can interpret the medical records in case histories, and to facilitate professional dialogues with our colleagues who will form the multidisciplinary teams providing care for these children and their families. Knowing more about

the disorder will also help us to prepare for associated difficulties in behavior, perception, or cognition that may adversely affect language development and that will need to be taken into account when planning treatment and educational programs. However, we could answer "No," in the sense that knowing all of these things will not help us to know about an individual child's profile of communication strengths and weaknesses. Thus every assessment will need to start with the child and his or her family, and we must ensure that we do not miss anything important that may not fit our stereotypical profile of a child with a given disorder. "No" is also apt in the sense that there is a great deal of overlap in the cognitive and language characteristics associated with different diagnostic groups (Table 4-4), and that these categories are not mutually exclusive; as we've seen co-morbidity is the norm, not the exception, in developmental disorders. Many of the treatment approaches we use will be applicable across different diagnostic categories. So, knowing a child's diagnosis is only a signpost; we need to work closely with families to discover their primary concerns and priorities, and to conduct a thorough assessment of a broad range of language and related functions, using the guidelines presented in Chapter 2. Then we need to develop intervention goals and methods based on the assessment data, choosing among a repertoire of procedures and contexts that we discussed in Chapter 3. That's the real work of designing a language program. While it is influenced by the child's diagnosis, it cannot be fully determined by it.

STUDY GUIDE

I. Intellectual Disability
  A. Define Intellectual Disability (ID) and describe the diagnostic criteria discussed by the American Association of Intellectual and Developmental Disabilities.
  B. Describe the cognitive and linguistic characteristics of children with ID.
  C. What are "adaptive behaviors" and why are they important to assess when working with individuals with ID?
II. DLD associated with Disorders of Known Genetic Origin
  A. Down syndrome
    1. What causes Down syndrome (DS)?
    2. Describe language form, content, and use in DS.
    3. What are the cognitive characteristics of children with DS and how do they influence language development?
  B. Williams syndrome
    1. Describe the social skills of children with Williams syndrome (WS).
    2. How are language and cognition related in WS?
    3. What aspects of language content are particularly challenging for children with WS? Why?
  C. Fragile X
    1. How significant are gender differences in the language and cognitive profiles of children with Fragile X?
    2. High rates of co-morbidity are seen with what other developmental disorders?
    3. Describe the language and cognitive characteristics of children with Fragile X. What are the implications for assessment and treatment?
III. DLD Associated with Sensory Impairments
  A. Visual impairment
    1. How does blindness affect language development in terms of language form, content, and use?

TABLE 4-4   Cognitive and Language Characteristics across Diagnostic Categories

	Nonverbal Cognition	Executive Functions	Working Memory
Primary DLD	Not usually impaired	Variable	Impaired
Down syndrome	Impaired	Impaired	Impaired
Williams syndrome	Impaired	Impaired	Impaired
Fragile X syndrome (males)	Impaired	Impaired	Iimpaired
Visual impairment	Not usually impaired	Not usually impaired	Not usually impaired
Hearing impairment	Not usually impaired	Not usually impaired	Not usually impaired
Traumatic brain injury	Variable	Impaired	Impaired
Focal brain lesions	Not usually impaired	Not usually impaired	Variable
Landau Kleffner syndrome	Not usually impaired	?	Impaired
Autism spectrum disorder	Variable	Impaired	Variable
Attention-deficit hyperactivity disorder	Not usually impaired	Impaired	Impaired
Fetal alcohol syndrome	Mildly impaired	Impaired	Impaired
	Language Form	**Language Content**	**Language Use**
Primary DLD	Impaired	Relative strength	Relative strength
Down syndrome	Impaired	Relative strength	Relative strength
Williams syndrome	Not usually impaired	Relative strength	Impaired
Fragile X syndrome (males)	Impaired	Impaired	Impaired
Visual impairment	Not usually impaired	Relative strength	Vulnerable
Hearing impairment	Variable	Not usually impaired	Relative strength
Traumatic brain injury	Variable	Relative strength	Vulnerable
Focal brain lesions	Not usually impaired	Relative strength	Relative strength
Landau Kleffner syndrome	Impaired	Impaired	Vulnerable
Autism spectrum disorder	Variable	Relative strength	Impaired
Attention-deficit hyperactivity disorder	Variable	Relative strength	Vulnerable
Fetal alcohol syndrome	Variable	Impaired	Vulnerable
	Delayed Language Onset	**Decoding (Non-Word Reading)**	**Reading Comprehension**
Primary DLD	Yes	Vulnerable	Impaired
Down syndrome	Yes	Vulnerable	Impaired
Williams syndrome	Yes	Impaired	Impaired
Fragile X syndrome (males)	Yes	Impaired	Impaired
Visual impairment	Yes	Alternative method	Alternative method
Hearing impairment	No, if deaf parents	Vulnerable	Variable
Traumatic brain injury	No	Vulnerable	Impaired
Focal brain lesions	Yes	?	?
Landau Kleffner syndrome	No	May be strength	May be strength
Autism spectrum disorder	Yes	Variable	Impaired
Attention-deficit hyperactivity disorder	Maybe	Variable	Variable
Fetal alcohol syndrome	Maybe	Vulnerable	?

2. How can clinicians support literacy development in children with visual impairment?

B. Hearing impairment
  1. Otitis media
      i. Discuss the effects of otitis media (OM) on communication development.
      ii. What clinical implications can be drawn from the research on OM and language disorders?
      iii. What other developmental disorders are associated with high rates of OM?
  2. Sensori-Neural Hearing Impairment
      i. Define the types and degrees of hearing loss.
      ii. How have cochlear implants (CI) changed the role of speech-language pathologists?
      iii. Describe the differences in language form, content, use, and literacy for children with sensorineural hearing impairment (HI).
      iv. What are the effects of CI on language and literacy outcomes for children with HI?

C. Auditory processing disorder
  1. Is auditory processing disorder (APD) a valid diagnostic entity? Explain your answer.
  2. Discuss the guidelines for assessment of APD.

IV. DLD Associated with Acquired Neurological Disorder
  A. Traumatic Brain Injury
      1. Describe the three phases of recovery from traumatic brain injury (TBI) and the assessment/intervention approaches most appropriate for each phase.

2. Discuss the cognitive impairments associated with TBI, and their implications for learning and language processing.
3. What issues do clinicians need to consider when reintegrating children with TBI into the mainstream classroom?

B. Focal brain lesions
1. What is the pattern of language development and disorder in children with early acquired focal brain lesions?
2. What language skills are most vulnerable in children with focal lesions?

C. Seizure disorders (Landau Klefner Syndrome)
1. What are the developmental characteristics of Landau Klefner Syndrome (LKS) that should alert the clinician to consider this diagnosis?
2. Discuss language form, content, and use in children with LKS.
3. What alternative methods of communication have been suggested for use in LKS?

V. DLD Associated with Psychiatric Disorders
A. Autism spectrum disorder
1. What are the key diagnostic features of autism spectrum disorder (ASD)? How do the new severity criteria help clinicians?
2. Describe the cognitive profiles of children with ASD.
3. How might problems with social interaction and social understanding affect language development and language processing?
4. Discuss the literacy skills of children with ASD.
5. How are language form, content and use related in ASD?

B. Attention-deficit hyperactivity disorder
1. What are the cognitive features of attention-deficit hyperactivity disorder (ADHD)? How might they influence language development?
2. What additional factors should the clinician consider when developing intervention programs for children with ADHD?

C. Selective mutism
1. What are the diagnostic criteria for children with selective mutism?

2. Discuss some strategies for working with children who have selective mutism?

VI. DLD Associated with Environmental Disadvantage
A. Maltreatment
1. Why are children with language disorders at increased risk for maltreatment?
2. How does maltreatment affect communication development?
3. What are some of the implications for intervention with children who have been maltreated?

B. Fetal alcohol spectrum disorder
1. Describe the physical and cognitive characteristics of children with fetal alcohol spectrum disorder (FASD).
2. How does FASD interact with other environmental risks for DLD?
3. Describe the language profiles of children with FASD. Which aspects of communication are most vulnerable?

VII. The Nonverbal Child
A. Describe different types of augmentative and alternative communication (AAC) systems. What are the pros and cons of each?
B. Will the use of AAC help or hinder spoken language development? Explain your answer.
C. Describe a literacy program for children using AAC. What special considerations need to be made in developing the program?
D. Explain the developmental sequence for social-communicative goals of intervention programs for nonverbal children with ASD.

VIII. General Questions
A. What other professionals might the SLP being working with when assessing and treating children with developmental disorders?
B. How can language interventions influence the development of literacy skills in these populations?
C. Executive function deficits are reported in a number of developmental disorders. What are they and how might they influence language development and language processing?
D. What is the role of parents in developing and implementing intervention? Is it different for different disorders?

Child Language Disorders in a Pluralistic Society

Readers of this chapter will be able to do the following:

1. Describe the distinction between language disorders and language differences.
2. Discuss the role of communication in culture.
3. List a range of assessment procedures for evaluating communication in children with cultural and linguistic differences.
4. Describe intervention issues and strategies for clients with cultural and language differences.
5. Discuss the role of the speech-language pathologist in addressing communicative competence in bilingual and bidialectical clients.

In his book on the Civil War, James McPherson (1988) recounted an episode that occurred during General Lee's surrender to General Grant at the Appomattox Courthouse. General Grant's staff included a Native American of the Seneca tribe, by the name of Ely Parker. General Lee, upon being introduced to Parker, noticed Parker's Native American features and remarked, "Well, it's nice to see a real American here." And Parker replied, "We are all Americans." (p. 849)

Unless you've been stranded on the space shuttle for the past decade, it must be obvious that the cultural composition of American society is changing. Sources of this change include an increase in immigration from Africa, Central and South American countries, the Caribbean Islands, and many parts of Asia and the Pacific Rim, as well as an increase in internal migration of Native Americans away from reservations toward metropolitan areas. A second source of the change is seen in the fact that, although the overall percentage of children in the United States is declining, the proportion of children from nonwhite, non-Western European, non−English-speaking backgrounds is increasing (Children's Defense Fund, 1990; Hobbs & Stoops, 2002; U.S. Census, 2008). This is a result both of higher birth rates in non-European and non-American populations (National Center for Health Statistics, 1985) and of the higher number of females of child-bearing age in these groups, relative to the European and American populations (Hanson, 1998; Hobbs & Stoops, 2002). The result of these trends is that one in every four people in the United States is now of a race other than white. In some states, such as California and Texas, a majority of residents are of a non-European background. By the year 2050, it is predicted that the percentage of individuals from non-European

backgrounds will increase, as the percentage of whites declines to slightly over half of the population (Goldstein & Iglesias, 2006). In some cities, such as Miami, Philadelphia, and Baltimore, "minority" children are a majority in the public schools (Adler, 1993; Brice, 2002). But as Goldstein and Iglesias (2006) point out, there is a misperception that individuals from culturally and linguistically diverse populations exist mainly in large, urban areas. Children from culturally and linguistically diverse populations are well represented across the nation's school systems. In 2006–07, approximately 24% of all public school students attended schools where the combined enrollment of Black, Hispanic, Asian/Pacific Islander, and American Indian/Alaska Native students was at least 75 percent, compared with 16 percent of public school students in 1990–91 (Planty et al., 2009), and 40% of children in U.S. schools were from culturally and linguistically diverse backgrounds. The U.S. Department of Education estimates that 20% of students are learning English as a second language. And, unfortunately, a disproportionate number of these children will be from poor, single-parent (usually single-mother) families and at risk for a variety of disabilities (Battle, 2002b; Brice, 2002; Hanson, 2004; Iglesias, 2001), while only 6.9% of all speech-language pathologists (SLPs) are members of a racial minority, compared to 24.9% of the U.S. population (American Speech-Language and Hearing Association [ASHA], 2009).

And yet, as Ely Parker so aptly observed, we are all Americans. This is the challenge that SLPs face in this century: to appreciate the vibrant possibilities of the diversity that makes up our multifaceted American civilization and to contribute to our clients' ability to participate in it. Appreciation entails understanding, sensitivity, and respect for the many ways people look at the world and use communication, given their differences in culture and experience. Contributing means that we use every tool available to ensure that all clients—regardless of cultural background—get the most informed, most effective assessment of their difficulties and the most efficient, sensitive support in maximizing their potential for successful communication.

The term *culture* refers to the ways of thinking, talking, understanding, and relating to others that are characteristic of groups of people with a shared history. Cultures evolve to serve a purpose: to make groups coherent and to preserve their values and beliefs over time. In general, people come to America because they want a better life for themselves and for their children. Some come to escape repressive or intolerant societies in their homelands. Others want a chance to participate in our prosperity and engage in our pursuit of happiness. However, the opportunity to participate in the economic and political freedom that America affords should not have to entail giving up all that was unique about the cultures from which

each American came. For all of us, the achievement of participation in mainstream American life is a tug-of-war between opposing aspirations—the desire, on one hand, to enjoy the benefits of engagement in the wider society and the need, on the other hand, to maintain our cultural heritages and links to our past and our roots.

As clinicians, we help balance these desires by trying to provide access, through effective communication, to the opportunities of American society without depriving clients of the communication styles and strategies of their home cultures. This approach is often called "bicultural" education. Bicultural education simply means that a person can learn to take part in two (or more) sets of cultural styles and can switch back and forth when appropriate to maximize effectiveness in each. The foundation of bicultural education is understanding and sincere respect on the part of teachers and clinicians for cultures that contrast with those of the mainstream and that influence clients' communication.

DEFINING LANGUAGE DIFFERENCES

We should focus here for a moment on the distinction between a language difference and a language disorder. A disorder is what we defined in Chapter 1: a significant discrepancy in language skills relative to what would be expected for a client's age or developmental level. A language difference, on the other hand, is a rule-governed language style that deviates in some way from the standard usage of the mainstream culture. Some children from culturally different backgrounds have language disorders. When they do, the SLP's job is to provide remediation in a culturally sensitive way. But many children from culturally different backgrounds who are referred for language assessment do not have disorders, only limited exposure and experience with the language of instruction. Some, for example, who are acquiring English along with a home language display a different language acquisition pattern than children who are monolingual (Marian, 2009). Others may have limited exposure and opportunities to use English, so that their English skills are not as advanced as their skills in the home language. Roseberry-McKibbin (2008) discusses this issue in some detail and provides a framework for conceptualizing the needs of children with cultural and linguistic differences (CLD) who have varying levels of language ability and exposure to English. Table 5-1 provides an adaptation of her scheme.

Children can, of course, be at different stages along the road to being fully competent in English. Kohnert (2008) discussed the distinction between basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP). These terms represent the two ends of a continuum of competence with a non-native language. Some English language learners (ELLs) will have limited English proficiency (LEP); they will have a hard time expressing very basic communicative functions in English (although they may do just fine in their home language). Some children will be at the BICS stage of English acquisition; they can use words that are frequent in the language, produce more or less grammatical sentences, and engage in everyday talk about familiar items and events. Cummins et al. (2006) estimates it takes a child 2 to 3 years of exposure to and experience with English to achieve BICS, although Roseberry-McKibben (2008) reports the time can actually vary widely across children. When they do achieve BICS, children may appear to be fluent speakers of English, and may be thought to be fully bilingual. But Hornberger and Cummins (2008), Kohnert (2008), and Roseberry-McKibben (2008) remind us that this level of language proficiency is often not enough to succeed in the classroom, especially after the primary grades. BICS gets a child by on the playground. But to be able to read higher level texts with adequate comprehension, produce a range of written discourse, use and understand subject-specific vocabulary, and engage in cognitively demanding communication, BICS is not enough. To achieve CALP, which enables these kinds of higher-level communication skills, takes much longer. Cummins et al. (2006) estimate at least 5 to 7 years and sometimes longer. Because BICS may make a child appear to speak English, yet does not support success in the academic curriculum, children at BICS levels of English skill may appear to have language-learning disorders. We'll talk later about how to use assessment techniques to determine whether deficits in CALP represent language-learning difficulties or are rather a result of incomplete acquisition as seen in BICS. For now, it is important to know that the BICS/CALP distinction can make distinguishing language disorders from language differences challenging in ELLs. Still, one of the primary jobs of the SLP in dealing with children from CLD backgrounds is to accurately diagnose language disorders and distinguish them from language differences.

TABLE 5-1 Needs of Children with CLD and Varying Combinations of Language Learning Ability and English Exposure

Exposure to English	Language Learning Ability	
	Typical	**Language Learning Disability**
Adequate	Bilingual Education or Sheltered English instruction or ESL instruction	Bilingual special education or English special education with language input in primary language from educational aides, volunteers, etc.
Limited	Bilingual Education or Sheltered English or ESL and Addition opportunities to use English (tutoring, RTI, social skills group, English speaking "buddy" time	Bilingual special education or English special education with language input in primary language from educational aides, volunteers, etc. and Addition opportunities to use English (tutoring, RTI, social skills group, English speaking "buddy" time

Adapted from Roseberry-McKibben, C. (2008). *Multicultural students with special needs.* Oceanside, CA: Academic Communication Associates.

Cultural sensitivity is needed when working with families whose backgrounds differ from the clinician's.

When careful assessment, such as the kind described later in this chapter, reveals a difference rather than a disorder, Roseberry-McKibben (2008) suggests "sheltered English instruction." In sheltered English instruction academic content is taught in English, but the input language is simplified and supports, including visual and graphic organizers, relating to students' personal experiences, and supplementary culturally familiar materials are used (these supports are likely to help many students in the classroom, not only English language learners!). Kohnert et al. (2005) also discuss strategies for supporting the acquisition of home language of CLD children, as a solid foundation for the development of CALP skills. We'll talk about developing both BICS and CALP levels of Standard English proficiency in the intervention section of this chapter.

First, though, let's look at few of the larger cultural groups likely to be encountered in language pathology practice with children. We'll talk first about some information useful in understanding the communication patterns of children from some of these minority groups. Additional information is available in Roseberry-McKibben (2008). Then we'll look at some of the tools we can use to provide the most effective assessment and intervention services to these children.

LARGER MINORITY GROUPS IN AMERICA'S CULTURES

African-American Culture and Communication

As Terrell and Jackson (2002) pointed out, African-Americans, currently almost 13% of the U.S. population (U.S. Census Bureau, 2010), are not all alike. Some are wealthy, some are poor, and some are middle class. Socioeconomic class makes a good deal of difference in the attitudes and experiences of African-Americans, as it does in all Americans. However, one set of cultural experiences is common to many African-Americans: the history of forced abduction from their homelands, of slavery, and the tradition of racism and discrimination that has existed in the United States. Terrell and Terrell (1996) argued that the reaction to this set of experiences has formed many of the elements of contemporary African-American culture, including its music, religion, attitudes, and communication styles. Moreover, these experiences, according to Terrell and Terrell (1996), have led many African-Americans to develop a

sense of cultural mistrust that can affect their performance on evaluations administered by white clinicians. Willis (2004) provides additional information on cultural features that were shaped by these experiences and are shared by families with African-American roots.

The communication style shared by many, though not all African-Americans, is often called African American English, or AAE (Craig & Washington, 2006). AAE is considered a *dialect* of American English. Dialects are regional or cultural variations within a language that are used by a particular group of speakers. It shares many features with Standard American English (SAE; Craig and Washington, 2006). Dialects use a set of rules that are similar in many ways to those of the standard form of the language but differ in the frequency or circumstances of use of certain structures, lexical items, and other elements. All dialects of a language are mutually intelligible—any speaker of the language can understand them—and all are equally complex and legitimate (Burns et al., 2010). But some dialects have a higher status than others. The relative value or status of dialects is not inherent, though. It is said that a *language* can be defined as "a dialect with an army and a navy." In other words, the choice of which dialect has the role of the "standard" form of the language has more to do with power relations within the society than with anything intrinsic to the linguistic structure of any of the dialects involved.

Speaking a nonstandard dialect does not, in itself, constitute a disorder, but merely a difference in language use (Seymour, 2004). Still, the use of a nonstandard dialect such as AAE can in some situations be a handicap to the user, if speakers of the standard dialect view the nonstandard form as inferior or deviant (Fitts, 2001). Terrell and Terrell (1983), for example, found that when two groups of equally qualified African-American women applied for secretarial jobs advertised in newspapers, applicants who spoke AAE were less likely to be offered jobs. When they were, significantly lower salaries were offered to AAE speakers than to speakers of SAE. Prejudice against speakers of AAE, then, can have important economic implications.

Not all African-Americans use AAE, and many who do are bidialectical. In addition, the degree to which dialectal features are present in the speech of AAE speakers varies (see the Dialect Density Measure by Craig, Washington, & Thompson-Porter, 1998). Some speakers, even as young as preschool age, use AAE, for example, at home and with friends and switch to SAE, or whatever the predominant regional dialect of the mainstream is, when operating in less familiar settings (Connor & Craig, 2006). Use of AAE varies, to some extent, with geographical region (Stockman, 2010). Washington and Craig (1992), for example, found that AAE speakers living in the urban Midwest did not use as many AAE changes in their phonology as did children from the South. The use of AAE changes over a person's lifetime, as well (Craig & Washington, 2006). Craig, Thompson, Washington, and Potter (2003) and Issacs (1996) found that use of nonstandard dialect decreased through the elementary school grades, with the biggest dip occurring between kindergarten and first grade (Craig & Washington, 2006). AAE use also differs across contexts: Thomson, Craig, and Washington (2004a) found that African-American third graders used less AAE in more literate contexts, such as writing, than in picture description, while Curenton and Justice (2004) found that African-American preschool AAE speakers used literate language forms as often as Caucasian peers in a story-telling task from a wordless picture book. However, some African-Americans live in relatively isolated settings and may have little exposure to Standard English (Willis,

2004; Wolfram, Hazen, & Tamburro, 1997). Despite the great variability in its use (Burns et al., 2010), however, some characteristic differences between AAE and SAE are useful for clinicians to know. These differences are summarized in Box 5-1. For more detailed information on the linguistic structure of AAE, Charity (2008); Craig and Washington (2006); Green (2002); Mufwene, Rickford, Baugh, and Bailey (1998); Rickford (1999); and Roseberry-McKibben (2008) are excellent resources.

Understanding these characteristics can help the clinician to communicate more effectively with African-American clients, to distinguish between a difference and a disorder, and to identify points of interference with achievement in the curriculum. It also is helpful in this enterprise to understand the normal sequence of acquisition in AAE, which is described in Craig and Washington (2002, 2005); Horton-Ikard and Weismer (2005); Jackson and Roberts (2001); and Kamhi, Pollack, and Harris (1996).

As we'll often see in this chapter, supporting dialect speakers in their development of literacy and academic skills does not mean that the home dialect, in this case AAE, is defective in any way or that the AAE speaker has a disorder. It only means that we want to provide access to the language skills needed to succeed in the academic curriculum and to avoid encountering bias in the mainstream culture. Of course, we never want to "extinguish" use of AAE; rather, our goal is to develop bidialectical individuals who can *code switch,* or move back and forth, between AAE and SAE, as appropriate to the situation.

Hispanic-American Culture and Communication

Americans of Hispanic heritage come from a variety of cultures and races. What they share is a background of Spanish-speaking ancestry, although they may not actually speak Spanish themselves. Hispanic-Americans (or *Latinos*) come from Mexico, Cuba, Puerto Rico, Spain, the Caribbean Islands, Central and South American countries, and even Asia or Africa, and account for 16% of the U.S. population (U.S. Census Bureau, 2010). This diverse group speaks many dialects of Spanish; the major five spoken in the United States are Mexican, Central American, Caribbean, Chilean, and Puerto Rican. Some Hispanics are monolingual Spanish speakers; others are bilingual, to one degree or another, in English and Spanish. Brice (2002), Goldstein (2001, 2004), Roseberry-McKibben (2002a), and Zuniga (2004) provide detailed information about many aspects of the Latino culture of these diverse peoples.

Many children of Hispanic heritage come to school with *limited English proficiency (LEP);* that is, they know a little English but are not fluent communicators in English and have trouble functioning in a monolingual English classroom, at least for a while. These children are often referred to as English Language Learners (ELLs). Again, LEP is not a disorder, nor is it a permanent condition. Most normally developing children, with help and opportunities to interact with peers, eventually master English and become bilingual, able to communicate effectively in two languages.

BOX 5-1   Some Differences between AAE and SAE

PHONOLOGICAL DIFFERENCES
Changes in Medial and Final Consonants
1. Voiced and voiceless *th* replaced (*toof* for *tooth*; *nofin* for *nothing*).
2. /r/ and /l/ deleted (/fo/ for *four; potect* for *protect*).
3. Voiced stops; (/b/, /d/, and /g/) devoiced with vowel lengthened in consonant-vowel-consonant words (/pɪk/ with lengthened vowel for *pig*).
4. /m/ and /n/ deleted and replaced by a nasalized vowel (/pɪ̃/ with nasalized vowel for /pɪn/).
5. /ŋ/ changed to /n/ in -ing forms.
6. Change in order of consonants in cluster (/æks/ for *ask*).
Changes in Initial Phonemes, Syllables, and Initial Consonant Blends
1. Liquids often dropped from initial consonant blends (/p/ for /pr/; /b/ for /br/, etc.).
2. Certain consonants (particularly /w/ and /d/) omitted in specific words (*was, one,* and *don't*); final /r/ deleted.
3. Unstressed initial syllables dropped (*mato* for *tomato, cause* for *because*).
4. Word initial interdental fricatives; (th) replaced by stops.
5. *Thr* clusters pronounced as *th* (*tho* for *throw*).
Deletion of Final Consonants and Clusters
1. Final consonant is dropped in final clusters such as /nd/, /sk/, /sp/, /ft/, /ld/, /st/, /sd/, /nt/.
2. Variable deletion of certain consonants, including /l/, /b/, /p/, /d/, /t/, /g/, /k/.

SYNTACTIC AND MORPHOLOGICAL DIFFERENCES
Verb Marking
1. Regular past tense marking (*-ed*) is not obligatory and is sometimes omitted.
2. Irregular past tense is marked on some verbs and not on others (*see* is not changed to *saw*).
3. Regular and irregular third-person marking is not obligatory.
4. Future tense is often marked by *gonna* rather than *will*. When *will* is contracted, its pronunciation may be reduced. When *will* is required before *be* in SAE, it may be deleted in AAE ("I be home later" instead of "I will be home later"); or *bouta* (He *bouta* fall).
5. Contractible forms of copula and auxiliary *be* verbs are not obligatory ("He here"), though contractible forms are obligatory ("Is he here?").
6. Perfect tense in AAE is expressed by *been* to denote action completed in the distant past ("*She been gone*"); SAE uses adverbs to express this idea ("*She left long ago*").
7. Habitual state of verbs is marked with uninflected *be* in AAE ("She be workin' two jobs"), whereas SAE uses adverbs and inflected forms of *be* ("She's working two jobs now").
8. Double modals are allowed in AAE ("We might could go"), but not in SAE.

> **BOX 5-1**   Some Differences between AAE and SAE—cont'd

Noun Inflections
1. Plurals are not obligatory when quantifiers are present (*two dollar*).
2. Possessives are not obligatory when word order expresses possession ("Get mother coat"; "It be mother's").

Pronouns and Demonstratives
1. Pronominal apposition (noun followed by pronoun) is used in AAE ("My mother she home").
2. Reflexive pronoun forms are regularized in AAE so that all reflexive forms are produced by adding *–self* to a possessive pronoun (his-*hisself* in AAE, but *himself* in SAE; their-*theirself* in AAE, but *themselves* in SAE).
3. Relative pronouns are not obligatory in most cases, although in SAE only the *that* form is optional (AAE: "He the one made it"; SAE: "He's the one *who* made it"; but SAE: "He's the one [that] you like").
4. *These here* and *them there* combinations used in AAE, but not in SAE.
5. *Them* substituted in AAE for forms used in SAE (*these, those*).

Comparative and Superlative Markers
1. Endings *–er* and *–est* can be added to most adjectives in AAE (*baddest, worser*), unlike in SAE in which only certain forms can take these endings.
2. *More* and *most* can be combined with superlative comparative markers in AAE (*most stupidest*).

Negation
1. Double- and triple-negative markers may be used in AAE ("Nobody didn't never write to me"), but not in SAE ("Nobody ever wrote to me").
2. *Ain't* is used as a negative marker in AAE.

Questions
1. Indirect questions are produced with the same form as direct questions in AAE ("What is it?" "Do you know what is it?").
2. A clause beginning with *if* in SAE is produced with *do* in an indirect question in AAE ("I want to know *do* you want to play ball with us?").

SEMANTIC DIFFERENCES
Many lexical items are used in AAE that are not used in SAE or that come into SAE from their use in AAE. Some examples include *funky* and *rap*. Other words are used to denote meanings in AAE that are not part of their meaning in SAE, although often these meanings migrate into mainstream use as well. Some examples are *hog* (expensive car), *all that* (excellent), and *dude* (man or person).

PRAGMATIC DIFFERENCES
1. Silence is used in AAE when the speaker is in unfamiliar situations, when a speaker means to refute an accusation, or when a question considered intrusive is asked. The silence is often misinterpreted by mainstream listeners as a lack of innocence of an accusation or lack of knowledge, rather than as a communication strategy.
2. Direct eye contact is used in AAE in the speaker's role, but indirect eye contact is considered proper listening behavior. Making direct eye contact with speakers by children and by speakers with lower status is considered disrespectful in AAE. SAE speakers may misinterpret the indirect eye contact as "not listening" or "not making appropriate eye contact."
3. Wit and sarcasm are important elements in AAE language interactions. These often involve ritualized insults and retorts. Skill at parrying in these interactions is highly valued. Such interactions, often perceived as hostile by SAE speakers, may in fact be friendly and playful.
4. Asking personal questions of a new acquaintance about his or her job, family, and similar matters is considered rude and intrusive in AAE, although an SAE speaker may intend such inquiries to be friendly.
5. Conversations are considered private; butting in is seen as rude in AAE, although SAE speakers may intend this behavior to be a helpful addition to the discussion.
6. Interruption is tolerated and access to the conversational floor is given to the most aggressive speaker in AAE, whereas in SAE turn-taking rules attempt to give most participants at least some time to hold the floor, and interruption is considered rude.
7. Dynamic, intense behavior in public conversations in AAE is acceptable, including intense verbal arguing; SAE requires more restraint, less emotion, and less intensity in verbal argument.
8. Narrative style in AAE may differ from mainstream styles in that
   More gestures are used
   Judgments and evaluations of characters may be included
   More associational styles are used, rather than topic-centered styles, which are typical of SAE. AAE narratives flow from comments made in association with the last statement, rather than from a central theme.
9. Touching a child's hair during conversation is considered an insult in AAE, whereas in SAE it is meant as a sign of affection.

Data from Adler, S. (1993). *Multicultural communication skills in the classroom.* Needham Heights, MA: Allyn & Bacon; Charity, A. H. (2008). African American Anglish: An overview. *Perspectives on Communication Disorders and Sciences in Culturally and Linguistically Diverse Populations, 15(2),* 33-42; Iglesias, A., and Goldstein, B. (2004). Language and dialectical variations. In J. Bernthal and N. Bankson (Eds.). *Articulation and phonological disorders,* (5th ed., pp. 348-375). Boston, MA: Allyn & Bacon; Craig, H., Thompson, C., Washington, J., and Potter, S. (2003); Phonological features of AAE. *Journal of Speech, Language, and Hearing Research, 46,* 623-635; Labou, W. (1998). Co-existent systems in AAE. In S. Mufwene, J. Rickford, J. Baugh, and G. Bailey (Eds.), *African-American English: Structure, history, and use* (pp. 110-153). London: Routledge; Roseberry-McKibbin, (2008). *Multicultural students with special language needs.* Oceanside, CA: Academic Communication Associates; Stockman, I. (1996). Phonological development and disorders in African American children. In A. Kamhi, K. Pollack, and J. Harris (Eds.), *Communication development and disorders in African American children* (pp. 117-153). Baltimore, MD: Paul H. Brookes; Goldstein, B. (2000). *Cultural and linguistic diversity resource guide for speech-language pathology.* San Diego: Singular Publishing Group; Reid, D.K. (2000). Ebonics and Hispanic, Asian and Native American dialects of English. In K. Fahey & D.K. Reid (Eds.). *Language development, differences, and disorders* (pp. 219-246). Austin, TX: Pro-Ed; Blond-Steward, L. (2005). Difference or deficit in speakers of African American English? *ASHA Leader, 10(6),* 6-30.

Brice (2002); Brice and Brice (2007); Gildersleeve-Neumann, Kester, Davis, and Peña (2008); Haynes and Shulman (1998a); Kayser (2002); Scheffner Hammer, Miccio, and Rodriguez (2004); Tabors, Paez, and Lopez (2002); and Uccelli and Paez (2007) provide a detailed discussion of what is known about normal development of Spanish in children learning it as a first language. This information can be useful to clinicians attempting to differentiate between a language difference and a disorder in a child whose dominant language is Spanish. When looking at the Spanish language development of these children, comparing production to available information on normal acquisition of Spanish can help to establish the stage of development a child is demonstrating in the first language. We'll talk in more detail later in the assessment section about some methods of looking at level of first language acquisition in children with LEP.

In working with Hispanic children with LEP, some characteristic difficulties or interference points come up between English and Spanish in what we might call Spanish-influenced English (SpIE). These characteristics are summarized in Box 5-2. Hispanic children with LEP who make changes such as those listed in Box 5-2

BOX 5-2   Characteristics of Spanish-Influenced English

PHONOLOGY
1. Some phonemes of English are not used in Spanish and will typically be changed in SpIE:
   /θ/ in English is changed to /t/ in SpIE.
   /ð/ in English is changed to /d/ in SpIE.
   /z/ in English is changed to /s/ in SpIE.
   /ʃ/ in English is changed to /tʃ/ in SpIE.
   /v/ in English is changed to /b/ in SpIE.
   /dʒ/ in English is changed to /j/ in SpIE.
2. Final consonants are usually devoiced in SpIE.
3. Addition of schwa vowel before /s/ initial consonant clusters in SpIE (*estudy* for *study, eschool* for *school*).
4. Spanish has fewer vowels than English. The vowels /ɪ/, /æ/, and /ə/ are absent from Spanish and will be substituted for when they appear in SpIE. /ɪ/ in SAE is usually pronounced as /i/ in SpIE, for example.

SYNTAX AND MORPHOLOGY
Verb Marking
1. Regular past -*ed* is not obligatory in SpIE.
2. Regular third-person–singular marking is not obligatory in SpIE.
3. Copula will sometimes be produced as *have* in certain constructions ("I *have* eight years").
4. Future tense can be expressed by "go + to" in SpIE (for example, SpIE: "I go to have lunch." SAE: "I am going to have lunch").
Noun Inflections
1. Possessive markers used in SAE will be substituted by prepositional phrases ("the book *of my sister*"), or, in the case of body parts, by articles ("I cut *the* finger").
2. Plural /s/ marker is not obligatory in SpIE.
3. Articles are often omitted in SpIE ("I go to store").
4. Subject pronouns may be omitted in SpIE when the subject has been given in the previous sentence ("Jose is sick. Got chicken pox").
5. *More* is used as a comparative marker in SpIE instead of the -*er* ending ("He is more short").
6. Articles are optional ("That is big dog").
Negatives
1. *No* may be used in SpIE as a negative marker in place of *not* ("She no go to work today").
2. No may be used instead of *don't* in negative imperatives ("No go too fast!").
Questions
1. "*Do* insertion" is not obligatory in questions in SpIE (SpIE: "You want some?" SAE: "*Do* you want some?").
2. Intonation is used more frequently in SpIE to mark questions than it is in SAE ("Carmen will be here?").

SEMANTICS
1. Number, color, and letter words often receive less emphasis in parent-child interactions in Hispanic households.
2. Names and labels for objects, donors of objects, and particularly for relatives are emphasized in Hispanic parent-child interactions.

PRAGMATICS
1. Speakers of SpIE tolerate closer personal distance during conversation than speakers of SAE.
2. Direct eye contact is avoided in SpIE; lack of eye contact can signal attentiveness in SpIE, although it can mean just the opposite in SAE.
3. There is a greater incidence of touching between conversational partners.

Data from Brice, A., & Brice, R. (2007). A tale of two languages. *The ASHA Leader,* (September, 2007); Kayser, H. (2002). Bilingual language development and language disorders. In D. E. Battle (Ed.), *Communication disorders in multicultural populations,* (3rd ed., pp. 205-232). Boston: Butterworth-Heinemann; Goldstein, B. (2001). Transcription of Spanish and Spanish-Influenced English. *Communication Disorders Quarterly, 23,* 511-560; Haynes, W., and Shulman, B. (1998). Ethnic and cultural differences in communication development. In W. Haynes and B. Shulman (Eds.), *Communication development: Foundations, processes, and clinical applications* (pp. 363-386). Englewood Cliffs, NJ: Prentice-Hall; Owens R. (2005). *Language development: An introduction,* (6th ed.) Boston: Allyn & Bacon; Reid, D. K. (2000). Ebonics and Hispanic, Asian and Native American dialects of English. In K. Fahey & D.K. Reid (Eds.), *Language development, differences, and disorders* (pp. 219-246). Austin, TX: Pro-Ed.

in their use of English would not be considered as having a disorder. To determine whether a Hispanic child with LEP was having inordinate problems in learning English, we would need to look for other types of errors that would not be typical of SpIE. We'll talk in more detail in the assessment section about methods of looking for these atypical kinds of errors.

Native American Culture and Communication

Joe and Malach (2004) reported that at the time of Christopher Columbus, there were at least 1000 Native American tribal entities, each with a distinct language, culture, set of beliefs, and governance structure. Even though many Native Americans have moved away from reservations to more urban areas, more than 1 million people still live on hundreds of reservations located in remote rural areas where medical, educational, and rehabilitative services are not readily available. Even Native Americans in cities share many of the cultural and child-rearing practices of their relatives on reservations (Joe & Malach, 2004; Westby & Vining, 2002). Like the other cultural groups being discussed, the Native American population encompasses great diversity. However, Joe and Malach (2004) and Robinson-Zanartu (1996) have pointed out some of the common themes among communication styles of the many first American peoples.

Native American children from a variety of tribal groups have been found to score higher on motor, social, and self-help skills than their mainstream peers, although they score lower on language areas (Westby, 1986, 2005). These differences are thought to reflect the experience of the Native American children, whose cultures rely much more heavily on visual than on vocal channels of information exchange. Native American children are taught to learn by watching—being quiet, passive observers of cultural practices. Demonstration of skills to Native American children does not usually involve verbal accompaniment nor are children expected to show their knowledge by verbal performance. Instead, they are required to display their physical mastery of a task, such as dancing or weaving, by just doing it. Still, these cultural differences can have educational implications; children from Native American backgrounds are over-represented in special education (NCES, 2005), partly as a result of their tendency to "do" rather than talk.

Basso (1979) reported that Apache children were scolded for "acting like a white man" if they talked too much. Native American children are taught that important questions deserve thoughtful answers and are encouraged to take time to consider a question carefully before answering. The long pauses they use before responding to questions are often misinterpreted as a processing problem or lack of knowledge of the correct answer. Similarly, Joe and Malach (2004) report that it is considered rude in many Native American cultures to ask too direct a question or to make direct eye contact with one in authority. Westby (1986) emphasized that a Native American child's reluctance to speak, to look at the teacher, to ask questions, or a tendency to have long latency of response should not be misinterpreted as a lack of communicative competence. Instead, it should be understood as an appropriate expression of cultural patterns of communication (See Inglebret et al., 2008, for ways to use Native American storytelling traditions to encourage shared storybook reading).

Robinson-Zanartu (1996) noted that many Native American languages do not have words for concepts such as *hearing loss, retardation,* or *disability.* Nichols and Keltner (2005) report that children so labeled by the mainstream culture may be considered as simply part of the traditional community by its members. This can have profound effects on the ways professionals need to communicate with families about assessment and intervention services.

Reid (2000) and Westby and Vining (2002) identified several general differences that are commonly seen between English and Native American languages, and give some examples, primarily based on the Navajo language, as reported by Young (1967). These are summarized in Box 5-3. For more detailed and specific comparisons, clinicians will need to consult native speakers of the languages with which they come in contact, or resources such as Mithun (1999) and Patrick (2002). Again, in analyzing the language skills of a Native American child with LEP and attempting to decide whether a language difference or disorder exists, it will be necessary to determine whether the errors made in the child's use of English are different or more pervasive than those of peers at similar stages of exposure to English. It also will be important to keep pragmatic differences in mind. Being sensitive to these differences will optimize the chances of obtaining information that is truly representative of the child's communicative competence. Inglebret and Harrison (2005) offer general considerations to SLPs for working with Native Americans. Faircloth and Pfeffer (2008) talk about collaborating with tribal communities to provide early intervention services to Native American children.

Arab-American Culture and Communication

Since the 1980s many new immigrants to the U.S. have come from the Arab world of Middle-Eastern countries including Egypt, Iran, Iraq, Syria, Turkey, and Algeria. Ninety-two percent of this population is of the Muslim faith, but the Arab language also provides a bond among peoples of this region (Roseberry-McKibben, 2008). Middle Eastern communication styles include the acceptance of loud speech as normal in conversation, rapid speech, emphasis on eye contact as indicative of truthfulness in men, though less acceptable for women, acceptance of emotionality in conversation, and value placed on silence during communication. Arabic cultures place high esteem on poetry and eloquence, as well as on elaborate displays of respect through the use of titles in greetings (Omar Nydell, 2006). Some articulation and language differences between English and Arabic speakers are listed in Box 5-4. Children from Middle-Eastern background who make these kinds of errors will need additional opportunities to hear and use English, in order to refine their English-language skills.

Asian-American Culture and Communication

Although Asians have been coming to America for more than two centuries, their numbers have increased greatly in the past three decades. Chan and Lee (2004) and Cheng (2001, 2002a) discussed the diversity of peoples included in the "Asian-American" category and provided valuable information on many linguistic, social, religious, educational, and historical characteristics of the major cultural groups subsumed under the "Asian-American" umbrella. They come from China; Japan; Korea; India; Vietnam; Thailand; Cambodia (Kampuchea); Laos; and various Pacific Islands, including Guam, Samoa, and the Philippines. They speak hundreds of different languages—more than 80 languages are spoken in China alone. Asian-Americans come out of both rural and urban backgrounds and

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BOX 5-3   Features of Native American Dialects of English

PHONOLOGY

1. Native American dialects retain the phonemic patterns, phonological rules, and stress patterns of the tribal language. For example, the Navajo language does not use consonant clusters in syllable final position. Navajo dialects of English simplify these clusters.
2. Native American dialects retain intonation patterns of the tribal language. For example, Navajo uses particles rather than intonational contours to express questions, exclamations, and other forms. Navajo dialects of English may not include intonational changes to mark emotional overtones in speech.

SYNTAX AND MORPHOLOGY

1. Native American dialects carry over syntactic forms from the tribal language. For example, in Navajo, possession is expressed by personal pronouns prefixed to the possessed noun (*man his-boots*). Navajo dialects may include these rather than standard ('s) possessive markers.
2. Native American dialects carry over morphological rules from the tribal language. For example, in Navajo, opposites are not expressed morphologically, but rather with a standard negating or opposite marker:
   Navajo dialect: agree-not agree; SAE: agree-disagree
   Navajo dialect : tie-not tie; SAE: tie-untie
3. Constructions found in other nonstandard forms of English also can be found in Native American dialects (e.g. *ain't,* uninflected forms of *be.*)
4. Specialized meanings of negative markers may be used; e.g., "The man does not do anything like this" (implies women may do it) and "The man does not do nothing like this" (implies he does something else).

PRAGMATICS

1. Cultural norms dictate who may be addressed by whom and what is appropriate to discuss at what season of the year.
2. Silence is more than absence of speech. It is a rule-governed practice used to express respect, thoughtfulness, that the question is worthy of serious consideration, or that the situation is unfamiliar.
3. It is rude to tell someone something he or she already knows. For example, if a teacher asks a question to which the answer is obvious, she must already know the answer (e.g., the teacher holds up a picture of a dog and says, "What is this?"), and therefore the child may not answer.
4. Greetings are not always used when entering or leaving, out of a desire not to intrude or interrupt.
5. Tempo of speech is slower and more fluid than in SAE.
6. Native Americans show a preference for "hearing out" a whole story or discourse before any questions or discussion takes place.
7. It is rude to correct or interrupt a peer.
8. Narratives are discursive, circling around a central point, rather than proceeding directly to it.

Adapted from Reid, D.K. (2000). Ebonics and Hispanic, Asian and Native American dialects of English. In K. Fahey & D.K. Reid (Eds.) *Language development, differences, and disorders* (pp. 219-246). Austin, TX: Pro-Ed; Young, R. (1967). *English as a second language for Navajos: An overview of certain cultural and linguistic factors.* Washington, DC: Navajo Area Office, Division of Education, Bureau of Indian Affairs; Westby, C. & Vining, C. (2002). Living in harmony: Providing services to native American children and families. In D.E. Battle (Ed.), *Communication disorders in multicultural populations,* 3rd ed. (pp. 135-178). Boston: Butterworth-Heinemann.

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adhere to a variety of religions, including Buddhism, Christianity, Confucianism, Hinduism, Islam, Shinto, Taoism, and various local animistic belief systems. Like many cultures, those from Asia have specific cultural practices and beliefs relating to child development and language learning that need to be addressed when working with these families (Johnston & Wong, 2002). Clinicians who find children from these groups on their caseload will benefit from reviewing Chan's, Cheng's, and Johnston and Wong's detailed descriptions.

Like the Native American languages discussed earlier, the Asian languages that can influence the speech of Asian-Americans are so many and diverse that it would be impossible to outline all the points of interference. Cheng (2001), Goldstein (2000), Owens (2005), and Reid (2000) provided some characteristics that Asian language speakers in America have in common. These are outlined in Box 5-5. Cheng (2002b) provides specific guidelines for assessing Asian-language speakers. Again, though, a clinician working with an Asian-American ELL child will need to get more specific information about the child's first language to determine the extent to which a child's communication problem represents a language

difference or a disorder in need of intervention. Hwa-Froelich, Hodson, and Edward (2002), for example, discuss this issue for Vietnamese; Jia and Fuse (2007) discuss it for Mandarin.

High- and Low-Context Communication

As we've seen from this brief review of some of the communicative characteristics of several of the larger minority groups in America today, there is nearly as much diversity within each group as there is between each and the mainstream. Knowing a little about communicative characteristics typical of particular minorities can be useful in sensitizing ourselves to differences we might expect, so long as we are careful not to stereotype anyone on the basis of cultural background. In addition to the commonalities that exist within each cultural group, some general tendencies in communicative style are common across traditional cultures. Awareness of the possibility of these differences, too, can help us to be cognizant of the cultural factors that operate when we assess and remediate communication skills in children whose cultural backgrounds and perspectives diverge from our own.

Language and Articulation Differences between English and Arabic

COMMON CHANGES	RESULTING ERRORS IN ENGLISH
Articulation	
/n/ for /ŋ/ substitution	/san/ for *song*
/ʃ/ for /tʃ/	*shoe/chew*
/w/ for /v/	/wæn/ for *van*
/f/ for /v/	/dʌf/ for *dove*
/t/ or /s/ for /θ/	/mæt/ for *math*; /sɔt/ for *thought*
/z/ for /ð/	/ʌz¬/ for *other*
Epenthesis in triple consonant clusters	/waildʌli/ for *wildly*
Language	
Omission of possessive markers	That John hat; The name boy is . . .
Omission of plural morphemes	She has four dog.
Omission of prepositions	Put your socks.
Omission of *be* verbs	She my teacher.
Inversion of noun phrases	He go to the station gas.

Adapted from Omar Nydell, M. (2006). *Understanding Arabs: A guide for modern times* (4th ed.) Yarmouth, ME: Intercultural Press; Roseberry-McKibbin, C. (2008). *Multicultural students with special language needs.* Oceanside, CA: Academic Communication Associates.

SLPs will often have clients from cultural backgrounds different from their own.

Lynch (2004a) and Westby and Rouse (1985) discussed these general tendencies under the rubric of high-context versus low-context cultures, as defined by the anthropologist Hall (1983). Hall suggested that there is a continuum of contextualization of communication along which cultures can vary. Mainstream North American culture, particularly the culture of the classroom, tends toward the lowest end of this continuum, with communication being highly *decontextualized.* Many traditional cultures, however, locate their communication at the higher end of the contextualization continuum.

Table 5-2 presents some of the contrasts between high- and low-context communicative styles. Understanding these differences in communicative styles can help to head off problems with clients who come from relatively high-context cultures. We might, for example, talk about the objectives and procedures for the immediate present, perhaps one session at a time, in our discussions with these families and focus less on planning intervention strategies and goals for the longer-term future.

Westby and Rouse (1985) pointed out that children from more traditional, high-context cultures may have particular difficulty adjusting to the demands of low-context communicative situations, particularly those of the classroom. They suggested that SLPs, in a consulting role, can encourage teachers to incorporate some higher-context activities in programs designed for such children. These might include substituting a more high-context activity for the usual "sharing time" monologue required in typical classrooms. Instead of being asked to relate an experience without contextual support, children can be asked to respond as a group to a question about personal experiences, such as, "What happens when you have a guest in your home?" Rather than singling out a child, teachers can invite children to make a contribution when they have one and use the support provided by others' contributions as a scaffold. Westby and Rouse (1985) also suggested supplying parents with a few low-context activities that they can do with the child at home. One idea might be to send home books at the child's level for the parents to read to their children (or if they are unable to read English, to talk about the pictures with their children). Parents can be given a list of specific questions to ask the children about the books, such as, "What is the story about?" "How did the character feel?" and "Why did she do that?" Increasing the contextualization of some activities at school while providing some experience with decontextualized talk at home can help to ease the transition for children from more traditional cultures, especially children with language and learning difficulties.

Narratives

Another place in which high- and low-context cultural styles affect communication is the area of narrative development. Narratives differ from conversation in that they are monologues that are tied into cohesive units by linguistic markers and thematic unity. Like conversation, narratives are important communicative structures used by all cultures to accomplish specific communicative purposes. High- and low-context cultures differ in narrative style, though. They contrast in the degree to which the various narrative genres are used, in the way in which narratives are organized, and the extent to which children are expected to produce each genre. Goldstein (2000) and Heath (1986) described four basic narrative genres: recasts/recounts, event casts, accounts, and stories. Descriptions of each type are summarized in Box 5-6.

These genres are used for different purposes and to different degrees in high- and low-context cultures. High-context, traditional cultures expect children to use *recast/recounts* to retell events with extensive verbal imitation, role-playing, and use of present tense. Low-context cultures, such as those of the classroom, use them to summarize succinctly, using past tense. *Event casts* are used frequently in low-context cultures to explain activities or series of events that are being planned or will take place in the future. They are very prone to metalinguistic or metacognitive commentaries, in which the speaker talks about the language being used or thinks out loud about how best to convey the ideas. These types of narratives are used often in classroom communication but

BOX 5-5 Features of Asian Dialects of English

PHONOLOGY
1. Most Asian languages have open (consonant-vowel) rather than closed (consonant-vowel-consonant) syllables. Many Asian dialects of English omit final consonants.
2. In many Asian languages, /r/ and /l/ occur in the same phonemic category and will be confused in Asia dialects of English.
3. Consonant blends are common in English but rare in many Asian languages. Some Asian-Americans may simplify them.
4. Many Asian languages are monosyllabic. Asian dialects of English may involve truncated or telegraphic-sounding forms, and stress may be misplaced.
5. Many Asian languages are tonal; prosodic changes carry semantic information rather than defining sentence types or conveying communicative intent, as they do in English. These intonational patterns may be difficult for Asian-Americans to learn, and they may be misinterpreted.

SYNTAX AND MORPHOLOGY
Verb Marking
1. *Be* verbs may be omitted or improperly inflected ("I going" "I is going").
2. Auxiliary *do* may be omitted or uninflected ("He not going." "He do not go").
3. Past *–ed* may be omitted ("He want ice cream yesterday"), overgeneralized ("He eated the cake"), or doubly marked ("She didn't saw me").
4. Past participle may be unmarked ("I have eat") or overgeneralized ("He has wented"), *have* auxiliary may be omitted ("He been there").
5. Noun-verb agreement may be error ("He have"; "You goes").
Nouns and Pronouns
1. Plurals may be omitted with quantifiers (*two shoe*) or overgeneralized (*the sheeps*).
2. Subject-object confusion ("Him here").
3. Errors of possessive marking (*him book*).
4. Errors on demonstrative pronouns (*those horse*).
5. Errors on comparatives (*gooder, more gooder*).
6. Gender is not marked ("He and his husband go").
Negatives
1. Double marking ("I didn't hear nothing").
2. Simplified marker ("He no want").
Questions
1. No reversal of auxiliary verb ("you are going?").
2. Auxiliary omitted ("You like football?").
Other
1. Omission or misuse of prepositions ("She is at room." "We go car").
2. Omission of conjunctions ("You I leave now").
3. Omission or overinclusion of articles ("I got to store." "You go to the home").
4. Word–order errors including adjectives following nouns (*Shoe new*), possessive following nouns (*hat mine*), subject-verb-object order. ("He gave out them").

SEMANTICS
1. Literal translations from native language (*open-light*=turn on light).
2. Difficulties with idioms and colloquialisms.

PRAGMATICS
1. Giggling may be used to indicate shyness rather than humor.
2. Praise is responded to with embarrassment; praise is not usually give outside the family.
3. Feelings are not openly expressed; Asians may retain composed facial expression even when agitated. Reprimands may be responded to by lowering the eyes and maintaining silence.
4. Kinship terms may be used to address elders as sign to respect, even when they are actually related.
5. Professionals have high status and command respect. They are regarded as authorities.
6. Social status is important and must be established early in an interaction. Formal introductions by a third party are preferred to self-introductions, particularly for introduction of high-status professional (such as SLPs).
7. Social status is established on the basis of age, marital status, and employment. Questions on these facts are deemed appropriate to ask directly of new acquaintances to establish proper social order among conversationalists.
8. Children are expected to be seen and not heard; children are not expected to talk during meals. In schools, children are discouraged from interrupting teachers and may appear passive to Western adults.
9. Direct eye contact is avoided.
10. Repeated head nodding is used.
11. It is rude to say "no." It is hard for Asians to disagree directly, especially with a high-status professional.

Adapted from Owens, R (2005). *Language development: An introduction* (ed.6). New York: Macmillan, Cheng, L (1987), Cross-cultural and linguistic considerations in working with Asian populations. *American speech-Language-Hearing Association, 29(6),* 33-41; Cheng, L. (2001). Transcription of English influenced by certain Asian languages. *Communication Disorders Quarterly, 23,* 40-46; Reid, D.K. (2000). Ebonics and Hispanic, Asian, and Native American dialects of English. In K. Fahey & D.K. Reid (Eds.), Language development, differences, and disorders (pp. 219-246), Austin, TX: Pro-Ed.

TABLE 5-2   Contrasts between High- and Low-Context Communicative Styles

Low-Context Styles Used in Mainstream Culture	High-Context Styles Used In Traditional Cultures
Most information is transmitted verbally.	Most information is the physical context or is in shared knowledge among participants.
Learning takes place through words.	Routines and behaviors are taught through observation.
Society undergoes rapid change; there is great opportunity but life is less predictable. Planning of the future and delaying gratification for future rewards are encouraged.	Change is slow, life is predictable. As a result, little planning is needed. Talk about the future may be discouraged.
The role of the individual is to achieve and excel.	The role of the individual is as a member of the cultural group; most activities are controlled by the group rather than by an individual; individuals should not stand out from peers.
Monochronic concept of time: Single events happen one at a time. Planning and scheduling are critical. Actions are tightly scheduled. What matters is sticking to the timetable.	Polychronic concept of time: time is flexible; timelines and schedules may not exist. What matters is the completion of transactions, not time.

Adapted from Westby, C., & Rouse, G. (1985). Culture in education and the instruction of language learning disabled students. *Topics in Language Disorders, 5(4),* 15-28; Hall, E. (1983). *The dance of life.* New York: Anchor Press/Doubleday.

BOX 5-6   Narrative Genre Descriptions

Recast/Recount–Retells events and experiences from the past, with sequential chronology and consistent point of view. Example: summarizing a section of a textbook.
Event cast–Verbal replies or explications of activities or procedures that are currently being done or are planned. Example: telling how to bake a pie, explaining what will happen on a field trip.
Account–Shares an experience. Example: telling about your vacation.
Story–Fictional account of people (or animals or inanimate objects that take on human characteristics) who must overcome some problem that has social or moral significance to the culture. Example: *The Three Little Pigs.*

Adapted from Goldstein, B. (2000). *Cultural and linguistic diversity resource guide for speech-language pathology.* San Diego: Singular Publishing Group; Heath, S. (1986). Taking a cross-cultural look at narratives. *Topics in Languages Disorders, 7(1),* 84-94; Kayser, H. (2002.) Bilingual language development and language disorders, in D.E. Battle (Ed.), *Communication disorders in multicultural populations* (3rd ed.) (pp. 114-157). Boston. Butterworth-Heinemann.

are rarely expected of children in high-context, traditional cultures. *Accounts* are used in both high- and low-context cultures to share experiences. Low-context cultures require that they have a predictable progression of events so that the listener can anticipate what is coming. In low-context situations in which these narratives are used, such as the show-and-tell situation in school, accounts are judged by not only their truth value but also by their degree of organization. In high-context cultures, less stress is on organization. *Stories* are used by both high- and low-context cultures, but they differ across cultures in terms of their internal organization and focus. Although most cultures expect children to listen to stories, cultures differ in the degree to which children are expected to tell stories. In some traditional high-context cultures, only elders or others with high status are expected to be storytellers.

Goldstein (2000) and Hester (1996) discussed the different structures that stories can have in high- and low-context cultures. Low-context cultures tend to have a storytelling style that Gee

(1985), Michaels and Collins (1984), and Tannen (1982) referred to as "topic-centered." These stories have a linear progression that follows the story-grammar model (Stein & Glenn, 1979), in which an initiating event or problem motivates a character to develop a plan and carry out an attempt to solve the problem. The problem is resolved one way or another, and some form of external evaluation of the resolution ("and they lived happily ever after") takes place. (Story grammars are discussed in more detail in Chapters 10 to 14.) High-context cultures tend to use a more topic-associated style of narrative organization. This style is more anecdotal than linear. Westby and Vining (2002) reported that topic-associated stories consist of segments in which the overall theme may be implicit but never stated. Focus of person, place, and time often shifts and relationships must be inferred by the listener. These stories are longer than topic-centered narratives and may appear to the naive listener to have no beginning, middle, end, or central point. Westby (1989a) cited Kaplan's (1966) diagrammatic representation of the different forms that topic-associated narrative can take. These appear in Figure 5-1. However, Goldstein (2000) pointed out that this difference in structure may be more related to task demands than to underlying narrative ability. In fact, Fiestas and Peña (2004) found that bilingual children did include elements of story grammar in their stories in both English and Spanish, although there were differences in the particular elements included in each language.

Skill in producing and understanding topic-centered narratives has been shown to be closely related to literacy development and to success in school (Bishop & Edmundson, 1987; Boudreau, 2006; Boudreau & Hedberg, 1999). Children from high-context cultures with little experience of this narrative style may encounter difficulties in the many academic tasks that require processing and producing these narratives. As Westby (2005) pointed out, topic-centered narratives form a bridge between high-context, oral language styles and the low-context, literate language style of the classroom for mainstream as well as for culturally different children. Moreover, Fiestes and Peña (2004) argue that narrative production requires children to manage cognitive load in planning extended discourse, and thus is a good way to assess higher-level cognitive-linguistic skills. They report data indicating that narrative is a valid and relevant task for assessing higher-level language
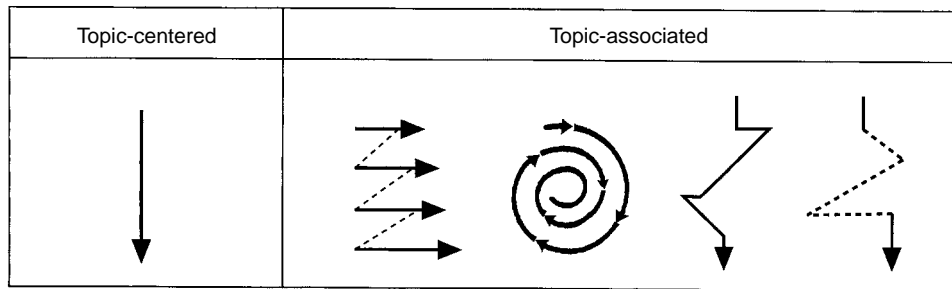
Topic-centered	Topic-associated

FIGURE 5-1   Narrative structures across cultures.   (Adapted from Westby, C. [November, 1989]. Cultural variations in storytelling. Paper presented at the National Convention of the American Speech-Language-Hearing Association. St. Louis, MO; and Kaplan, R. [1966]. Cultural thought patterns in intercultural education. *Language Learning, 16*, 1-2.)

skills in bilingual children. When assessing narrative development in clients, it is important to be aware of the possible problems children from traditional cultures can have with topic-centered narratives. Rojas and Iglesias (2006, 2009) provide guidance on eliciting and scoring narrative samples from Spanish-speaking children, for example. For all children with CLD we want to be careful not to imply that the topic-associated narrative styles with which the client is familiar are wrong. Rather, we will want to encourage students to learn an additional style to be used when telling stories in the classroom or mainstream setting.

Working with Families from Culturally Different Backgrounds

As we'll see when we talk in the following chapters about working with young children, the best practice in child language disorders is *family-centered*. This practice involves helping families to identify concerns, priorities, and resources for their child and including them as integral members of the intervention team (Donahue-Kilburg, 1993; Hidecker et al., 2009; Pedersen & Vining, 2009). Family-centered practice with families whose cultural background differs from our own operates on exactly the same principles. We must respect the concerns and priorities of families whose experiences and values diverge from ours, just as we do those of families whose beliefs are more familiar to us. As both Hwa-Foerlich and Westby (2003) and Peña and Fiestas (2009) pointed out, differences in beliefs and values about learning, parenting, and disabilities can lead to confusion and misunderstanding. Therefore, we need to be aware of how our own assumptions and expectations affect our interactions with CLD families (Kohnert, 2008). Goldstein and Iglesias (2006) and Roseberry-McKibben (2008) suggested the strategies for culturally sensitive family-centered practice that are summarized in Box 5-7. In addition, Cheng, Battle, Murdoch, and Martin (2001); Coleman and McCabe-Smith (2000); Goldstein (2000); Johnston and Wong (2002); Lynch (2004b); and McNeilly and Coleman (2000) discuss issues related to developing cultural competence for working with families of CLD children. Clinicians would benefit from reading and studying these texts to develop culturally sensitive practices.

We'll talk in more detail about family-centered practice in the next few chapters. The important point to remember here is that the principles and communication strategies we'll discuss apply to families that come from diverse cultures as well as to families in the mainstream.

BOX 5-7   Strategies for Developing Culturally Sensitive Family-Centered Practice

Be sure family members (and in many CLD families, family members other than parents will be involved) understand the purpose of each assessment or intervention session.

Attempt to involve family members in making decisions about assessment methods and interpretation, intervention targets and procedures, etc.

Match assessment and intervention goals to family priorities.

Allow ample time for questions after each session, and be prepared to answer the same question different ways for different family members, if necessary.

Research the language and culture of each client (using sources like those cited in this chapter) to make use of culturally appropriate practices.

Team up with people from the cultural community who can act as both language and cultural interpreters.

Read about the family's culture.

Visit student homes.

Consider family value systems when setting goals; for example, independence is highly valued in our culture, even for young children. Families from more traditional cultures may not think young children need to be independent and may reject intervention that aims to increase independence, such as using a remote switch for a young physically handicapped child to turn on the TV himself.

Invite students to share aspects of their culture with other students.

Learn some basic communication (simple phrases, common words) in the student's home language.

Learn to pronounce students' and family members' names as they are pronounced in the home language, not as they are "Americanized."

Based on Goldstein, B., and Iglesias, A. (2006). Issues of cultural and linguistic diversity. In R. Paul and P. Cascella (Eds.). *Introduction to clinical methods in communication disorders* (2nd ed. pp. 261-280.) Baltimore: Paul H. Brookes; Roseberry-McKibbin, C. (2008). *Multicultural students with special language needs*. Oceanside, CA: Academic Communication Associates.

ASSESSING CULTURALLY AND LINGUISTICALLY DIFFERENT CHILDREN

Language Disorder or Language Difference?

The first problem in assessing a culturally or linguistically different child is determining whether a real disorder exists or whether there is merely the perception (usually on the part of teachers or other

professionals) of a disorder that is based on a language difference. Laing and Kamhi (2003) point out that over- (and under-) diagnosis of language and literacy problems are common in CLD children. ASHA's *Issues Brief on CLD Students* (2006; Appendix 5-1) reports the incidence of communication disorders in CLD populations should be no higher than in English-only populations (around 10%) and the Individuals with Disabilities Education Act (IDEA) makes provisions for ensuring that over-identification of minority populations is not occurring in the schools. Part of the reason for over-identification is an over-reliance on standardized tests that are often plagued by biases that reduce their validity for assessing these children fairly. Qi (2006) pointed out that children from CLD backgrounds often score lower on standardized tests because they are unfamiliar with test-taking situations or lack experience with the concepts and knowledge contained in the standardized tests.

Taylor (1986) suggested that a language disorder should be diagnosed in a CLD child only when the child's language skills deviate significantly from the norms and expectations of the child's home community. Wilson, Wilson, and Coleman (2000) outlined the criteria for identifying language disorders in CLD clients. A language disorder is likely to exist if the client's communication:

- Is considered defective by the individual's cultural community
- Operates outside the norms of acceptability for that community
- Calls attention to itself or interferes with communication within that community
- Results in difficulties in adjustment for the client

So the initial step in the assessment process for any CLD child is to determine whether language is disordered or simply different. We need to find out whether a problem is perceived because of a difference in cultural expectations for communication or because the child has a genuine disability, even in the home culture. Let's take an example to see how over-identification can happen.

Harry was a Native American child recently arrived from the reservation to an urban Head Start program. He seemed to the teachers to be inordinately quiet. When asked a question, he took an exceedingly long time to answer, causing the teachers to question his comprehension skills. He had a great deal of difficulty presenting information during sharing time and did not seem to process teachers' verbal directions. He was referred for speech and language assessment. Ms. Lopez, the SLP, observed his classroom behavior and saw the same problems that the teachers had indicated.

Before deciding Harry had a disorder, however, she interviewed Harry's parents. She found that they spoke both English and Navajo in the home. Both were fluent in English and had jobs in which they conversed with English speakers regularly. They believed that Harry was proficient in English; he watched English-language TV and played with English-speaking children after school and seemed to get along with them alright. They didn't really understand why he should be having so much trouble in school.

Ms. Lopez decided to collect a language sample from Harry during a play period with a peer. She analyzed the sample and found that Harry's use of syntax and semantics was generally age-appropriate. Receptive language testing, using a standardized picture-pointing test, showed that Harry's receptive vocabulary score was somewhat below the normal range. Ms. Lopez asked the parents about the items Harry failed to identify on the test, and they explained that he was unlikely to have encountered those words in their home or on the reservation. Ms. Lopez assessed Harry's comprehension of classroom directions with some criterion-referenced measures. She found that Harry could follow most directions, but was very slow and careful about doing so. When she asked his parents why this might be the case, they explained that he had been taught at home to think carefully before acting. They commented that Harry had once said that the teachers seemed to want him to act like a "show off" in school.

Ms. Lopez concluded that there was a mismatch between the teachers' expectations and Harry's communication style. While Harry would need some help in developing some of the vocabulary items with which he'd had no previous experience, consulting with teachers about some concepts to emphasize in the course of their regular program could do this. Ms. Lopez also shared her nonstandardized assessment results with the teachers and talked with them about Harry's need to consider before answering and his unwillingness to stand out from the group in sharing time. She suggested some ways they could modify their interactions with Harry that could bring their communicative expectations more in line with his. She also suggested that they talk with him about some of the different ways people can be expected to act at school and at home, so that some of the school rules might seem less foreign to him.

In Harry's case, the assessment suggests a difference rather than a disorder of communication. The remedy for this situation is two-pronged. Some work must be done to help Harry adjust to the communicative demands of the classroom. This work, however, should be culturally sensitive; care should be taken not to invalidate the styles of communicating that are appropriate at home. The second prong consists of making some adjustments in the classroom's communication requirements. This would include consultation with teachers to make them aware of Harry's communication style, assuring them that it is a difference rather than a disorder and that Harry has the potential to communicate effectively. It also would involve finding ways to accommodate his communication in the classroom setting.

Recently, at least one assessment method has been developed to address this issue directly in children who speak AAE. *The Diagnostic Evaluation of Language Variation* (DELV) (Seymour, Roeper, & deVilliers, 2005) was developed as a valid and reliable assessment that allows the clinician to identify AAE speakers with language impairments regardless of the dialect of the child. The DELV is available in both screening and full diagnostic forms, and also provides items that identify speech delays in AAE speakers. Based on extensive research of both typical and delayed development in AAE (Bland-Stewart & Pearson, 2006; Pearson, 2004), the DELV provides clinicians with at least one psychometrically sound tool for diagnosing language disorders in AAE speakers. Thomas-Tate et al (2006) also report data suggesting the *Expressive Vocabulary Test* (Williams, 2006) is another valid assessment for AAE speakers, although Champion (2010) and Washington and Craig (1999) question whether its companion measure, the *Peabody Picture Vocabulary Test* (Dunn & Dunn, 2007) is equally valid. We'll talk in the following sections about some additional issues in using standardized tests to help determine whether a

language difference or disorder is present in clients from various CLD backgrounds.

Another approach is suggested by Laing and Kamhi (2003). They report on the use of processing-dependent tasks, which require minimal use of prior knowledge or experience. Examples of processing-dependent tasks include various memory tasks, such as digit span (repeating a series of numbers in random order), working memory (children hear a sentence, are asked to tell whether it is true, and then recall the last word in the sentence), and non-word repetition (repeating nonsense words varying in length from two to four syllables that have no resemblance to familiar English words). These tasks are thought to be less biased because they do not depend on knowledge of culturally determined information, such as vocabulary (which children learn from hearing their parents talk). Instead they tap directly the processes that go into learning language. Laing and Kamhi (2003), Hwa-Froelich and Matsuo (2005), and Weismer et al. (2000) reported that, when children perform poorly on processing-dependent measures, there is a high likelihood that they will have some type of language-learning difficulty. The use of processing-dependent measures with CLD populations makes sense because they are not biased regarding life experience, socialization practices, or literacy knowledge, and they are quick and easy to administer. Moreover, many non-word repetition and working memory measures are included in currently existing standardized measures, including the *Comprehensive Test of Phonological Processing*, or in clinical literature, such as *the Non-word Repetition Test* (Campbell, Dollaghan, Needleman, & Janosky, 1997), as just two examples.

A third approach to this question is the use of dynamic assessment procedures. We talked about dynamic assessment in Chapter 2. From there, you will remember that one approach to dynamic assessment is to test, teach, and then retest. This method of dynamic assessment has been shown to differentiate stronger and weaker language learners in Puerto Rican, African-American, and Native American preschool and kindergarten children (Laing & Kamhi, 2003; Ukrainetz, Harpell, Walsh, & Coyle, 2000). Another method of dynamic assessment was examined by Peña, Iglesias, and Lidz (2001). They used Mediated Learning Experiences (MLE), designed to teach children principles or strategies for learning a task, to determine whether these supports would distinguish language difference from language disorder in preschool African-Americans and Latino American children with low levels of language performance. All children received pretest standard language measures. Children were then taught new vocabulary items; some received MLEs organized around theme-based play and book-sharing activities, others received no mediation. All were post-tested on the same tests. Findings revealed that changes in the post-test scores on knowledge of the new vocabulary were associated more closely with the presence of mediation than with pretest standard scores. Miller, Gilliam, and Peña (2001) reported similar findings for a dynamic narrative assessment task.

Dynamic assessment also allows us to learn, for those children who do not improve in quantitative test scores after an intervention, whether their responses are qualitatively improved; for example, whether they provide longer responses, or responses closer to the target than they did before. These changes, too, are indicative of a benefit from the intervention and can be used to help distinguish a language difference from a disorder. Gutierrez-Clellen and Peña (2001) provide information on various dynamic assessment techniques, which are summarized in Table 5-3. ASHA's multimedia tutorial on the use of dynamic assessments with CLD students is another useful resource that can be found at www.asha.org/practice/multicultural/issues/Dynamic-Assessment.htm.

Finally, Lewis et al. (2010) propose an approach that they call "Assessment 360" for ELLs. They recommend a comprehensive approach that takes advantage of a range of assessment methods. This approach is summarized in Table 5-4. Craig and Washington (2006) also propose a model of assessment specifically adapted for AAE speakers.

Establishing Language Dominance

As a first step toward determining whether there is a language difference or disorder, we need to identify the child's dominant language. That is, we need to determine whether the child's primary language is English or some other language. The reason that establishing language dominance is important concerns our responsibility to do least-biased assessment. The Individuals with Disabilities Education Act (Part B)—the federal law that guarantees a free, appropriate public education in the least restrictive setting to every child regardless of handicapping condition—requires that testing be provided in the language or other mode of communication in which a child is most proficient. If we test an ELL child in English, of course, all we will find out is that he or she has limited English skills. We won't know whether the child really has a language disorder or simply hasn't yet had the opportunity to develop fluency in English. IDEA regulations issued in 2006 emphasize that evaluation of CLD students does not necessarily need to include standardized testing, but must take place "in the form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally." While this does not necessarily mean that assessment *must* be administered in the home language, it does mean that we need know whether the home language or English is the child's stronger communication modality in order to decide which will yield the most valid information.

Kayser (1995) provided some suggestions for establishing language dominance in CLD children. Observation is one method. Here the clinician would observe the child in the classroom and in less formal settings, such as the lunchroom or playground, and chart communicative behaviors in each. Heavy reliance on gestures in situations requiring English or a preponderance of the home language in informal situations would suggest that English is not dominant for this child. A second method is the use of structured questionnaires to assess language dominance. Some examples include the *Assessment Instrument for Multicultural Clients* (Adler, 1991), the *Basic Inventory of Natural Language* (Herbert, 1977), the *Bilingual Language Proficiency Questionnaire* (Mattes & Santiago, 1985), the *Bilingual Syntax Measure* (Burt, Dulay, & Hernandez-Chavez, 1975), the *Home Bilingual Usage Estimate* (ASHA, 1982a), the *Oral Language Evaluation* (Silvaroli & Maynes, 1975), *PAL Oral Language Dominance Measure* (Apodaca, 1987), and the *Teacher Language Observation Report* (ASHA, 1982b).

If English is found to be the dominant language, testing in English can proceed. With a CLD child, however, testing in English requires sensitivity to pragmatic, experiential, and dialectical differences that must be evaluated before deciding whether a disorder is present. As we saw in Harry's case, a child can be English-dominant and still have a culturally different communication style. As discussed in Chapter 2, standardized tests do not provide all the information we need to answer these questions in a CLD child, just as they do not for any other child. Particularly for the CLD child, however, standardized measures should be

TABLE 5-3 Dynamic Methods for the Assessment of CLD Children

Method	Description	Purpose	Example
Test the limits	Traditional test procedures are modified by providing feedback about the correctness of the answer, why it was correct or incorrect, and an explanation of the principle in the task; or by asking the child to describe the test question and tell why they gave the answer they did.	To get a more accurate assessment of the child's knowledge of items on the test; modified responses cannot be included in standard scoring, but supply deeper information about the child's knowledge.	When child is incorrect on expressive vocabulary test, point to the stimulus and say, "Yes, we do eat that. Do you know a special name for this thing?"
Interview on responses	Generate questions to help children understand how they are thinking about test problems and help them become aware of targets skills.	To understand how the task appears from the child's point of view.	When child is incorrect on expressive vocabulary test, ask questions such as, "How did you know that?" or "What would happen if you wanted one of these from the store? What would you say?"
Graduated prompting	Identify Zone of Proximal Development (ZPD) by providing a hierarchy of prompts to vary the level of contextual support.	Child responses to the prompts are used to make predictions about response to intervention. Number of prompts needed to elicit targets can predict gains after intervention.	To predict readiness for productions of 2-words utterances, provide a hierarchy of prompts for single words; such as: modeling (It's a baby), modeling with elicitation (It's a baby; what is it?), and modeling with obstacle (withhold object until child says word). Fewer cues needed for word production predicts readiness for multiword speech.
Test-teach-retest	Identify deficient or emerging skill; provide intervention by teaching principles of the task; post-test to find out how modifiable the child's performance is.	To equalize students' experiences that can affect test performance.	If a child performs poorly on a language test, provide instruction on items similar to those in the test by giving verbal explanation, models, examples, and prompts. Post-test on an alternate form.
Measure modifiability	Likert scales developed by the clinician used to rate the child at the beginning and end the intervention phase of dynamic assessment.	To document change in child behaviors not measured by pre- or post–tests.	Amount of support provided. 1 2 3 Maximal Minimal Child responsiveness to tasks: 1 2 3 Maximal Minimal

Adapted from Gutierrez-Clellen, V., & Peña, E. (2001). Dynamic assessment of diverse children: A tutorial. *Language, Speech, and Hearing Services in School, 32*, 212-224.

supplemented with criterion-referenced and other nonstandardized information to obtain a full picture of the child's communication skills.

If English is not the CLD child's dominant language, Kayser (1995) suggested testing further in both English and the dominant language. Naturally, scores in English will be lower than those in the dominant language, but comparing performance in the two gives the clinician an idea of whether the child is progressing adequately for age in the home language and where gaps in English proficiency are found. Owens (2009) suggested testing in the dominant language first, then following up with testing in English. As Appendix 5-2 shows, there are a variety of tests available in a range of languages for children with CLD. If the clinician has a child who is dominant in one of these languages on the caseload, testing may be carried out by a trained native speaking paraprofessional or speech assistant who can report results to the SLP for interpretation.

Is there always a dominant language or dialect? Davison (2009) discussed the typologies of bilingualism. She pointed out that speakers can have varying degrees of competence across each language and varying durations of exposure to each. Her system for classifying this variety in individuals learning two languages appears in Table 5-5. As it shows, it is not always the case that one language dominates over another.

Obtaining Interview Data

Just as we need to gather data on hearing, speech-motor, and nonverbal skills for every client suspected of a language disorder, we need to gather these data on children with CLD, obtaining information about a child's medical, language, feeding, and developmental and language history regarding both the child and other family members (Pruitt et al., 2010); interviewing parents about current skills in communication and related areas; and finding out about

TABLE 5-4   A Model for Comprehensive Assessment of English Language Learners

Type of Assessment	Information Provided	Source

Developmental history	History of language acquisition
	    Age of first word, word combination
	    Like/unlike siblings
	    Like other children in the community
	Medical history that could affect speech and language
	    development
	    Hospitalizations
	    Ear infections
	    PE tubes
	    Feeding problems
		Parents

School history	History of schooling
	    U.S./non-U.S. academic settings
	    Stable or interrupted
	    Instruction in English or home language
	History of supports for 2nd language acquisition
	    Supportive/non-supportive environment
	    Academic progress similar/not similar to ELL peers
		Parents, teachers, school records

Language use history	Use of primary and secondary language at home with parents,
	    siblings, extended family, and friends
	Language preferences in different settings or for different
	    activities
		Parents, student

Dynamic assessment	Ability of child to learn new tasks in structured teaching
	    environment
	Assists in differentiating a child who has not had the
	    opportunity to learn a language skill from one who has
	    difficulty learning new skills
		Test, teach, test procedure with
		    student

Language sampling	Child's connected speech in less structured, social/interactive
	    tasks, including:
	    Mean length of utterance
	    Narrative structure
	    Pragmatic language skills
		Story telling or retelling
		Conversation

Behavioral observation	Connected speech in social (low structure) vs. academic
	    settings (high structure) to compare BICS vs. CALP
	Pragmatic language patterns
	Language preferences
		Classroom conversations and
		    cooperative learning with
		    peers

Norm referenced assessment	Quantitative comparison of the child's language skills to typically developing peers	Individually administered tests

Adapted from Lewis, N., Castilleja, N., Moore, B. J., & Rodriguez, B. (2010). Assessment 360: A panoramic framework for assessing English language learners. *Perspectives on Communication Disorders and Sciences in Culturally and Linguistically Diverse Populations, 17(2)*, 37-56.

family concerns and priorities are important parts of the assessment for each child we see. For the CLD child, however, these tasks become more complicated, because the SLP and the client's parents may not speak the same language. One solution to this problem is to employ interpreters.

Bilingual individuals can often interpret between clinicians and parents, giving the clinician access to crucial information about clients. Not everyone who is bilingual can be an interpreter, though. Interpreting for clinical purposes requires special skills. Kayser (1991) suggested that interpreters need to have at least a high school education, an ability to relate to people with disabilities, and strong linguistic and literacy skills in both languages. They should be able to say things in different ways and retain chunks of information while interpreting. Lynch and Hanson (2004b) point out that the interpreter needs to be able not only to translate from one language to another, but also to interpret cultural cues and convey the nonverbal aspects of the message as well as its words. Interpreters also need to have good command of medical and educational vocabulary and be able to rephrase

terms for parents. They must be trained to maintain confidentiality and neutrality. Langdon (2002) advocates following a three-step process that includes briefing, interaction, and debriefing (BID) in preparing interpreters for a session. This process is summarized in Box 5-8. Derr (2003) emphasized that, for these reasons, it is usually better for the interpreter not to be a member of the client's family or close personal friend. The American Speech-Language and Hearing Association (ASHA, 1988) recommended using professional interpreters from language banks, bilingual professional staff from other disciplines, or bilingual teachers' aides or paraprofessionals as interpreters. ASHA guidelines for working with interpreters can be found at: www.asha.org/practice/multicultural/issues/interpret.htm. Langdon (2002) and Langdon and Chen (2002) also provided detailed guidance for SLPs on working with interpreters.

Interpreters function essentially as paraprofessionals under the direction of the SLP, with the clinician maintaining responsibility for decisions in assessment and intervention. It is important, however, that they understand the rationale and procedures being used

TABLE 5-5	Davison's (2009) Typology of Bilingualism	
Type	**Description**	**Example**
Additive	A second language is learned without any adverse effect on the first language.	A child comes to the New York from Puerto Rico at age 4; her first language is Spanish. She goes to preschool and acquires English, but continues to speak Spanish at home, to read books in Spanish her parents provide, and to visit grandparents in Puerto Rico each summer, where she attends summer enrichment programs in Spanish.
Subtractive	A second language is acquired, but the first declines.	A child of American parents who have been living in France since his birth moves back to the U.S. at age 6. The child goes to school and learns to read in English. French is no longer used at home regularly, and no French reading material is available. In high school the child takes French, but has only a moderate advantage over other students.
Dominant	An individual speaks two languages, but has a higher degree of proficiency in one language than the other.	An adult takes a job in northern Mexico, but lives in Texas. He has studied Spanish in school, and takes additional classes. He learns to converse with his co-workers in Spanish, and to understand what is needed for the job, but he continues to speak English outside of work. He has difficulty with conversation in Spanish about non-work related topics and does not read in Spanish.
Balanced	An individual has equivalent competence in two languages.	A child comes to the U.S. with her family from Sudan at age 3. She is fluent in Arabic. She attends preschool and school in English, but attends a community after-school program through high school, where she learns to read, studies religious texts, and continues to converse in Arabic.
Simultane-ous	A child is exposed to two languages from birth.	A child is born to a Russian speaking mother and English speaking father. Mother speaks to the child in Russian, father in English. The child is home with mother until the age of three when he enters preschool. Mother continues to speak Russian to him.
Sequential	A child is exposed to one language from birth; second language acquisition occurs later in child development.	A child is born in China and is exposed to Mandarin from birth. When she is five, her parents move to San Francisco. She enters school and begins learning English.

BOX 5-8   Langdon's (2002) BID Process for Working with Interpreters

Briefing: Clinician and interpreter review client's background information and outline the purpose of the session.
Interaction: Each team member addresses the client or family when speaking, even when through the interpreter ("Are you . . ." rather than, "Ask Ms. X if she . . ."). The clinician must always be present with the interpreter, to monitor task presentation and client/family reactions.
Debriefing: Clinician and interpreter review the session and develop a follow-up plan. Clinician should give interpreter feedback on performance and seek interpreter's impressions of client/family responses.

in the interview and that time is spent with them before the parent conference discussing the information the clinician hopes to obtain. They can be asked to review the clinician's questions for cultural appropriateness and to help find alternative ways to get information that families may be uncomfortable giving. Bernstein (1989) suggested that one way to evaluate whether an interpreter has been trained adequately is to borrow a technique from anthropology. Here two interpreters are used. One translates the clinician's questions into the second language and the other translates the responses into English. In this way the clinician can assess whether the interpreter will correctly convey the sense of the interview to the family.

Westby (1986) suggested that a good interview question to begin with in obtaining history information on CLD clients is, "Is this child like your other children or different in some way?" Interpreters translating parents' answer to such a question should understand and have discussed with the clinician the kinds of differences that will contribute to a decision about a language disorder, so that these can be reliably conveyed to the clinician. ASHA Multicultural Affairs offers a handout on cultural norms that may be useful. It can be found at www.asha.org/uploadedFiles/practice/multicultural/issues/ELLCulturalNorms.pdf#search=%22cultural%22.

Using Standardized Tests with CLD Children

When assessing CLD children's communication in the dominant language and in English, we have basically the same methods available as discussed in Chapter 2: standardized tests, developmental scales, criterion-referenced procedures, dynamic assessment, and behavioral observation. As we saw in Chapter 2, the primary purpose of standardized tests is to find out whether a child is significantly different from other children in the area assessed by the test. However, there are dangers in using tests standardized for monolingual English speakers with CLD children (Cesar & Kohler, 2007; Paradis, 2005). In recent years, a variety of standardized tests have been developed in languages other than English for just this purpose. Spanish language tests are the most common, although some tests have been normed in other languages, as well, and some standardized tests have been re-normed or provide alternative scoring rubrics for AAE speakers (Criag & Washington, 2006). Langdon

and Wiig (2009) also discuss tests designed to assess both a first and a second language. Appendix 5-2 presents a sample of standardized tests that can be used to assess CLD children. These tests also can be given along with standardized tests that assess English versions of similar areas. Results can then be compared not only to help determine whether the child is progressing normally in the home language (L_1) but also to identify areas of English (L_2) that are less developed than the dominant language. However, as we would when using any standardized test, we need to be cautious about understanding the properties, strengths, and weaknesses of these measures. Restrepo and Silverman (2001), for example, reviewed the psychometric properties of the *Spanish Preschool Language Scale—3*, a widely used instrument. They found that there were problems in the test's norming sample, reliability, and validity data. Similarly, Restrepo et al. (2006) and Thomas-Tate et al. (2006) both reported that for AAE speakers, the *Expressive Vocabulary Test* (Williams, 2006) appears to be a valid assessment, although its companion measure, the *Peabody Picture Vocabulary Test* (Dunn & Dunn, 2007) had a greater tendency toward false positive identification. These findings suggest that we need to carefully review the manuals for any test we select for use with our clients, and attempt to find those that meet high psychometric standards for inclusive norming samples, validity, and accuracy (Stockman, 2010).

Brice (2002), Goldstein (2000), Kayser (1995), Langdon and Wiig (2009), Roseberry-McKibben (2002a), and Wyatt (2002) have made suggestions for modifying standardized tests to gain information about language proficiency in CLD children. They suggest that adapting tests should be a group effort, since a monolingual SLP making the modifications in isolation might not make adaptations that are optimal for speakers of a different language. The SLP can enlist bilingual ESL teachers, psychologists, special educators, and community members to make the modifications. Suggestions for adaptations of tests are given in Box 5-9. Adler (1993) and van Keulen, Weddinton, and DeBose (1998) also presented some modifications of standardized tests that can be applied when testing speakers of nonstandard dialects.

Oetting et al. (2008) presented an additional approach. They suggest using cut-off scores for standard tests that are derived empirically (that is, selected based on their ability to differentiate children with known diagnoses from those with typical development) and combining these with process measures like non-word repetition provides a high degree of accuracy in identifying CLD children with language disorders. Guitierrez-Clellan et al. (2006) developed a measure to assess Spanish morphosyntax as a way of identifying Latino preschool children with language disorders. This approach represents another way to develop an accurate classification scheme, and can be applied to additional languages by SLPs with expertise in languages other than Spanish.

For many CLD children, however, standardized tests of the home language will not be available. In this situation we have some alternatives. An obvious alternative is to have an interpreter translate a standardized test into the child's home language. Cheng (2002a); Goldstein (2000); Langdon and Wiig (2009); and Wilson, Wilson, and Coleman (2000), however, cautioned against this practice. Words and concepts common in mainstream culture may be unfamiliar to the CLD child, so failure to use or recognize them in the home language would not necessarily indicate a deficit. Translating

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BOX 5-9   Suggestions for Modifying Standardized Tests for Assessment of CLD Children

1. Review test content for items that tap knowledge or experiences CLD childen are unlikely to have. Determine whether modification can reduce bias.
2. Have members of the team perform the tasks on the test and make suggestions about how to make them less culturally biased.
3. Consider administering the test to an adult from the community to get information on the appropriateness of the test items.
4. Review past testing of CLD children to look for items or subtests that were problematic for many of these children.
5. Make an effort to identify tests that include substantial numbers of individuals from CLD backgrounds in the norming sample.
6. Determine appropriateness of vocabulary for community; poll team for most appropriate vocabulary to use for local children.
7. Review pictures for familiarity. Substitute other pictures or objects for those likely to be unfamiliar.
8. Reword instructions to make them more comprehensible for CLD children.
9. Give additional practice items to teach children how to take the test.
10. Provide additional response time; repeat items and instructions it needed.
11. Continue testing beyond ceiling.
12. Record children's comments, explanations, and changes of response for qualitative analysis.
13. Observe *code switching* (alternations between languages within an utterance) and *language interference* (the influence of one language on another, such as mispronunciations due to accent), and interpret how these affect performance and results.
14. Compare children's answers not only to the "right" answer according to test norms, but also to dialect, home language, or second-language learning features. Rescore articulation and expressive language results, giving credit for these kinds of variations.
15. On picture-pointing tests, have children name the items as well as point to those named by the tester, to examine the appropriateness of the children's label.
16. Have children explain why they answered as they did, if answer is incorrect according to test norms.
17. Report all modifications when writing up assessment information; use norm-referenced scores with caution, and only if they are valid for the population to which the client belongs.

Adapted from Goldstein, B., & Iglesias, A (2006). Issues of cultural and linguistic diversity. In R. Paul & P. Cascella (Eds.) *Introduction to clinical methods in communication disorders.* (2nd ed.) (pp. 261-280) Baltimore: Paul H. Brookes; Erickson, J., & Iglesias, A. (1986). Assessment of communication disorders in non-English-proficient children. In O. Taylor (Ed.), *Nature of communication disorders in culturally and linguistically diverse populations.* San Diego, CA : College-Hill Press; Kayser, H. (1995). Speech and language assessment of Spanish-English speaking children. *Language, Speech, and Hearing Services in Schools, 20,* 226-244; Wyatt. T. (2002). Assessing the communicative abilities of clients from diverse cultural and language backgrounds. In D.E. Battle (Ed.), *Communications disorders in multicultural populations* (pp. 415-459). Stoneham, MA: Andover Medical Publishers; Weddington, G. (1987). Guidelines for use of standardized test with minority children. In L. Cole & V. Deal (Eds.), *Communication disorders in multicultural populations* (pp. 21-22). Rockville, MD: American Speech-Language-Hearing Association.

also invalidates the standardization of the test, defeating the purpose of using it in the first place. Goldstein (2000), Langdon and Wiig (2009), and Kayser (1995) suggested that it is wiser to modify or adapt test items than to translate them directly. When these modifications are made, of course, the adapted instrument is no longer a standardized test. We are, in effect, using the standardized test as a criterion-referenced measure. Although this method will not tell us if a child is significantly different from other children, it can tell us what forms and functions a child uses and understands in the language being tested.

Wyatt (2002) cautioned that when we do adapt standardized tests for use with CLD children, we need to be especially careful to note the adaptations in clinical reports on the client. She recommended that any changes made in standardized administration or scoring procedures be fully documented in the report. The report also should state whether an interpreter was used and how the interpreter was trained to administer and score the test. When testing takes place in two languages, the languages used and the order of use of the languages (English first, Spanish second, for example) should be given. Norm-referenced scores should be reported only when they are appropriate for the way the test was administered. If the test was adapted in any way, norm-referenced scores cannot be used without reservations. If published developmental data are used for comparison to the child's performance, full bibliographical reference to the published data should be made.

Another alternative for assessing a CLD child's language proficiency is to develop local norms for standardized tests (Goldstein & Iglesias, 2006). This option only makes sense when a large number of CLD children from similar backgrounds reside in an SLP's district. Kayser (1995) warned that developing local norms is not as easy as it sounds. Groups of CLD individuals are heterogeneous in terms of socioeconomic status, length of time in this country, and degree of acculturation. All these differences can affect their performance on a test. Adler (1990) suggested that developing local norms may not really help identify CLD children with genuine language disorders, because the "culture fair" data represented in the local norms may not be relevant to the realities of classroom expectations. Harris (1993) advised that if local norms are to be developed, they should have at least 50 individuals at each age or grade level who are randomly selected from the community to provide the norms. Both means and standard deviations should be computed. Children falling 1, 1.5, or 2 standard deviations below the mean for their community group might be identified as language disordered, depending on the criterion for language disorder being used by the clinician. However, Carter et al. (2005) remind us that these local norms should show a normal distribution, or bell-shaped curve. If they do not, the assessment should be modified so that a normal distribution is achieved. Bayles and Harris (1982) found that using local norms in this way decreased the percentage of children from CLD families identified as having language impairments.

Whether we adapt tests or develop local norms, several guidelines should be followed. These are outlined by Carter et al. (2005) and include the following:

- Include native speakers of the home language in the development of the instrument, including paraprofessionals, teachers from the community, and other local informants.
- Pilot-test the assessment on a representative sample of typically developing children from the home community.
- Pilot-test pictures to be used in the assessment by asking young, typically developing children from the community to identify them. Any pictures not recognized by the pilot sample should be redrawn or discarded.
- Pilot-test instructions, practice items, etc., as well before using the test to identify deficits in the home language.
- Whenever possible, have the assessment administered by native speakers of the home language.
- Use materials familiar to children from this community; for example, types of trees and flowers in pictures should be those with which the children will be familiar.
- For children who are unfamiliar with the testing situation, consider giving extra practice items.

Terrell, Arensberg, and Rosa (1992) suggested an additional alternative use for standardized tests with CLD children: Parent-Child Comparative Analysis (PCCA). This is a method of assessing children who come from cultural groups too small for development of local norms. Here an identical battery of tests is given to both parent and child. The child's performance is compared not to test norms but to the parent's responses. Any patterns that match patterns produced by the parent are considered dialectical variations rather than errors. If the child's patterns do not match the parent's, the child's responses are compared to age expectations, using developmental charts and normal language data, such as those found in Haynes and Shulman (1998b) or Owens (2008). Deviations from Standard English patterns that do not match the parent's and are not typical of normally developing children of the client's age are considered aspects of a language disorder.

Developmental scales that look at nonlinguistic areas can be a useful adjunct to assessment of the CLD child. As discussed in Chapter 2, developmental scales and collateral, nonverbal assessments can provide information about motor, self-help, nonverbal cognitive, problem-solving, and play skills that can help to identify gaps between linguistic and nonlinguistic development in CLD children, as they can in clients from mainstream backgrounds. Many of the instruments we talked about in Chapter 2, particularly those that are nonverbal or minimally verbal in format, are appropriate for rounding out our picture of the skills of the CLD child. Ortiz (2001) also suggests determining the degree of "cultural loading" on these assessments; that is, the degree to which a test requires specific knowledge and experience with mainstream culture. His article provides a list of tests of cognitive and collateral areas classified by their degree of cultural loading.

Criterion-Referenced Assessment of CLD Children

IDEA 2006 specifically permits the use of nonstandard assessments for CLD children if they are most appropriate for the evaluation of a student. Criterion-referenced assessment is used with CLD children in much the same way as for a mainstream child (that is, we use criterion-referenced measures once standardized testing has established that the child is significantly different from peers—in the CLD child's case, peers from the home culture—in linguistic development). The criterion-referenced assessments are then used to establish baseline function, identify goals for intervention, and document progress in the remedial program. Interpreters can be especially helpful in carrying out criterion-referenced assessments. When testing a child who is not English dominant, we may want to assess forms of interest in both the first language and English, to identify gaps between the two as well as establish level of functioning in the dominant language.

Since standardization is not an issue for criterion-referenced assessments, many of the criterion-referenced procedures in the following chapters can be translated directly by an interpreter into a CLD child's first language. The only thing we will need to be careful about is that the forms and procedures used in the assessment are culturally appropriate. For example, if a child's home culture's communication style dictates that you don't tell people something they already know, asking a child to tell what color a picture is may be inappropriate, even if the question is asked in the native language. Perhaps the situation would have to be modified so that the question concerns a picture that the examiner cannot see, to make the question pragmatically appropriate for the CLD client. Here, too, consulting ahead of time with the interpreter about culturally appropriate procedures can help prevent problems.

We talked in Chapter 2 about the importance of structural analysis of spontaneous speech samples as one aspect of criterion-referenced assessment and about some guidelines for collecting speech samples that truly represent a child's productive language skills, and Horton-Ikard (2010) discusses the use of language samples for assessment purposes in CLD population. When language sample analysis is part of the assessment of communication in the CLD child, certain cautions need to be kept in mind. Stockman (1996) points out a central concern to us: language sampling is not used to identify a disorder in mainstream children. Instead, it is used when a disorder has been identified with standardized testing and we want to investigate baseline function and target expressive language goals for intervention. Because language sampling procedures do not meet psychometric standards of reliability, validity, sensitivity, and specificity, they cannot properly be used to decide that a child is significantly different from other children. We can use language sampling with CLD children just as we use it for children from mainstream backgrounds: to describe current functioning in the dominant language and in English, to identify goals for intervention by establishing the next steps in the normal sequence of acquisition of either language, and to target these goals in an intervention program. Rojas & Iglesias (2010) illustrate how SLPs can use language sampling with ELLs to track progress. Information in Price et al. (2010) using computerized language sample analysis is relevant for CLD students as it is for others. The SALT computer program (Miller and Iglesias, 2008) has measures specifically designed for Spanish speakers.

When collecting a language sample for these purposes from a CLD child, it is important to remember that conversational rules are culturally determined. To get a valid sample of a CLD child's language, then, we need to attend to the cultural rules that govern conversation for that child. Perhaps children are not expected to speak extensively to adults in a certain culture. In this case, a more valid sample might be collected from a peer interaction. Leonard and Weiss (1983) emphasized the importance of incorporating culturally appropriate materials and topics into the evaluation. These all help to obtain a more representative picture of the child's linguistic skills. To monitor the representativeness of a speech sample collected from a CLD child, we will want to learn some details of the cultural conversational practices from interviews with community members. In addition, we may want to observe the client in several conversational situations to select the most representative one to use as the basis for our speech sample analysis. It also is a good idea to check with a parent or familiar adult to ask whether the sample we plan to analyze sounds like the way the child usually talks. Narrative samples can be of use for the same types of clients with CLD who function at school-age levels.

Kit-Sum To et al. (2010) and Rojas and Iglesias (2009) provide guidance for collecting narrative samples from children with Spanish and Cantonese backgrounds.

Language samples can be collected in the home language from children who are not English dominant. In this case, the child may interact with a parent or another fluent speaker of the language. The sample can be audio recorded and transcribed by an interpreter. Again, the interpreter will need to be carefully trained by the clinician so that the transcription accurately represents the child's pronunciation, use of grammatical morphemes, word order, and any other aspects of speech that the clinician wants to examine. Without training, the interpreter may be tempted to "normalize" the child's speech, correcting the child's errors in the transcription and removing an important source of information about the child's linguistic patterns. A translation of the sample will need to retain some indication of these errors to be analyzed by the clinician in collaboration with the interpreter.

The language sample from the home language will be especially useful for determining whether the child is learning normally in the first language. Norms for Spanish acquisition are available (see Fabiano-Smith & Goldstein, 2010; Haynes & Shulman, 1998b; Uccelli & Paez, 2007), and a Spanish-speaking child's spontaneous speech can be compared with these normative data. Goldstein (2001) and Linares (1981) provided rules for computing mean length of utterance in morphemes in Spanish. For languages for which normative data are not available, the interpreter and the clinician can consult with the parent and other bilingual individuals in the community.

Collecting a sample of the child's speech in English also can be helpful. Here we would compare the child's errors in English to those made in the home language to look for similar difficulties in the two languages. The child might be substituting a /t/ for an /s/ in both languages, for example, or leaving plural morphemes out of both, even where they are required in the home language. These kinds of similarities could indicate that the child is having trouble acquiring language in general, not just in using English. Second, this comparison can identify structures that the child uses correctly in the home language but makes errors on in English. These errors can be examined to determine whether they arise from interference from the home language. If so, they are likely to resolve on their own as the child develops English proficiency, if no other language disorders are present.

Stockman (1996, 2008) has made an additional suggestion for the use of spontaneous speech data as a way to establish whether, in fact, a child is demonstrating a language difference or disorder. The Minimal Competence Core (MCC) is a criterion-referenced measure that represents the least amount of linguistic knowledge needed to be judged normal at a given age within a speech community. Although most speakers will know more than this core, the MCC is designed to identify the linguistic features that the least competent normal child could demonstrate. Because this core includes common obligatory features, it is less affected by contextual and vocabulary differences among situations and speakers. The use of this metric requires, of course, a detailed and well-researched set of MCC features for each age and dialect. Stockman (1996, 2008) has presented one such set for 3-year-old speakers of AAE. This is presented in Table 5-6.

Craig and Washington (1995) looked at the production of complex sentence types (those containing more than one main verb) in the speech of a representative sample of low income African-American boys aged 4 to 5.5 years old who were living in the urban Midwest. Like Stockman, they found that complex sentence

TABLE 5-6 Minimal Competence Core Features for 3-Year-Old AAE Speakers
Language sampling context: Two-hour speech sample gathered while subject played with race track and cars, then looked at pictures in books.
Productivity criteria: Four correct productions observed anywhere in the 2-hour sample.

Language Domain	Core Features
Phonological	Correct production of the following word-initial consonants by over 90% of participants: /m/, /n/, /w/, /j/, /p, /b/, /t/, /d/, /k/, /g/, /f/, /s/, /h/, /l/
Pragmatic functions	Comment on objects by labeling or describing
	Regulate interaction by requesting information or requesting objects or actions
	Initiate conversational repairs with general query ("Huh?") or spontaneously repeating or revising utterances
	Respond to speech by answering questions, acknowledging or imitating prior utterances
Semantic relations	Existence
	State
	Locative state
	Action
	Locative action
	Specification
	Possession
	Time
	Negation
Morphosyntax	Simple sentences with two to three constituents (subject-verb: I eat; subject-verb-object: I eat candy.)
	Simple, elaborated two to three constituent sentences with lexical or inflectional modifiers (He eats; *I* am eat*ing the* candy.)
	MLU 2.7
	Use of two or more different grammatical morphemes
	3%–10% complex sentences in sample

Adapted from Stockman, I. (1996). The promises and pitfalls of language sample analysis as an assessment tool for linguistic minority children. *Language, Speech, and Hearing Services in Schools, 27*, 355-372; Stockman, I. (2008). Toward validation of a minimal competence phonetic core for African American Children. *Journal of Speech, Language, and Hearing Research, 51*, 1244–1262.

production of at least 3% of a speech sample represented typical performance. They suggest that the appearance of complex sentences within spontaneous speech samples of AAE speakers as they enter school can serve as a screening criterion for determining presence of language disorder within this population. Craig and Washington (2000) explored this idea further and showed that a combination of MLU, percent of complex sentences, and number of different words derived from free speech samples provided a sensitive and culturally fair method of identifying expressive language impairment in school-aged AAE speakers. When combined with receptive measures of responses to *wh-* questions and passive sentences, sensitivity and specificity of this informal measure were excellent for identifying language impairments in this population. Furthermore, Craig and Washington (2004b) show that adding a measure of non-word repetition (imitating nonsense syllables) and a measure of nonverbal cognition to this battery produced a valid, relatively unbiased screening for language impairment in young African-American children. Craig, Washington, & Thompson (2006) extended this study to AAE speakers in elementary grades. Their research used a task involving description of three action pictures (Numbers 5, 7, and 24) from the *Bracken Concept Development Program* (Bracken, 1986). Data they reported, which can serve as a comparison to data collected from AAE clients suspected of language disorder, appears in Table 5-7. Horton-Ikard (2010) pointed out that the measures used by Craig et al. (2006) are relatively unaffected by dialect usage, so using a language sample like theirs can provide a relatively unbiased assessment of language function in AAE speakers.

Leonard and Weiss (1983) suggested another approach. They advocated looking for features with surface realizations that differ

TABLE 5-7 Normal range ($+/-$ 1 SD from Mean) for Mean Length of Utterance (MLU), Proportion of Complex Sentences (% Comp) and Average Number of Different Words per Utterance (NDW) Produced by AAE Speakers in Grades 1–5 Describing Pictures from Bracken (1986)

Grade	MLU	% Comp	NDW
1	4.8–7.2	21–69	2.4–3.6
2	5.0–7.8	27–77	2.5–3.9
3	5.5–8.5	36–90	2.67–4.1
4	5.9–8.7	61–97	2.7–4.3
5	6.0–9.8	50–99	3.0–4.6

Adapted from Craig, H. K., Washington, J. A., & Thompson, C. (2006). Oral Language Expectations for African-American Children in Grades 1 Through 5. *American Journal of Speech-Language Pathology, 14,* 119–130.

from those expected in Standard American English. For example, several features of SAE are not obligatory in AAE. If a child who speaks AAE omits a plural marker, we will not be able to tell whether the omission represents an error or a rule-governed feature of AAE. Instead, we can look for features that are not omitted but are realized differently in AAE (or whatever the child's linguistic variation is) than in SAE. Horton-Ikard and Weismer (2005) and

BOX 5-10 Features Realized in AAE but Not in SAE

Distributive *be:*
AAE: "I be good."
SAE: "I am good sometimes."
Habitual *be:*
AAE: "She be at work on Fridays."
SAE: "She works on Fridays."
Remote time *been:*
AAE: "I been walked."
SAE: "I already walked."
Complete aspect *done:*
AAE: "I done went fishing."
SAE: "I already went fishing."
Inflectional marking after consonant cluster reduction:
AAE: desses, tessing
SAE: desks, testing
Embedded *do* inversion:
AAE: "He wants to know did she get here."
SAE: "He wants to know if she got there."
Preposed negative auxiliary:
AAE: "Couldn't nobody do it."
SAE: "Nobody could do it."
Existential *it:*
AAE: "It's a new kid in the building."
SAE: "There's a new kid in the building."
Pronoun apposition:
AAE: "My mother she did it."
SAE: "My mother did it."

Adapted from Horton-Ikard, R., & Weismer, S. E. (2005). Distinguishing African American English from developmental errors in the language production of toddlers. *Applied Psycholinguistics, 26*(04), 597; Leonard, L., & Weiss, A. (1983). Application of nonstandardized assessment procedures to diverse linguistic populations. *Topics in Language Disorders, 3,* 35-45.

FIGURE 5-2   A true double negative item from the grammatical judgment task. In the item depicted, a man is sitting at a table and preparing to feed one of two hungry babies; the baby with hair or the baby without hair. A correct response to the verbal prompt, "He didn't feed the baby with no hair, which one did he feed?" would be to point to the baby with the hair.   (Reprinted with permission from Coles-White, D. [2004]. Negative concord in child African American English: Implications for Specific Language Impairment. *Journal of Speech, Language, and Hearing Research, 47,* 212-222.)

Leonard and Weiss (1983) provided some examples for AAE, which are listed in Box 5-10. Coles-White (2004) added a related suggestion. She found that typically developing African-American children were similar to Caucasian peers in understanding various negative forms, even when their production of these forms was influenced by AAE. She suggests that testing understanding of forms like the one in Figure 5-2 will be helpful in distinguishing children with dialect usage from those with language disorders.

Another approach to analyzing language samples from children who speak AAE dialect was proposed by Nelson (2010). She presented a modification of the criteria for the *Developmental Sentence Score* (Lee, 1974), called the Black English Sentence Scoring (BESS). This procedure uses a set of criteria based on those developed by Lee (see Chapter 8 for details of these criteria) with changes based on patterns typical of AAE dialect. For example, under the first stage of personal pronoun development, Lee places *I, me, mine, you,* and *yours.* The BESS includes *mine's* in this category, since it is used in AAE. Similarly, in the main verb category, absent copulas would be given an "attempt mark" or a score of zero in Lee's procedure. The BESS awards these constructions 1 point, since they are typical of AAE. Using the BESS to analyze a speech sample from a child known to be an AAE speaker is another way to reduce the bias of our structural analysis of the speech of CLD children. Toronto (1976) developed a similar adaptation of the *Developmental Sentence Score,* the *Developmental Assessment of Spanish Grammar,*

for evaluating the syntactic skills of Spanish-speaking children using spontaneous speech samples. Gutierrez-Clellen, Restrepo, Bedore, Peña, and Anderson (2000) discussed the issues involved in conducting language sample analyses on Spanish transcripts. They advocate using a measure of number of syntactic/morphological errors/T-unit. This measure has been shown to have a cut-off of 10 errors in 50 utterances for identifying language disorders in Spanish-speaking 5-year-olds. However, its use for children of younger ages, or those with bilingual development, has not yet been established. Gutierrez-Clellen et al. also warn against counting episodes of code-switching (going from Spanish to English forms within an utterance, or vice versa) as errors.

As we discussed in Chapter 2, language samples can be used for a variety of purposes. Cheng (1987) suggested collecting language samples from several tasks to look at pragmatic skills in a CLD child. These tasks included relating a past experience, describing an object, and describing a picture. Samples collected can be used to look at language function as well as form and content, as Stockman's (1996, 2008) data illustrate. Bernstein (1989) found this approach to be particularly helpful in getting a broad picture of the communicative skills of CLD children from a variety of backgrounds.

Terrell et al.'s PCCA (1992) also can be applied to language sample analysis. Here a speech sample using a similar sampling context, such as relating a personal experience or narrating a story, would be collected from both parent and child. Again, the child's

linguistic patterns—in terms of syntax, semantics, phonology, or pragmatics, depending on the presenting complaint—would be compared with those of the parent. Any child language characteristics that match those produced by the parent are considered dialectical variations rather than errors. If the child's patterns do not match the parent's, the child's responses are compared with age expectations, using developmental charts and normal language data, such as that found in Haynes and Shulman (1998b), Miller (1981), or Owens (2008). Deviations from Standard English patterns that do not match the parent's and are not typical of normally developing children of the client's age are considered aspects of a language disorder. The PCCA is especially useful for analyzing speech that is influenced by languages or dialects with which the clinician has little experience and for which there are no published data on typical variations from SAE or interference points with English. Comparative analyses can also be done by comparing a child's speech to that of another, typically developing child from the same language/cultural group (Goldstein, 2000).

Some of the measures we discussed as indices of language dominance also can be used to elicit and analyze samples of spontaneous speech from CLD children. These include the *Assessment Instrument for Multicultural Clients* (Adler, 1991, 1993), the *Basic Inventory of Natural Language* (Herbert, 1977), the *Bilingual Syntax Measure* (Burt, Dulay, & Hernandez-Chavez, 1975), and the *Oral Language Evaluation* (Silvaroli & Maynes, 1975). These procedures provide a somewhat structured method of analyzing natural conversational data. Each requires the child to produce a short language sample using a picture description or picture sequence task. Criteria for evaluating the language produced in both English and the home language are provided in the manuals for these procedures.

Other Assessment Procedures

A variety of alternative approaches to making the distinction between language difference and disorder have been presented in the literature. Roseberry and Connell (1991) found that teaching an invented morpheme to children with LEP reliably differentiated normal bilingual children from those with specific language deficits. The children with LEP who were language impaired were much poorer at learning the invented rule and failed to use the morpheme in naming pictures given during post-teaching probes. Lidz and Peña (1996) and Owens (2004) advocated a similar approach, using mediated learning experiences in a pretest–intervention–post-test format to teach vocabulary items on the *Expressive One-Word Picture Vocabulary* Test−2000 *Edition* (Brownell, 2000). Both these approaches use dynamic assessment procedures, as we defined them in Chapter 2. Dynamic assessment, you'll remember, attempts to determine the degree to which mediation in the learning processes assists a child in grasping new material. For children who can benefit from this mediation, normal language-learning capacity can be inferred. For those who do not find the mediation helpful, underlying deficits in language-learning ability may be present. Approaches such as mediated learning, dynamic assessment, and language processing evaluations like the ones we discussed earlier are especially promising because they can be used no matter what first language the client speaks and regardless of the clinician's familiarity with or access to normative developmental data regarding the first language.

Restrepo (1998) identified a set of measures that discriminate language difference from disorder in Spanish-speaking 5- to 7-year-olds. Her analysis showed that high sensitivity and specificity could be achieved with only two of the measures: parental report of the child's speech and language skills and the number of errors per T-unit (see Chapter 11) in a speech sample derived from three contexts (picture description, interview, and story retelling). The speech samples were collected in Spanish and analyzed by a native Spanish speaker for morphosyntactic errors. Findings suggest that more than 10 errors per 50 T-units and more than 10 speech or language problems reported by parents on a form such as the one in Figure 5-3 are sufficient to identify a child as having a language disorder in Spanish. Similarly, Patterson (2000) reported that using parent reports of vocabulary size and ability to combine words provided valid information about whether bilingual Latino 2-year-olds were acquiring language normally.

Of course, these methods will only help to decide whether a child with CLD really has a language problem—the screening aspect of our assessment. If, with the help of these procedures, we decide that a CLD child would benefit from intervention, we will still need to do additional assessment to establish baseline function and document progress in intervention, just as we would for any client. For these purposes, both the criterion-referenced procedures we've discussed and observational methods will be helpful.

Using Behavioral Observation with the CLD Child

In Chapter 2, we talked about using behavioral observation to describe aspects of a child's communication when our concern is not to compare the child to some standard but simply to get a picture of current communicative skills. Figure 2-14 gives an example of a form that we might use to look at communicative competence, and this form is appropriate for CLD as well as for mainstream clients (Erickson, 1987). Clinicians can devise other forms to look at behaviors of interest as well.

Cheng (2002a) and Crago and Cole (1991) have argued for the importance of ethnographic assessment with CLD children. Ethnographic assessment differs from other forms of naturalistic behavioral observation in that we may not know ahead of time exactly what categories and attributes of behavior we wish to examine. We are using the ethnographic method because of our unfamiliarity with the cultural norms of the child being observed and will use the observation itself to discover the relevant parameters.

Crago and Cole discussed several methods of ethnographic assessment. These included participant observation, audio and video recorded data, and open-ended interviews. Participant observation is described as "hanging around and taking notes" (p. 114). The clinician watches and may participate in a natural interaction, taking brief notes to be expanded later, to get a rounded and unencumbered view of a set of events. Although participant observation is usually easier to accomplish than, say, videotaping a child in a classroom or on the playground, notes of the participant observation are usually less inclusive than transcripts of a recording. The relative advantages of each method need to be weighed before deciding what method to use in observing a particular child. Open-ended interviews with families of CLD children are another method of gathering ethnographic information about the communicative competence of the CLD child. McCracken (1988) suggested that interviewers develop a series of skeletal questions, without preconceived categories of response, and proceed by a series of indirect prompts for further information while listening carefully for signals that topics are inappropriate or that miscommunication has occurred. Kummerer, Lopez-Reyna, and Hughes (2007) reported on a study that used open-ended interview data.

(More than 10 "yes" responses indicate significant language problems in 5- to 7-year-olds)*		
In comparison with other children of the same age, do you think that your child has problems expressing himself/herself or being understood?	Yes	No
In comparison with children of the same age, do you think that your child has speech problems?	Yes	No
Do your family or friends think that your child is delayed in language?	Yes	No
For his/her age or in comparison with other children, does your child have difficulty producing correct phrases?	Yes	No
Do your family or friends think that your child is difficult to understand?	Yes	No
For his/her age, does your child produce very short phrases?	Yes	No
Do you think that your child has problems with grammar?	Yes	No
When your child talks about the same person, does he/she have difficulty using the correct pronoun such as *he, she, they?*	Yes	No
When your child talks about something that happened, does he/she have difficulty explaining when this happened or use words in different times; for example, talking about yesterday, does the child say "fall" instead of "fell"?	Yes	No
Does your child make mistakes in sentences more than a little of the time?	Yes	No
When your child talks, does he/she have difficulty expressing whether he/she is talking about a man or a woman?	Yes	No
In comparison with other children of the same age, does your child use many words that are too general and not descriptive or exact, such as *this, that,* or *thing?*	Yes	No
Does your child have difficulty finding the exact words to express himself/herself?	Yes	No
Does your child have difficulty explaining or describing things?	Yes	No
Is it difficult for your child to tell you what he/she did during the day?	Yes	No
Is your child frustrated because he/she cannot talk well?	Yes	No
Do you or your child's brothers and sisters have to repeat what you say to him/her more often than when talking to other children?	Yes	No
Do you have to repeat questions or directions to your child more often than to other children?	Yes	No
Does your child have trouble understanding more than a little of what he/she is told?	Yes	No
Do you think that your child has trouble learning new words?	Yes	No
In comparison with children the same age, is it difficult for your child to learn new ideas?	Yes	No
In comparison with children the same age, does your child have a very low or limited vocabulary?	Yes	No
Do you think that your child has a learning problem?	Yes	No
Does your child have dyslexia?	Yes	No
For his/her age, does your child have difficulty paying attention for a long period?	Yes	No
Is your child hyperactive?	Yes	No
Does your child have difficulty attending to an activity or game?	Yes	No
For his/her age, does your child have difficulty pronouncing words?	Yes	No
Is your child's pronunciation easy to understand?	Yes	No
*In conjunction with more than 10 errors/50 T-units in a language sample.		

FIGURE 5-3 Parental report of child speech or language problems. (Reprinted with permission from Restrepo, M. [1988]. Identifiers of predominantly Spanish-speaking children with language impairment. *Journal of Speech, Language, and Hearing Research, 41,* 1398-1411.)

LANGUAGE INTERVENTION WITH THE CLD CHILD

Once a language disorder has been identified and baseline function in the dominant language has been established, intervention for the CLD child generally follows the guidelines we discussed in Chapter 3. We need to address a few problems particular to CLD children when we plan their intervention programs, though. The first type of problem arises when we find that a child who is not SAE dominant has a language disorder. If an SLP who is fluent in the child's dominant language or dialect is not available, how should intervention be managed? A second problem concerns the child who is progressing adequately in the dominant language or dialect but has limited proficiency in SAE or uses a nonstandard dialect. What is the SLP's role with this client? Thirdly, we have a problem in making our intervention culturally appropriate. How can we be sure of not creating just another setting in which cultural differences get in the way of communication and learning? Let's take these questions one at a time.

The Monolingual SLP and the Client Dominant in a Different Language or Dialect

Because SAE proficiency is so important for access to mainstream culture and its economic opportunities, children with language disorders who speak a language or dialect other than SAE should, at some point, be given the opportunity to learn to communicate in Standard English. In early stages of intervention, however, research (Cobo-Lewis, Eilers, Pearson, & Umbel, 2002; Lopez & Greenfield, 2004; Perozzi, 1985; Perozzi & Chavez-Sanchez, 1992) suggests that instruction in a client's native language facilitates the development of both the first language and English. These findings indicate that early stages of intervention for CLD children with language disorders should be given in the native language, whenever possible, with gradual transition to intervention and instruction in English. When a clinician fluent in a client's native language is available, this approach is clearly preferable.

Too often, however, in a diverse society such as ours, clinicians who speak the language or dialect of every client on the caseload are not to be had. Take Lilly's case, for example.

Ms. Engle was an experienced SLP who had worked for 10 years in a pediatric hospital. But she had never been confronted with a problem such as the one she faced when Lilly found her way onto her caseload. Lilly's family had recently emigrated to the United States from China, and no one in the family, including Lilly, spoke much English. Lilly had recently, at age 4, suffered a series of seizures, and her language use in her native dialect of Mandarin Chinese appeared to be deteriorating. Distraught, her parents brought her to see doctors at the hospital, using friends in the neighborhood as interpreters. Ms. Engle used parent interviews, a speech sample carefully translated in collaboration with the neighborhood interpreters, and some developmental scales and modifications of standardized tests to establish that Lilly's language had been normal when she was younger but had indeed gotten worse since the seizures. Lilly appeared to be communicating at a telegraphic level, to have difficulty understanding anything beyond simple one-step commands, and to rarely initiate communication. In addition to medication to control the seizures, the diagnostic team at the hospital recommended language intervention. Since Mandarin Chinese was Lilly's first, and at this point, only language, Ms. Engle believed it was important to deliver the intervention in that language. Ms. Engle, however, did not speak this dialect.

Juarez (1983) suggested that direct therapy with a monolingual SLP is not the optimal approach for clients with language disorders who are dominant in a different language or dialect. However, as Goldstein and Iglesias (2006) point out, there are important services the monolingual SLP can provide, including in-service training, consultation, diagnostic service, and paraprofessional training. Chabon, Brown, and Gildersleeve-Neumann (2010) provide an ethical perspective on this issue.

In-Service Training

The SLP can train ESL and classroom teachers who work with these clients. Training can focus on topics such as normal language acquisition processes, the relation of communication to language development, the importance of interaction in language acquisition, appropriate and inappropriate uses of standardized tests, informal and criterion-referenced assessment procedures, techniques for eliciting and evaluating language samples, methods of designing language intervention programs, and the differences between "home" and "school" talk (van Kleeck, 2007). The SLP also can provide answers to some of the most commonly asked questions about CLD children with language disorders. These questions include the following:

1. Did the child's bilingual background cause the language disorder?

   The answer to this question is a definitive *no.* Cheng's (1996), Owens' (2009), and Thordardottir's (2005) reviews of a broad range of literature on this topic concluded that normally developing bilingual children acquire both languages at a comparable rate, with no deficits in either language. Kay-Raining Bird (2006) and Restrepo (2005) showed that children with intellectual disability growing up in bilingual home environments learned two languages at the same level as did children with similar disabilities learning just one. Even children with significant developmental disorders were able to

acquire two languages with no greater delays than their monolingual counterparts. The key to development is the opportunity to hear and use both languages in familiar, interactive environments. This, of course, may not be the case for many CLD children who hear the minority language exclusively at home and do not encounter the dominant language until they get to school. Still, a child exposed to two languages simultaneously will learn both with no trouble. A normally developing child exposed to one language at home and another at school will go through a period of limited English proficiency but will communicate normally in the home language and will eventually master the dominant language, given adequate opportunity. Most normally developing bilingual children learn enough English to engage in ordinary social interactions (BICS) in 2 to 3 years, although, as we've seen, acquisition of CALP may take more time. So if a child is having trouble in the first language, exposure to the second is not what caused it.

2. Must CLD parents speak to their children only in English?

   Again the answer is a resounding *no.* Parents should never feel guilty about using the native language in the home. They should not feel obliged to speak to the CLD child with a language disorder in English, if English is not their own first language. Research (Cummins, 1981; Ramirez & Politzer, 1978) has shown that it is the quality of the language input that makes a difference in development, not the particular language spoken. Parents should be encouraged to engage in many kinds of communicative interactions with their children, including reading books to them, telling them stories, engaging in pretend play, and hearing and telling personal experiences. The language in these interactions should be the one in which the parent is most comfortable and fluent. In this way, the child can receive an optimal model of language structure and function that serves as a strong foundation for development in both languages.

3. Can a language disorder exist in one language and not the other?

   Once more, the answer is *no* (Cummins, 1981; Juarez, 1983; Kay-Raining Bird, 2006). If a child has a deficit in the first language, that deficit will affect the acquisition of English as well. If a child is developing normally in the first language, on the other hand, but has limited English, the problem is most likely to be lack of adequate opportunity to develop English language skills. This lack of opportunity may be a result of recent arrival in the United States, in which case time and understanding teachers may be all that are needed to solve the problem. The lack of opportunity could also stem from social isolation, though. A CLD child may be exposed to English only in limited, formal contexts in school and interact exclusively with people who speak the minority language at all other times. The monolingual SLP can make this clear by observing the child in school. The SLP can document who the CLD child spends informal time with during recess and lunch and what language is spoken.

   If it turns out that the CLD child is socially isolated from English speakers, the SLP can use the in-service training setting to encourage teachers to foster some social interaction. This might include helping teachers to arrange an English-speaking "buddy" to pair off with the child during some informal parts of the day; organizing sports, craft activities, or games between mixed groups of CLD children and English-speaking classmates during recesses; or developing a lunchtime club with invited members from both linguistic groups who

get to eat in a special place (such as the teachers' room) and talk together in English. For normally developing children with limited English skills, such social interactive opportunities go a long way toward building English proficiency.

Damico and Damico (1993) discussed the process of acculturation in students from linguistically and culturally different backgrounds. They emphasized that a crucial factor in acculturation is the degree to which a person feels affiliated with the mainstream culture. An attitude of acceptance and respect on the part of mainstream professionals is certainly an important factor in creating this feeling of affiliation. In addition, however, teachers and clinicians who work with children from culturally different backgrounds would perform a service by setting up opportunities for playground or extracurricular interactions with SAE-speaking peers. These interactions will go a long way toward developing feelings of solidarity with the dominant culture that provide ELL children the motivation to improve their English language skills.

Consultation

In addition to training teachers in general techniques for developing language skills in children, monolingual SLPs can consult on the interventions for particular CLD children with language disorders. Clinicians can work with teachers to increase their use of culturally sensitive teaching strategies, such as those discussed in the "Multicultural Teaching Techniques" section. We also can encourage the use of script-based interventions, literature-based scripts, and many of the other intervention strategies we discussed in Chapter 3. Clinicians can demonstrate in English how to use such approaches, so the bilingual staff can adapt them to the minority language. Salas-Provance and Oprandy (2006) provide additional ideas, and ASHA suggests guidelines for educational modifications for ELLs, which appear in Box 5-11. A wealth of other resources can be found at www.asha.org/practice/multicultural.

SLPs also can, in collaboration with other staff, develop child-centered or curriculum-based language activities that can be translated by the bilingual staff. These would involve consulting with bilingual staff about the language status and goals for particular clients and about the current classroom themes and curriculum. The SLP can then design a set of activities to address these goals in the context of classroom themes and can consult with staff about translating this program into the child's first language.

In addition, SLPs can fulfill their consultation role by becoming familiar with new tests and materials that address particular language groups. As Appendix 5-2 amply demonstrates, a variety of tests are available in several languages. As time goes on, more materials in more languages will come onto the market. The SLP can serve as a resource for bilingual staff by watching for and alerting them to new materials in the languages of their clients.

SLPs consulting to classroom programs with CLD children also are important in helping decide when to introduce or focus more sharply on instruction in English. Since CLD children with language disorders should have the opportunity to develop English-language skills, the monolingual SLP needs to observe their progress to determine when some intensive intervention in English is warranted. This involves careful monitoring of both English and first language skills. Using the techniques for assessing first language and SAE skills in CLD children that we talked about earlier, the clinician can use both standardized and informal procedures to

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BOX 5-11 English Language Learners in Schools Checklist for Educational Modifications

CLASSROOM ROUTINE
Establish a daily routine
Provide optimal seating so that the student can easily see the materials and hear the instructor
Review and summarize prior lessons
Set up "partners" in order to team a student who is an English language learner with another student
Teach book format (e.g., table of contents, glossary, directionality of text)

LESSON PLANNING
Consider background of students when planning appointments, community outings, holiday celebrations, meals and snacks; for example, not all children may celebrate the same winter holiday
Consider the cultural and linguistic background of students when selecting materials (for example, pictures, books/workbooks, flashcards, videos, music, food, etc.)
Plan for small group activities to allow children to rehearse speaking skills
Present frequent review and repetition
Provide a blank outline, chart, or web to fill in during class
Use a consistent format for worksheets with minimal graphic distractions

DAILY INSTRUCTION
Allow multiple methods of sharing experiences and communication, for example, use of storytelling and props that support the oral tradition
Allow extra time
Ask specific questions
Learn and appropriately use key words in other language(s) (for example, hello, please, thank you, etc.)
Present information in short, sequential steps
Provide hands-on instructional materials
Use multisensory cues for instruction
Use visual aids, gestures, and physical prompts
Write instructional key words on the board

From ASHA Multicultural Materials, available at www.asha.org/practice/multicultural

Bilingual SLPs can deliver services in clients' first language.

track growth in each language. Criteria we might use to make the decision to introduce English-language intervention include the following:

1. The client's English skills have progressed to about the same level as first language skills. English-language intervention can "shadow" forms and functions being acquired in the first language.
2. The client has reached a plateau in first language learning and is not making rapid progress. English skills commensurate with those in the first language can be targeted. Miller (1984) suggested that language intervention in English should begin with features the child already knows in the first language.
3. The client has been in a bilingual program for a considerable time. English intervention can be introduced to begin the transition to more participation in the mainstream program.

Diagnostic Services

Monolingual SLPs have the obligation to determine whether a CLD child is different or disordered in communication skills. This diagnostic responsibility can be fulfilled by using all the techniques we talked about before, including establishing language dominance, training interviewers and obtaining interview data, using and modifying standardized tests, doing speech sample analyses and other criterion-referenced assessment, gathering information from behavioral observation of the child, doing dynamic assessments, and getting ethnographic information about cultural styles of communication from bilingual members of the community.

Training Paraprofessionals to Deliver Services in the First Language

When professional staff such as ESL teachers or bilingual clinicians fluent in a client's language are not available, we may be able to draw on bilingual paraprofessionals, aides, or community volunteers to deliver first-language services (Kohnert, Yim, Nett, Kan, & Duran, 2005). SLPs may sometimes need to recruit such people to assist with their programs for CLD children with language disorders. Community agencies, churches, and local colleges and community colleges can be contacted to locate bilinguals willing to work as aides or volunteers to teach language skills to children in their cultural group.

The monolingual SLP has the responsibility to plan out the client's program and train the paraprofessional to deliver it. Again, the SLP will need to complete the diagnostic process and arrive at goals for first language learning. Commercially available materials in the first language can be selected and assembled to address some of the goals. The SLP can carefully review the procedures for use of these materials with the paraprofessional.

The SLP can train the paraprofessional to use the child-centered language approaches we talked about in Chapter 3 when working with clients in early stages of first language acquisition. These include, you'll remember, indirect language stimulation or facilitative play. The clinician can train the paraprofessional to engage in child-centered activities and provide enriched input in the form of self-talk, parallel talk, recasts, expansions, and extensions in the client's first language. Literature-based script activities also can be taught to the paraprofessional, with an emphasis on clear and repetitive input paired with engaging activities and materials selected to highlight vocabulary and language forms and functions that the child needs to develop. Focused stimulation and clinician-directed activities also can be designed by the clinician and translated in collaboration with the paraprofessional.

When working with a paraprofessional, of course, the SLP maintains the responsibility to monitor progress in the intervention program, by reviewing assessment data gathered by the paraprofessional in the course of the program. The SLP will be the one to decide when to introduce new goals, when to modify procedures, when to terminate intervention, and when to switch to English language instruction or to pair intervention in the two languages.

ASHA (1998, 2004c) has provided guidelines for monolingual SLPs working with clients who speak another language. These are summarized in Box 5-12.

The Worst-Case Scenario

Suppose you have a certain CLD child with a language disorder on your caseload. You don't speak her language and neither does anyone else in your facility; there is no ESL program in your area; the client's parents do not speak English; and you've been unable, after some effort, to recruit a community member to work with her. What can you do? Kohnert et al. (2005) suggest one alternative: recruiting typical peers from the same language group to provide peer mediation. Peers from the client's language community can be taught simple strategies, like those used in "Buddy Time" (English et al., 1997), in which buddy pairs are assigned for a period of the school day and the buddy's job is stay with and talk to the client for the entire period in order for both to earn some reward. Such simple strategies can provide the client with intensified opportunities to practice the home language.

At the same time, the clinician can deliver appropriate intervention in English. We would want to assess, as well as we can, where the child is functioning in the first language to get some sense of baseline function. Then we would begin using indirect language stimulation with age-appropriate materials. When the child has begun to use English in this setting, some script-based or focused stimulation activities can be introduced. We would proceed essentially as we would with a child in the emerging language stage (see Chapter 7). Vocabulary and themes can be related to classroom work if the client is in school. The combination of peer mediation in the home language and clinician-delivered intervention in English can help to shore up both forms of communication (Restrepo, 2005). ASHA (2008) and Peña and Fiestas (2009), Pederson and Vining (2008) provide guidelines for SLPs working with CLD preschool children and toddlers.

BOX 5-12   ASHA Guidelines for Monolingual SLPs Working with Clients Who Speak Another Language

Monolingual SLPs may do the following:
- Test in English
- Perform oral-peripheral exams
- Conduct hearing screening
- Complete nonverbal assessments
- Conduct family interviews with appropriate support personnel
- Research client's language and culture
- Advocate and refer

Monolingual SLPs should seek help with CLD clients by doing the following:
- Establishing contacts and hiring bilingual SLP consultants
- Establishing cooperative groups among several school systems to hire bilingual SLPs
- Establish networks and links between universities and clinical setting to recruit and train bilingual SLPs
- Establish Clinical Fellowship Year and graduate student practicum sites for bilingual SLPs training
- Establish interdisciplinary teams in which monolingual SLPs collaborate with and cross-train bilingual professionals from other fields
- Recruit and train support personnel from the community to serve as bilingual aides and paraprofessionals
- Follow ASHA guidelines for supervising bilingual support personnel

Adapted from American Speech-Language and Hearing Association (1998). Provision of English as a second language instruction by speech-language pathologists in school settings; position statement and technical report. *ASHA Supplement,* 18; American Speech-Language-Hearing Association. (2004c). *Preferred practice patterns for the profession of speech-language pathology.* Retrieved from http://www.asha.org/members/deskref-journal/deskref/default

The SLP and Normally Developing Children with Limited Proficiency in Standard English

Several court cases (*Lau v. Nichols,* 1974; *Martin Luther King Junior Elementary School Children et al. v. Ann Arbor Michigan School District Board,* 1979) have ruled that it is unconstitutional for schools to fail to take into account the languages with which children come to the classroom. These decisions do *not* mean that students' home languages must be the language of instruction. They do mean, however, that public institutions have the obligation to educate teachers about students' native languages or dialects and to attempt to eliminate negative attitudes and diminished expectations on the part of teachers based on their perceptions of their students' language differences. Ms. Salford's story shows how such attitudes can affect adults' perceptions of CLD children.

SLPs working with children with LEP can provide social opportunities to interact with SAE speakers.

Ms. Salford was a new SLP in an inner city school with about 90% African-American and Hispanic-American students. When she arrived, she noticed that the students rarely talked to adults unless they were directly asked a question. On the playground students did lots of talking, yelling, and arguing, but inside they were mostly sullenly silent. Teachers complained that the students had "poor verbal skills" and were "language delayed" and wanted large numbers of students included on Ms. Salford's caseload for language intervention. Ms. Salford sat in on a few classroom sessions to learn more about the students' communication skills. She noticed that the teachers frequently corrected their students, insisting that they use "proper" English when they talked. Students were often told that the teacher couldn't understand them, that their speech was "sloppy." Yet in her playground observations, Ms. Salford heard sophisticated verbal negotiations and a lot of creative use of language for ritualized, playful put-downs. She even heard students getting together in small groups in corners of the playground to add verses and make up new lyrics to their favorite raps. She began to suspect that there was a serious discrepancy between what she heard on the playground and what the teachers were reporting about the children's language skills.

When a normally developing CLD child has LEP, the SLP needs to decide, based on thorough assessment in both languages or dialects, that the child is indeed developing normally in the first one and is limited in SAE only. For these children who do not have a disorder, but rather have a limitation in the use of Standard English, direct services by the SLP are usually not indicated. Still, as Fitts (2001) reminded us, even though LEP or use of nonstandard

dialect may not be a disorder, it can constitute a social and educational handicap. Blake and van Sickle (2001) and Mehan (1984) emphasized the importance of being able to master the code of classroom language to succeed in school and thereby obtain wider opportunities for economic advancement and security. As we've seen, children who have BICS in English may not have achieved the level of CALP that supports success in school (Roseberry-McKibbin, 2008). In light of the importance of using and understanding SAE to "make it" in the mainstream, a legitimate aspect of our scope of practice can be to offer our expertise to professionals who deal with normally developing ELLs, even when we don't provide services to these children directly. ASHA (2002) provides guidelines for these kinds of services, and considers them *elective,* rather than required. The main roles we will generally play in this enterprise will be in terms of in-service training and consultation.

In in-service presentations to other professionals and in consultation activities, we will want to emphasize the importance of creating social opportunities for ELLs to interact with SAE speakers. Taylor (1986) gave some suggestions for encouraging the development of a second language or dialect through interaction. These are summarized in Box 5-13. In addition, many of the recommendations that we talked about earlier for creating social opportunities for CLD children also are applicable here.

Another aspect of our responsibility for educating other professionals about CLD concerns the need to convey the importance of language skills for success in the classroom. We need to help our colleagues see how language skills pervade the curriculum at all levels, from preschool through secondary grades. Some of the suggestions for in-service training given in Chapter 12 can be used to make this point. To take it one step further for the CLD child, Adler (1990) emphasized that we need to make colleagues aware of how negative attitudes about language differences can affect children's performance. We also need to help minimize the handicap conferred by a language difference by increasing colleagues' awareness of the problem.

Blake and van Sickle (2001) stressed that improving SAE does not mean eliminating the nonstandard dialect or use of the minority language. On the contrary, programs aimed at improving SAE in culturally different children should have the aim of helping children become bilingual or bidialectical code-switchers (that is, speakers able to move back and forth between language styles,

choosing the one most appropriate for the situation). For example, Lugo-Neris, Jackson, and Goldstein (2010) showed that reading Spanish-speaking preschoolers books in English, and providing explanations of unfamiliar English words in Spanish produced greater gains in the children's use of expressive definitions than English-only instruction. Connor and Craig (2006) showed that AAE-speaking preschoolers were already capable of code-switching, and suggest this ability may serve as a foundation for metalinguistic skill development. Additional ways to develop bilingual and bidialectical abilities include providing instruction not only in SAE forms, but also engaging children in discussion of the functions of a variety of communicative styles. As a metalinguistic approach, this sort of intervention is ideally adapted to classroom situations. Talking about language use is a metalinguistic activity that will benefit all students, not just those who are CLD. Let's look at some specific techniques we can present to colleagues as consultative suggestions for classroom programming in this area.

Cole (1985) suggested a variety of activities that can be used to teach SAE as a second dialect to AAE speakers, many of which are applicable for children with LEP as well. These are outlined in Box 5-14.

Taylor (1986) presented a detailed program for developing skills in SAE for children who speak a nonstandard dialect. This program is referred to as *A Cultural and Communication Program for Teaching Standard English as a Second Dialect (ACCPT,* pronounced as "accept," for short). These procedures also can be adapted for bilingual children with LEP. The sequence of instruction in this program is schematized in Figure 5-4.

The first and perhaps most crucial step in this program is developing positive attitudes toward the children's own language or dialect. This requires, of course, that the teacher have such attitudes as well. The SLP can be very important in this process by using in-service training opportunities to talk about the legitimacy and importance of having a strong base in the home language or dialect on which SAE proficiency can be built. At the same time, the SLP can encourage teachers to convey an accepting and positive attitude about the home language or dialect to students. Taylor (1986) suggested that students be introduced to the idea that each culture has its own language and to see language as a tool for communication that can be looked at and be of interest for its own sake. Activities such as learning a simple song, rhyme, or finger play in each of several languages can be a first step. The teacher can convey acceptance of the students' own language or dialect through activities such as asking students to bring in songs or games that they play at home and teach them to the group or asking the students to "teach" how they greet someone in the home language or dialect.

The next step in this program involves developing an awareness of language differences, first in general and later in contrasting the home language or dialect with SAE. Adler (1993) suggested that students be taught to recognize two different language styles, designated "everyday talk" and "school talk." Two puppets might be introduced, one who talks everyday talk and one who talks school talk. Children can be encouraged to listen to how the puppets talk differently and decide which puppet uses which style. Next, pictures of different settings, such as classroom, playground, doctors' office, and kitchen, might be shown. Children can be asked to say whether everyday talk or school talk would be most appropriate for each setting. Van Kleeck (2007) provides additional ideas.

Additional activities can include reading poems and stories in "old" or more archaic forms of English. Classic poems such as

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BOX 5-13   Principles for Developing Second Language or Dialect Skills

1. Give children opportunities to engage in genuine, spontaneous conversations with peers.
2. Create situations in which some information is missing, so the child must identify the gap and request more information.
3. Set up goal-oriented conversations with peers, such as assigning children to cooperative learning groups in which they must complete a class project. Be sure that the CLD child has opportunities to negotiate verbally with the other members of the group.

BOX 5-14 Methods for Teaching English as a Second Dialect or Language

1. **Modeling and expansion.** The instructor models the SAE version of a child's utterance, making no direct attempt to change the child's production. The SLP works with the teacher to identify a small set of forms to be especially careful to notice and model whenever they appear in the child's speech. When use of these forms moves closer to SAE usage, new forms can be targeted.
   Example: If an AAE– or Spanish-speaking student in the class has difficulty using SAE negative marking, a child who remarks, "He no like beans" can be told, "You're right. He doesn't like beans."

2. **Script-based approaches.** Specific forms are targeted by teaching the group a script based on a song, story, poem, finger play, or chant.
   Example: If a Hispanic child in a class has difficulty using comparative endings, the group might be taught the song "I Am Bigger" to the tune of "Where Is Thumbkin?" Each student adds a verse to the song, after several models by the instructor. Each verse has the following form:
   "You are big, but I am bigger. I am bigger, I am bigger" (You are X, But I am X-er).

3. **Call and response:** This is a type of interaction between a speaker and group of listeners in which calls from the speaker elicit responses from the group. Responses can be either scripted or spontaneous. For scripted responses, the teacher establishes a classroom routine, to which students are expected to respond when they hear a particular call. For example, when a child uses a "school talk" form spontaneously, the teacher might ask the group, "What do we say to that?" who respond, "Smooth talk-ing; give your back a pat!" Spontaneous responses use the teacher's call as a guide; usually these include requests the repeti-tion. Foster (2000) provides the following example.
   Example: When teaching a new word such as *paleontologist,* the teacher (T) might say to class (C):
   T: Here's a new word we need to learn for our dinosaur study. The scientist who studies dinosaurs is a paleontologist. How many parts to that?
   C: Six
   T: Ok, let's say the first three together: pay lee on
   C: pay lee on
   T: Yes, just like when you owe your friend, you'll say I am gonna Pay Leon!
   C: Pay Leon
   T: (whispers) Pay Leon
   C: (whispers) Pay Leon
   T: (louder) PAY LEON
   C: (louder) PAY LEON
   T: OK! PAY LEE ON to lo gist
   C: to lo gist
   T: Let's say the whole word, FAST: pay lee on to lo gist!
   C: Pay Leon tologist

4. **Literature-based scripts:** The group reads or listens to a story selected to give numerous examples of a target form (see Appendix 9-1 for an extensive list of examples of such stories). After the first reading, children participate in telling the story by acting it out, using flannel board figures or similar means. Students fill in parts of scripts of the story as the instructor rereads it.
   Example: If a CLD child has trouble with subjective pronoun use, *The Very Busy Spider* (Carle, 1984) can be read to the group and acted out. The CLD child can be asked to narrate some sections of the acting-out, so that opportunities for using the subject pronoun ("*She* was very busy . . . ") are provided.

5. **Dialect stories.** Stories are read to the group that contain characters from the same cultural group as the CLD child. The speech of the characters is read in dialect, whereas the rest of the text is read in SAE. The instructor has the children contrast the two styles, talk about how they differ, and explain why different styles are used in different parts of the story.
   The dialect sections can be "translated" into SAE and the SAE sections into dialect or into the CLD child's first language by the CLD child. Again, the group can discuss the differences.
   Example: The group can read *Liza Lou* (Meyer, 1976), *We Be Warm Til Springtime Comes* (Chaffin, 1980), or *Cornrows* (Yarbrough, 1981). The characters can be given dialogue in AAE by AAE speakers in the group. These forms can be contrasted with the way the rest of the story is written.

6. **Situational contrastive drills.** Children act out a variety of everyday situations, using both SAE and the home language or dia-lect. They are encouraged to talk about which is appropriate for each situation, to list situations in which they might use one or the other. They can brainstorm about why "home talk" is appropriate at home, but a different "school talk" form is needed at school or in more formal situations.
   Example: Suppose Marta's dad runs out of gas on his way to work. He walks to a gas station near his job. What do he and the gas station attendant say to each other? What if he ran out of gas right near his apartment, where nearly everyone speaks Spanish and walked to the station right on his corner. What would he and the attendant say to each other then?
   How do we decide which way to talk?

Adapted from Cole, L. (1985). *Nonstandard English: Handbook for assessment and instruction.* Silver Spring, MD: L. Cole.

BOX 5-14   Methods for Teaching English as a Second Dialect or Language—cont'd

7. **Linguistic contrastive analysis.** The instructor gives the children examples of specific contrasts of standard and nonstandard forms. The student contrast the two versions of each form to find out about the rules that differentiate the two types.
   Example: Here are two ways to say the same thing:
   "I look for him last week." "I looked for him last week."
   "I walk to school yesterday." "I walked to school yesterday."
   "I help the teacher a lot last year." "I helped the teacher a lot last year."
   How are the two ways of saying the same thing different? Can you say what the rule for the first speaker is when talking about things that happened in the past? What about for the second speaker? Which speaker is using "school talk?" "Home talk?"
8. **Paraphrasing and retelling.** Students listen to or read a story in SAE and retell it in the home language or dialect.
   Example: The students read a story, such as a chapter of *Stuart Little* (White, 1974). In cooperative learning groups, they "translate" it into the home language or dialect.
9. **Role projection.** Students take on a role and respond to realistic situations within their role.
   Example: Willy isn't feeling well, so his mom takes him to the doctor. What do Willy's mother and the doctor say to each other as the doctor examines Willy?

Adapted from L. Cole (1985). *Nonstandard English: Handbook for assessment and instruction.* Silver Spring, MD: Author; Foster, M. (2002). Using call-and-response to facilitate language mastery and literacy acquisition among African American student. *ERIC/CLL Digest,* July, EDO-FL-02-04.
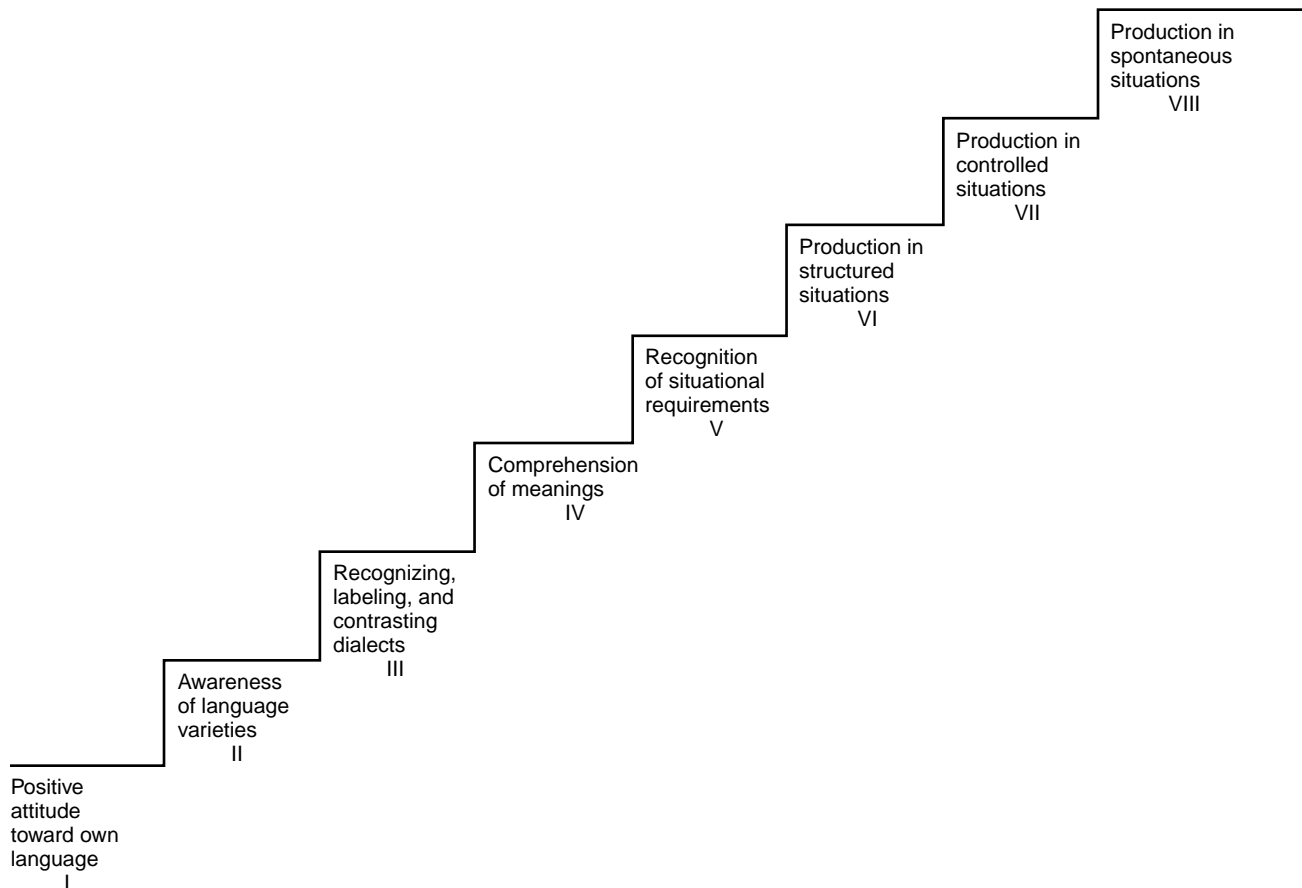
FIGURE 5-4   A sequence of oral communication training for bilingual or bidialectal children.   (Reprinted with permission from Taylor, O. [1986]. *Treatment of communication disorders in culturally and linguistically diverse populations* [p. 168]. Austin, TX: Pro-Ed.)

Mary Howitt's "The Spider and the Fly" or Henry Wadsworth Longfellow's "The Midnight Ride of Paul Revere" might be used. Children can retell each in their own language, the teacher can retell them in contemporary SAE, and the retellings might be recorded for later contrastive analysis. Typing 'Lingo Kid' into YouTube's search engine produces a video of a child peddler describing his wares in ten different languages, and may serve as a stimulus to discussion. Children also can listen to different regional dialects (putting the search term "accent" into YouTube's search engine yields a variety of videos of a large range of accent types) recorded by the instructor from popular television shows or podcasts and "translate" these scripts into the home dialect.

Steps III and IV of Taylor's scheme involve recognizing and labeling differences in the form and meaning of messages sent in

standard and nonstandard styles. For children beyond the primary grade levels, analysis of form could include contrastive linguistic analyses and attempts to characterize the rules for use of the different languages or dialects. Work on comprehending meanings of various forms of the same message can involve talking about the different meanings words can have in different dialects (When does *sick* mean "not well" and when does it mean "cool" or "hip"?). Wheeler (2005) has shown that contrastive analysis and encouraging code-switching through awareness of differences between dialects works better than merely correcting dialectical usage. She argues that correcting children's dialect use is ineffective (Wheeler & Swords, 2004), and leads to increasing gaps between SAE and AAE speakers as they progress through school. Wheeler shows that contrastive analysis with an emphasis on conscious code-switching results in significant decrease in the use of AAE features in writing, and in consequent narrowing of the achievement gap.

Looking at the situational requirements for different language styles (Step V) can involve role-playing and metalinguistic discussions of the needs of speakers and listeners in different communicative settings. Activities such as those suggested in Box 5-14 can be used in these contexts. In Step VI of Taylor's sequence, children are given practice and support to produce forms in SAE in structured situations. One kind of structure that can be employed is the call-and-response form. This form has a long history in African-Americans traditional discourse (Cazden, 1999) and may be familiar to students for this reason. Foster (2002) reported that primary classrooms whose teachers used call-and-response improved reading and code-switching to SAE more than classrooms that did not use the technique. A description of call-and-response discourse appears in Box 5-14. Taylor also suggested activities such as choral reading and Readers' Theater, in which students read short poems or stories of their own choosing to an audience. The poems and stories in this exercise are in SAE style. Step VII involves similar activities with somewhat less structure and support. Students use role-playing and story-telling contexts to produce SAE forms. In these activities, the content of the message is familiar and predictable. Familiar situations, such as visiting a doctor, ordering a hamburger, or buying shoes at the store, would be appropriate for role-play in SAE style. Retelling an often-heard story, such as the plot of a popular movie or TV episode or a folktale well-known in the community, is another vehicle for this level of instruction. Although the students must produce their own spontaneous language in SAE style, the task is somewhat more constrained than normal conversation, providing the students with a better chance to focus on the SAE forms, since the function and content of the message have already been determined for them.

Blake and van Sickle (2001) suggest using a Writers' Workshop approach to address this step for older students. Here, students are encouraged to write about their own experiences in their own dialect. Brief mini-lessons are presented to address writing mechanics and text structures. Students get feedback on their work through dialogue journals, in which teachers comment not only on content, but on dialect features of the writing and make suggestions for changes to SAE. Students then share their writing with the class, and discuss when/how/why they did or did not choose to use dialect features within their compositions.

The final step in Taylor's program involves spontaneous production of SAE forms in the appropriate context. Here instruction would remind children what they have learned about the different communicative demands of different contexts. Role-playing would be used for less-constrained production activities to allow students to practice emerging SAE skills. Situations appropriate for this level might include asking a teacher about a homework assignment, giving a formal talk on bike safety to a group of younger students, or telling the student's life story to a reporter writing an article for the school newspaper.

Brice and Roseberry-McKibbin (2001) and Roseberry-McKibbin (2008) made suggestions for working with children who come from non−English-speaking backgrounds. They emphasized the importance of using the native language as a medium for improving students' communication in the second language, and outlined a series of strategies for implementing this suggestion in the bilingual or monolingual classroom. These strategies are summarized in Table 5-8, and can serve as helpful consultation suggestions for SLPs working with classroom teachers of children learning English as a second language.

Any of the programs we've been discussing, or ideas from them, are appropriate information to share with classroom and ESL teachers in our consulting role. For SLPs who work in schools with large numbers of CLD children, these also are ideal opportunities to do some collaborative teaching, coming into the classroom of a CLD child who does have a disorder and doing activities such as the ones we just discussed to help the whole class improve their proficiency in SAE. When we offer these activities as consultative suggestions, however, we'll need to remember that it won't be enough just to do the activities, if the teacher doesn't convey a genuine sense of acceptance of language difference. Using the collaborative teaching situation may be one of the best ways for us to provide a model of this kind of attitude to teachers who work in classroom settings with CLD children.

Finally, it is good to bear in mind that many of the techniques advocated by writers on ELLs and children with CLD are the *same approaches* recommended for working with children with language-learning difficulties from mainstream backgrounds. Methods such as creating preparatory sets, teaching compensatory strategies, allowing extra time for processing, bringing children's personal experiences to bear on classroom topics, using simplified, repetitive language in instruction, scaffolding, using focused stimulation to correct grammatical errors, teaching phonological awareness and alphabet knowledge explicitly to promote early literacy, using carefully structured questions to facilitate language production, explicit teaching of curricular vocabulary, and using text structures to facilitate expository comprehension are advocated by Bejos (2009), Lugo-Neris et al., (2010), Mathes et al. (2007), Roseberry-McKibbin (2008), Restrepo and Towle-Harmon (2008), and Thordardottir (2005), just as they are by those working with mainstream children with language problems (see Chapter 12 and 14). For clinicians, this means that working with CLD clients and their teachers does not involve re-inventing the wheel. Many tried and true techniques are helpful for these clients, as they are for others. The additional piece of the puzzle for clients with CLD is to encourage these students to continue to learn and use their home language, and to employ it as a scaffold to competency in English (Kohnert, Yim, Nett, Kan, & Duran, 2005). Burns, Velleman, Green, & Roeper (2010) argue that the issues for speakers of AAE are quite similar, and similar approaches, including encouraging home dialect use in conjunction with SAE, are warranted.

Multicultural Teaching Techniques

How can we make intervention more culturally appropriate and therefore more accessible to CLD children, both with and without language disorders? Tharp (1989) showed that when similarities

TABLE 5-8 Consulting Suggestions for Teachers Working with Bilingual Children in Classroom Settings

Strategy: Encourage Teachers to	Description	Example
Reiterate	Repeat what the other speaker said for emphasis and clarification.	Student: He take it? Teacher: Did he take it? I think he did.
Check and expand vocabulary	Checks vocabulary understanding and use. Introduce new words in English, talk about Spanish equivalents, and discuss vocabulary items explicitly.	Student: I need a . . . . Teacher: You need an eraser? You need to erase your answer, to change it? You need an eraser, then. We use an eraser to erase, or get rid of what we want to change. How do you say that in Spanish?
Maintain flexible language environment	Allow students multiple forms of participation in classroom discourse, including flexible turn-taking, increasing wait time for reponses, accepting answers in either language, rewards for participation.	The teacher may occasionally respond to a student with "*si*" rather than "*yes*," or prompt with "*y que mas*" sometimes, instead of "*and what else*."
Value native languages	Convey acceptance and appreciation of multiple languages by recognizing appropriate uses of each language, asking students how to say things in their native languages, including material from native languages within the curriculum.	Teacher reads students a Mexican folktale in English, then asks students, "What's the word for this bowl in Spanish? How would you ask the girl in the story's name in Spanish?"
Encourage code-switching	Allow code-switching in student contributions to encourage spontaneous language use.	Encourage students to help others master classroom concepts by presenting what the teacher said in English to peers in Spanish.
Ask questions	Encourage bilingual students to answer teacher questions, in the native language if necessary, to increase class participation and provide opportunities to hear English versions of their Spanish responses.	Teacher: There's a grandmother in this story. What do you call your grandmother? Student: Abuelita. Teacher: *Abuelita,* that's what you call your grandmother? I call mine *Gran*. *Abuelita, Gran,* two names for grandmother.
Allow use of home language as a bridge to English	After hearing/reading a story, ask ELLs to summarize the story in the home language first, then in English (Smyk, Restrepo, Gray, & Morgan, 2008).	After reading allow children to break into groups by home language. Let ELLs work together to summarize the story in the home language. Then have groups take turns providing a summary in English.
Provide clear, repetitive, simplified input, along with more advanced forms	Simplified input does not need to replace more advanced language, but it can accompany it.	Ask teachers to paraphrase instructions and important content, after their normal presentation. For example, "This week we'll be studying the conversion of light to energy by means of photosynthesis. Photosynthesis is the way plants make food. They turn sunlight into food energy by photosynthesis. Photosynthesis gives plants their energy to grow."

Adapted from Brice, A., and Roseberry-McKibben, C. (2001). Choice of language in instruction: One language or two. *Teaching Exceptional Children, 33,* 10-16; Roseberry-McKibbin, C. (2008). *Multicultural students with special language needs*. Oceanside, CA: Academic Communication Associates; Restrepo, M. A., & Towle-Harmon, M. (September 23, 2008). Addressing emergent literacy in English-language learners. *The ASHA Leader.*

between the school and home culture are increased, the performance of CLD children improved. In both our consulting role with teachers and in our own direct interactions with CLD children, we can incorporate some procedures and activities that will help reduce cultural conflicts. Remember, however, that different cultures will have different expectations. As we saw earlier, Asian-Americans may expect teachers to talk and children to listen, speaking only when spoken to first. Native Americans, on the other hand, may not find speaking in a teacher-directed group a familiar or comfortable experience. The suggestions we'll talk about here may be helpful for some children from some cultural groups, but no one suggestion will be appropriate for everyone. We'll always need to use judgment and rely on advice from community members about what techniques will work best for particular children and cultural groups.

One issue that faces us when we work with children with CLD concerns their view of themselves and their potential. Smyer and Westby (2005) recount what happened when they invited students in a low-income, all-minority school to enter an essay contest for scholarships to a summer science camp. They were surprised when, after a long silence, one of the students replied, "That's for smart white kids, not us." (p. 23). Smyer and Westby conjecture that the persistent achievement gap between CLD children and mainstream students has roots in this feeling that only "smart white kids" succeed in school and academic pursuits. They argue that an important aspect of multicultural teaching includes an explicit

Working with culturally different clients may involve teaching SAE as a second dialect.

refusal to accept this assumption, and a concerted attempt to convince the children themselves of their potential as learners. Danzak and Silliman (2005) echo this notion, and argue that becoming a competent English-language speaker involves building a new aspect of identity; that of a "smart kid" who communicates in English at least some of the time. To accomplish this end, Smyer and Westby describe a literature-based program in which they encouraged students to read (or listen to) and discuss stories of individuals, particularly those from nontraditional backgrounds, who had overcome obstacles, defied others' expectations, and used courage and determination to achieve great things. A list of some of the literature they used in this program appears in Box 5-15. Smyer and Westby also report that, following this literature program, several of their students successfully applied for the summer scholarships. In our consultant and collaborative roles, we can encourage teachers to adopt similar approaches to raising students' expectations of themselves.

One important aspect of multicultural teaching concerns the role of literacy for the CLD child. Connor (2008) emphasizes the important connection between oral language and literacy development, and the impact of this connection on children with linguistic differences. Since literacy is built on the base of oral language, a mismatch between the language or dialect a child is learning to read and the one he or she speaks will inevitably lead to difficulties. Kayser (2004) reported that the International Reading Association advocates encouraging CLD students to become biliterate as well as bilingual, and suggests beginning literacy instruction in the child's first language. While this may not be possible for children from smaller language groups, many programs working with Spanish first-language users do adopt this approach. Even if first-language literacy instruction is not possible, however, Kayser suggests SLPs work with teachers of CLD children to improve their literacy development by providing parents with books to read to their children in their native language, and building bridges between home literacy and school. As we've seen, Restrepo and Towle-Harmon (2008), as well as Schwanenflugel et al. (2005) and Smyk et al. (2008), also support this approach. Terry (2008) adds that developing metalinguistic awareness, talking about language and dialect differences as part of the literacy program, reading literature that uses different language styles, and role-play that contrasts language use in different contexts is appropriate for children with CLD even in the preschool and primary years.

We talked earlier about some of Westby and Rouse's (1985) suggestions for working with CLD children with language and learning disorders in classrooms. They suggested adding some high-context activities in the classroom to increase the child's chances for success there. In addition, they advocated providing parents with structured, lower-context activities to do at home to build these skills in a nurturing atmosphere. Westby and Rouse also suggested using cooking, crafts, and pretend play activities to provide high-context opportunities for language learning. In these activities, the clinician or teacher first introduces the tools or props to be used, names them, and discusses their function. The adult outlines the sequence of activities to be carried out. For cooking or craft activities, this would involve telling the students the steps to follow to complete the project. For pretend play, the adult can set the scene and outline the script ("We'll pretend to have a birthday party for Maria. First we'll have to bake her a cake. Someone will have to go to the store to buy . . . ") Children are invited to contribute, but are not singled out or required to give a particular response. The purpose of the interactions is to provide rich, contextualized language input with models of the kinds of discourse appropriate for the situation and to give children opportunities to talk in a nonthreatening setting. Children are encouraged to comment and relate personal experiences, rather than to display knowledge as they are in traditional classroom activities.

Westby and Rouse stressed the importance of teaching planning and metacognitive skills to CLD children, since many high-context communicative styles do not place strong emphasis on planning

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BOX 5-15   Books Used to Overcome Low Expectations

Adler, D. (1996) *A picture book of Thomas Alva Edison*. New York: Holiday House.

Bridges, R. (1999) *Through my eyes*. New York: Scholastic.

Coleman, F. (1999). *White socks only*. Morton Grove, IL: Albert Whitman.

Cooper, R. (1996). *Mandela: From the life of the South African statesman*. New York: Philomel.

Demi (2001). *Gandhi*. New York: Margaret K. McElderry.

Farris, C. (2003). *My brother Martin: A sister remembers*. New York: Simon and Schuster.

Krull, K and Morales, Y. (2003). *Harvesting hope: The story of Cesar Chavez.* San Diego: Harcourt.

Lasky, K. (2003). *The man who made time travel.* New York: Farrar, Straus, & Girouz.

Pinkney, A. (1994). *Dear Benjamin Banneker.* San Diego: Harcourt Brace.

Ringgold, F. (1999). *If a bus could talk: The Rosa Parks story.* New York: Aladdin.

Wiles, D. (2001). *Freedom summer.* New York: Atheneum.

Wishinsky, F. (2002). *What's the matter with Albert? A story of Albert Einstein.* Toronto: Maple leaf Press.

Wishinsky, F. (2003). *Manya's dream: A story of Marie Curie.* Toronto: Maple Leaf Press.

Woodson, J. (2001). *The other side.* New York: Penguin Putnam.

Yin, C. (2003). *Coolies.* New York: Puffin.

Adapted from Smyer, K. & Westby, C. (2005). Using children's literature to promote self-identity in CLD students. *Perspectives in Languages Learning and Education,* 12, 87-96.

future activities. They suggested that book reports, particularly reports developed by a group rather than an individual, offer an especially helpful context for developing these skills. Harris (1995) emphasized the importance of allowing CLD children to read or hear the whole story before asking any questions, since this holistic approach more closely mirrors a high-context communicative style.

Having a group of children develop an oral or written book report on a book they have read or listened to is valuable for several reasons. First, the book sets the topic and can be used by the teacher to get a child back on topic if an associative remark is made. Having the group negotiate the best way to retell or interpret the story provides valuable experience in applying metacognitive and metalinguistic processing to a text, such as a remembered story, for which there is little contextual support. Looking for characters' strategies, motives, and attempts to carry out intentions, then evaluating the results of characters' attempts, all help focus attention on the planning aspect of human behavior. Westby and Rouse emphasized that the purpose of all these activities is to help CLD children learn how to learn in a low-context culture such as the classroom and to allow them to use the high-context learning styles with which they came to school to acquire that knowledge.

Harris (1995) suggested modifying the timing and rhythm of presentation of material. Teachers and clinicians are encouraged to give CLD children more time to answer questions and to pause after a child's answer before giving an evaluation. These changes are particularly relevant for Native American children who feel speech needs to be considered carefully before a response is given. When these wait times were increased, Winterton (1976) found that Native American children were twice as likely to participate in classroom interactions as when shorter wait times and fewer pauses were used. Modifying rhythm of presentation means talking more slowly and fluidly, with fewer self-interruptions and digressions. Decreasing the rate of presentation of material will probably benefit many students, as well as improving the participation of CLD children.

Cheng (1996) argued that the key to success in working with CLD clients is both to support the students' transition to the classroom culture and to encourage children to make conscious comparisons and contrasts between home and school cultures. This can best be done, according to Cheng, by encouraging CLD students to bring their experiences with the home culture into the classroom conversation. There are several ways to structure these experiential activities.

Roseberry-McKibbin (2008) suggested using a *multicultural calendar.* Here the clinician or teacher would use the typical classroom theme of holidays and special days to incorporate the experience of the CLD child. Each month, mainstream holidays and holidays from the cultures of the CLD children would be marked on the calendar. Weekly or monthly themes for language activities would revolve around these special days. For example, Thanksgiving might be a theme for November. Here, activities around the traditional American celebration would be combined with discussion of harvest festivals of other cultures. CLD children could be asked to find out how the harvest is celebrated in their culture; to share artifacts, pictures, songs, or dances with the class; and to compare how these holidays are observed. Depending on the developmental level of the class, projects might include making group picture books with labels for objects used in American Thanksgiving and other harvest festival celebrations; making greeting cards to send to family members with pictures, ideas, and phrases typically associated with the mainstream and other

holidays; writing recipes and cooking foods associated with each festival; writing descriptions of how to celebrate each holiday; and so on.

Cheng (2002a) pointed out that *map study* provides another opportunity for incorporating the experience of CLD children in the classroom. Maps can be studied to identify the place of birth of each class member or to follow routes of trips that class members have taken (for CLD children, this can include the route to their country of origin). Students can work in groups to make maps of various places associated with their personal experience, such as their house, home town or village, or home country. Life stories can be written and illustrated with maps relevant to each student's story.

Hyter and Westby (1996) suggested the comparative study of *folktales* as another method to bring the CLD child's experience into school. Here, again depending on the developmental level of the group, age-appropriate folktales from mainstream culture can be read. CLD children can be asked whether they know any similar stories. The clinician or teacher may consult in advance with a librarian about parallel stories from different cultures and obtain books that tell parallel tales. *Little Red Riding Hood* and its Chinese version, *Lon Po Po* (Young, 1989), for example, may be read and compared. Paul Galdone's (1970) traditional retelling of *The Three Little Pigs* can be contrasted with *The Three Little Hawaiian Pigs and the Magic Shark* (Laird, 1981) or *The Three Javelinas* (Lowell, 1992). Various culture's renditions of the Cinderella story, such as *Mufaro's Beautiful Daughters* (Steptoe, 1987), *The Talking Eggs* (San Souci, 1989), *Turkey Girl* (in Verlarde, 1989), and *Yeh-Shen* (Louie, 1982), also can be compared. Many West African folktales (Appiah, 1989; McDermott, 1972), too, have parallels in folktales familiar to mainstream students.

Comparative folklore studies have many advantages. They not only bring students' experience into the classroom, but they also allow metalinguistic focus on different ways of telling stories and support narrative development. Cheng suggested doing activities such as having parents tell stories in the native language, having them translated, and having the CLD child retell the story to the class. Collective stories, in which each member of a group retells a part of a story, also can be used. These group stories can be "published" in class books, with the mainstream and CLD child's version side by side. Discussions of similarities and differences can follow. Related activities might have groups generate yet another version of the same story to write, illustrate, and publish.

Hyter and Westby (1996) also encouraged the use of stories as a way to help children learn to take multiple perspectives. For both mainstream and CLD students these activities help us to learn to try to "walk a mile in another's moccasins," or see how things might look from another's point of view.

Multiple perspective activities include the following:

Discussing versions of stories told through different characters' eyes, such as *The True Story of the Three Little Pigs by A. Wolf* (told from the wolf's point of view; Scieszka, 1989) or *The Untold Story of Cinderella* (told from the point of view of the stepsisters; Shorto, 1990).

Discussing controversial topics, such as racial prejudice, through books such as *Roll of Thunder, Hear My Cry* (Taylor, 1975), or *Maniac Magee* (Spinelli, 1990).

Talking about books that give a first person perspective, such as *Hatchet* (Paulsen, 1987) or *Toning the Sweep* (Johnson, 1993).

Reading and talking about "trickster tales," stories that involve deception and the need to distinguish between what is intended and what is said; many cultures have tales of traditional tricksters, including Brer Rabbit (Appalachian; Lester, 1990), Anansi the Spider (West African; McDermott, 1972), Raven (Northwest Native American; McDermott, 1993), Iktomi (Plains Native American; Goble, 1990), and Coyote (Southwest Native American; McDermott, 1994).

Cheng (2002a) also suggested the use of *cultural "capsules"* or *"clusters."* These are elements, activities, and events that are unique to a culture. They might include the African-American Kwanza celebration or the Mexican-American use of piñatas. Items related to cultural clusters or capsules can be displayed and discussed, used for vocabulary development, and incorporated into role-playing activities in which children use language forms appropriate for the objects and events. Scripts can be developed ahead of time and rehearsed, so that students can demonstrate their cultural capsules to an audience such as parents or another group of students. Such scripts also will support the students' development of communicative competence about their own culture.

Mainstream culture capsules also can be included in the intervention program. Here objects and events that may be unfamiliar to the CLD child (such as erasers, rulers, or "lining up") can be introduced and studied as other culture capsules are. This approach brings home the point that there's nothing more "right" or "natural" about the school culture than the home culture. What is important is to know the language and behavior that is expected in each. Again, role-playing and previously developed scripts can be useful to help CLD students interact with the culturally specific materials. Teacher-student, storekeeper-customer, doctor-patient, and other familiar roles can be played out to give CLD students additional experience with the language and organization of commonly occurring activities in the mainstream culture.

Cheng (1989) also suggested using the *"personal weather report"* (Figure 5-5) to help develop vocabulary for emotional expression. Since this is an area in which traditional cultures often differ from our American style of "letting it all hang out," CLD students may need extra help developing a precise and differentiated lexicon of feelings, beyond *happy, sad,* and *mad.* Clinicians can start each session by giving their own personal weather report and asking the students to identify their emotional state on a chart such as the one in Figure 5-5. The label for the chosen emotion can be given, and discussion of the various emotions expressed can be used to compare and contrast the various words and the feelings they represent. Later, figurative uses of words such as "cold" and "warm" to discuss feelings can be added to the activity. Other figurative uses of such words ("That's a hot car!") also might come up. (These activities will also be very helpful for students with autism spectrum disorders).

Scott and Rogers (1996) discussed ways of helping the older CLD student improve writing abilities in the classroom. They emphasized that the writings of CLD students often sacrifice self-expression for the sake of using SAE features. They suggest that students be encouraged to write first for voice and meaning by giving a verbatim transcription of the way the student would convey the message in speech. Through successive editing passes, each attending to only one feature of SAE at a time, the students bridge the gap between their oral speech style and an SAE version. Additional suggestions for SLPs to use in consultation or collaboration with teachers in classrooms with CLD children. These are summarized in Box 5-16.

CONCLUSIONS

We started our discussion of multicultural issues in child language disorders with the reminder that, despite our differences, we are all Americans. Most of us who are SLPs now have ancestors who, at some point, were newcomers to this country and spoke little English, too. Most of us have lost the languages with which our families came to these shores. That has some advantages, like the fact that we can all talk to each other in a rich common tongue that has borrowed elements from many of the languages our families brought here. But the loss of the old languages is sad, too. So many of us are now monolingual, which limits our communication in some ways in this ever-smaller world. As we think about our role in helping new arrivals and those who have been excluded from the mainstream to find their place in the bubbling multicultural mixture that is America, we might do well to remember the pluses and minuses of this historical pattern. We certainly want to help and encourage CLD children and their families to develop proficiency in Standard American English, which will give them the broadest opportunities for scholastic and economic success. But at the same time, we might recall the advantages that being bilingual or bicultural can confer. In working with CLD clients, our challenge is to strike a delicate balance. We must provide the tools of SAE communication that will allow participation in the mainstream culture, but we must do so without confiscating the tools of communication that make the life of the individual rich and integrated and the mosaic of our country increasingly vibrant as new elements continue to be added to its texture.

FIGURE 5-5 Personal weather report. (Reprinted with permission from Cheng, L. [1989]. Intervention strategies: A multicultural approach. *Topics in Language Disorders, 9*[3], 91.)

| Anxious | Confident | Determined | Jealous | Lonely | Mischievous |
| Disgusted | Frustrated | Hurt | Pained | Sad | Satisfied |

BOX 5-16 Suggestions for Multicultural Teaching Methods to Support All ELLs in Classrooms

Adapt classroom materials, using culturally familiar names, objects, and events.

Bridge vocabulary development by providing some information and expansion on new English words in the home language.

Build on prior knowledge.

Develop cooperative learning groups; allow groups to work first in home language, then move to English.

Employ peer tutoring and mediation.

Employ role-playing.

Focus on communication in reading and writing.

Integrate culturally based stories.

Provide context and background information.

Provide word maps.

Provide written materials in both English and the first language.

Read aloud to students throughout the elementary grades.

Use a variety of narrative styles (recounts, event casts, etc.).

Use a variety of social organizations for classroom activities; pairs, continuing groups, reshuffling groups.

Incorporate culturally appropriate materials to new curricular topics and themes.

Use dialogue journals in which teacher/clinician responds to, rather than corrects, student writing.

Use language experience stories, in which the teacher writes down students' oral narratives.

Use scripts.

Use semantic webs.

Use social and pragmatic activities.

Use visual and contextual supports by presenting information in spoken, written, and graphic modes.

Use "What I know" charts.

Develop a bicultural approach.

Talk about differences between "home talk" and "school talk."

Encourage extracurricular activities that come from the home culture and that expose children to mainstream culture activities.

Encourage high levels of interaction between CLD and mainstream students, or students with different CLD backgrounds.

Include a strong parental and community involvement component.

Adapted from Faircloth, S. C., & Pfeffer, R. (2008). Collaborating with tribal communities and families to improve the social, emotional, and linguistic competence of young indigenous children. *Perspectives on Communication Disorders and Sciences in Culturally and Linguistically Diverse Populations, 15*(1), 19-26; Goldstein, B. (2000). *Cultural and linguistic diversity resource guide for speech-language pathology.* San Diego: Singular Publishing Group; Inglebret, E., Jones, C., & Pavel, D. M. (2008). Integrating American Indian/Alaska native culture into shared storybook intervention. *Language, Speech, and Hearing Services in Schools, 39(4),* 521-527; Lugo-Neris, M. J., Jackson, C. W., & Goldstein, H. (2010). Facilitating vocabulary acquisition of young English language learners. *Language, Speech, and Hearing Services in Schools, 41(3),* 314-327; Roseberry-McKibbin, C. (2008). *Multicultural students with special language needs.* Oceanside, CA: Academic Communication Associates; Thordardottir, E. (2005). Language intervention from a bilingual mindset. *Perspectives on Communication Disorders and Sciences in Culturally and Linguistically Diverse Populations, 12(2),* 17-22; van Kleeck, A. (September 25, 2007). Home talk and school talk: Helping teachers recognize cultural mismatch. *ASHA Leader.*

STUDY GUIDE

I. An Introduction to Cultural Diversity
  A. Define bicultural education.
  B. Distinguish a language difference from a language disorder.
  C. Describe some of the factors that contribute to the unique style of communication used by African-Americans.
  D. List and discuss differences between AAE and Standard American English.
  E. Define bidialectical.
  F. Discuss the meaning and importance of code-switching.
  G. What is meant by limited English proficiency?
  H. Describe some characteristics of Spanish-influenced English.
  I. Discuss some features of Native American dialects of English.
  J. List some features of Asian and Arabic dialects of English.
  K. Describe the contrasts between high-context and low-context communication. How are these styles associated with CLD children? How do they affect narrative skill?

II. Assessing Culturally and Linguistically Different Children
  A. How can language dominance be established? Why is it important to establish it?
  B. How can interview data be obtained from families of CLD children if the clinician does not speak their language?
  C. Discuss the appropriate uses of standardized tests with CLD children.
  D. What are some appropriate modifications to make if standardized tests are not available in the client's dominant language? What are inappropriate modifications? How can the results of these modifications of tests be interpreted properly?
  E. Describe the Parent-Child Comparative Analysis procedure. Under what circumstances would it be used?
  F. Discuss the use of speech sample analysis with the CLD child. How can it be done if the clinician does not speak the child's dominant language? How can it be used to differentiate limited English proficiency from a language disorder?
  G. Explain what the Minimal Competency Core means. Give elements of this core for preschool speakers of AAE.
  H. How can dynamic assessment be used with CLD children?
  I. What are the uses of behavioral observation with the CLD child?
  J. What is ethnographic assessment, and how can it be used in the evaluation of a CLD child?

III. Language Intervention and the CLD Child
  A. What are the service delivery options for a CLD child whose dominant language is not English when the clinician is monolingual in English?
  B. What is the SLP's role with the normally developing child who has LEP or a nonstandard dialect of English?
  C. Describe a general approach to improving proficiency in SAE for children with LEP or nonstandard dialects. Give several specific examples of activities that might be used in such a program.
  D. Describe several approaches and activities for making instruction culturally appropriate for CLD children.

5-1 Idea Issue Brief

CULTURALLY AND LINGUISTICALLY DIVERSE STUDENTS

What the 2006 IDEA Part B Final Regulations Say:

The 2006 IDEA regulations continue to support appropriate service delivery to culturally and linguistically diverse (CLD) populations. Areas of practice that remain the same include the following:

Assessment and other evaluation materials should not be racially or culturally discriminatory.

Assessment and other evaluation materials are to be provided in the child's native language or other mode of communication unless it is clearly not feasible to do so.

A child must not be determined to be a child with a disability if the determinant factor is lack of appropriate instruction in reading or math, or limited English proficiency.

Parents are entitled to an interpreter at the IEP meeting if needed to ensure that the parents understand the proceedings.

When developing an IEP, in the case of a child with limited English proficiency, the language needs of the child as they relate to their IEP must be considered.

An addition to the 2006 regulations on evaluation procedures (§300.304) requires that assessment and other evaluation materials are administered "in the form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally." For CLD students, the "form" in which evaluation procedures are administered will vary. The addition of this new language emphasizes the allowance of variance from standard testing procedures, when necessary, in order to appropriately evaluate a student.

Additionally, the 2006 IDEA regulations made significant steps toward addressing problems with inappropriate identification and disproportionate representation by race and ethnicity of children as children with disabilities. A provision was added requiring states to review ethnicity data in addition to race data to determine the presence of disproportionality (§300.646). In the event that significant disproportionality is determined, the state will not only be required to review and revise policies, procedures, and practices, but also will require the local education agency (LEA) to reserve the maximum amount of funds under §613(f) of the statute to provide early intervening services to children in the LEA, "particularly, but not exclusively" to those in groups that were significantly over-identified. The LEA also will be required to publicly report on the revision of policies, practices, and procedures. These regulations clearly define steps that states must take to address the problem of disproportionality in special education. In particular, mandating that funds under §613 (f) are to be used for early intervening services is an excellent strategy for states with this problem. Research has shown that early intervening strategies assist in reducing the number of inappropriate referrals to special education. Long-term effects of reducing disproportionality using early intervening services include reduced paperwork as well as a reduced caseload for special education personnel.

Implications for ASHA Members

The statute, IDEA 2004, continues to emphasize the need for appropriate evaluation procedures for CLD students. The 2006 regulations emphasize the allowance of variance from standard testing procedures when necessary to appropriately evaluate a student. Use of nonstandardized testing procedures, such as portfolio assessments or spontaneous language samples, can provide valuable qualitative information on the child's communication skills. When evaluating English language learner (ELL) students, it is important for speech-language pathologists (SLPs) to carefully review the child's language history to determine the language of assessment. If it is determined that the child should be evaluated in a language other than English, the SLP must use all available resources, including interpreters when necessary, to appropriately evaluate the child. In addition, states are facing more stringent repercussions if their school districts are found to have a disproportionate number of CLD students in special education. SLPs will need to ensure that their assessment strategies for these students in particular are appropriate and that they yield the most reliable results.

What ASHA Members Can Do

ASHA members must ensure that their assessments for all students, especially CLD students, are appropriate and yield valid results. SLPs and audiologists must advocate at the state and local levels for identification, assessment, and eligibility policies and procedures for CLD students to assist in eliminating the issues of disproportionality. ASHA members must also advocate for inclusion in the development and provision of early intervening services at www.asha.org/members/slp/schools/prof-consult/RtoI.htm and www.asha.org/about/leadership-projects/multicultural/issues/da/. Research has shown that early intervening strategies assist in reducing the number of inappropriate referrals to special education. Long-term effects of reducing disproportionality using early intervening services include reduced paperwork, as well as a reduced caseload for special education personnel. ASHA members are encouraged to continue developing the knowledge and skills needed to provide culturally and linguistically appropriate services, as well as advocate for resources in order to provide effective services. ASHA has a number of resources on its Web site at www.asha.org/about/leadership-projects/multicultural/ that focus on service delivery to CLD populations. There are also a number of continuing education programs that provide information on best practice for working with ELL students, bilingual populations, and other CLD students.

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A Sample of Multicultural Tests and Assessment Materials

Name	Description	Available from
African-American English: Structure and Clinical Implications (Adger, Schilling-Estes, & Wolfram, 2003)	Assesses phonological, grammatical, and pragmatic characteristics of AAE in school-age children. Includes an interactive CD-ROM and manual. Aids understanding of the structure, features, and rules of AAE, in order to work more effectively with children who speak vernacular dialects.	American Speech-Language and Hearing Association 10801 Rockville Pike Rockville, MD 20852
All India Institute of Medical Sciences Test for Auditory Comprehension of Language; All India Institute of Medical Sciences Test of Articulation (S. Bhatnager)	Instrument for diagnosing speech and language disorders in Hindi.	Subhash Bhatnagar Dept. of Communicative Disorders College of Liberal Arts University of Mississippi University, MS 38677
Ann Arbor Learning Inventory—Revised (AALI-R) (B. Vitale and W. Bullock) (Available in Spanish)	Assesses skills important to learning, such as visual discrimination, visual memory, auditory discrimination, and auditory memory. Valuable for determining the best form of instruction for a child with disabilities. Offers comprehensive and detailed examination of skills that underlie reading, writing, speaking, listening, and spelling. Grades K-8.	Academic Therapy Publications 20 Commercial Blvd. Novato, CA 94949
Assessment Instrument for Multicultural Clients (S. Adler)	A criterion-referenced instrument for examining a broad range of 22 communication behaviors in children with LEP.	In Adler, S. (1991). Assessment of language proficiency in LEP speakers. *Language, Speech, and Hearing Services in Schools*, *22(2),* 12-18.
Assessment of Phonological Processes (B. Hodson) (Available in Spanish)	Identifies error patterns while deemphasizing differences related to dialect variations.	Los Amigos Research Associates 7035 Galewood, Suite D San Diego, CA 97120
Basic Inventory of Natural Language (C. Herbert) (Available in Spanish and 31 other languages)	Used for grades K-12. A language sample is scored for fluency, complexity, and average sentence length.	CHECpoint System, INC. 1520 N. Waterman Ave. San Bernardino, CA 92404
Ber-sil Spanish Test (M. Beringer) (Available in Philippine, Tagalog, Ilokano)	Also available in Cantonese, Mandarin, Korean, Persian. Assessment of receptive vocabulary for ages 5-12 years (elementary) and 13-17 years (secondary).	Ber-Sil Co. 3412 Seaglen Dr. Rancho Paols Verdes, CA 90274
Bilingual Classroom Communication Profile (C. Roseberry-McKibbin)	Observational screening tool to help classroom teachers distinguish communication differences from communication disorders.	Academic Communication Associates PO Box 566249 Oceanside, CA 92056
Bilingual Language Proficiency Questionnaire (L. Mattes and G. Santiago)	Parent interview questionnaire regarding bilingual children's development and use of speech and language. Items listed in both English and Spanish.	Academic Communication Associates, Publications Divisions, Dept. 2C PO Box 6044 Oceanside, CA 92056
Bilingual Syntax Measures I and II (M. Burt and H. Dulay)	Identifies students' mastery of oral syntactic structures in English and/or Spanish. Pre-K to 12th grade.	Harcourt Assessment 19500 Bulverde Rd. San Antonio, TX 78259
Bilingual Syntax Measures—Chinese and Tagalog (C. Tsang)	Test of language dominance in Chinese/Tagalog speakers.	Asian-American Bilingual Center 2134 Martin Luther King Jr. Way Berkeley, CA 94709

Continued

Name	Description	Available from
The Bilingual Verbal Ability Tests (BVAT) (A.F. Moñoz-Sandoval, J. Cummins, C.G. Alvarado, and M.L. Ruef)	Assesses the following in people 5 years old to adult: Cognitive Ability; Picture Vocabulary, Oral Vocabulary, and Verbal Analogies. Comprised of three subtests from the Woodcock-Johnson−Revised Tests of Cognitive Ability; Picture Vocabulary, Oral Vocabulary, and Verbal Analogies. These three subtests have been translated from English into eighteen languages. The languages available in BVAT are Arabic; Chinese, Simplified; Chinese, Traditional; French; German; Haitian-Creole; Hindi; Hmong; Italian; Japanese; Korean; Navajo; Polish; Portuguese; Russian; Spanish; Turkish; Vietnamese.	Riverside Publishing Company 425 Spring Lake Dr. Itasca, IL 60143
Bilingual Vocabulary Assessment Measure (L. Mattes) (Available in Spanish, French, Italian, Chinese, Vietnamese)	Initial screening for expressive vocabulary.	Academic Communication Associates PO Box 566249 Oceanside, CA 92056
Black English Scoring System (N. Nelson)	Speech sample analysis for Black English speakers; an adaptation of the Developmental Sentence Scoring procedure.	Nelson, N. (1998). In Appendix C of *Child language disorders in context.* Columbus, OH: Merrill Publishers
Boehm Test of Basic Concepts—3 (A. Boehm)	Designed to measure children's mastery of basic concept vocabulary. The test manual and instruments are available in Spanish.	Harcourt Assessment 19500 Bulverde Rd. San Antonio, TX 78259
Bracken Basic Concept Scale—Revised (Bracken, 2006) (Available in Spanish)	Assess 258 basic concepts including color, quantity, shapes. Spanish version for criterion-referenced use only.	Harcourt Assessment 19500 Bulverde Rd. San Antonio, TX 78259
Bracken School Readiness Assessment (B. Bracken)	Assesses the following concepts in children 2:6-7:11 yr: Colors, Letters, Numbers/Counting, Sizes, Comparisons, and Shapes. National norms are provided for English only, but Spanish norms can be developed for local Spanish-speaking population. Includes information on how to develop local norms.	Harcourt Assessment 19500 Bulverde Rd. San Antonio, TX 78259
Brigance Diagnostic Assessment of Basic Skills—Spanish Edition (Brigance)	Constructed using the comprehensive Inventory of Basic Skills (not a direct translation).	Curriculum Associates 153 Rangeway Rd. North Billerica, MA 01862
Brigance Diagnostic Assessment of Basic Skills, Portuguese Edition (H. Groomsman)	Adaptation of the Brigance Test.	Dr. Herbert Groomsman, Director of the Bilingual/ Multicultural Special Education Programs Division of Special Education and Rehabilitation Services San Jose State University San Jose, CA 95192
Chinese Oral Proficiency Test	Test of oral comprehension and word association in Chinese and English for children in grades K−6.	The National Hispanic University 255 East 14th St. Oakland, CA 94606
Chinese Test, Chinese Literature and Cultural Test, Chinese Bilingual Test (Metcalf)	Test and materials for use with speakers of Chinese.	Chinese Bilingual Project San Francisco Unified School District San Francisco, CA 94102
Clinical Evaluation of Language Fundamentals—4 (CELF–4; Semel, Wiig, & Secord) (Available in Spanish)	CELF–4 Spanish has been enhanced to better address the needs of clinicians who serve Spanish-speaking children and young adults. CELF–4 Spanish was developed specifically for Spanish speakers living in the U.S. as a parallel test to the English edition of CELF–4. It is *not* a translation of the English edition of CELF–4. Test items incorporate grammatical forms appropriate for Spanish speakers and themes familiar to Spanish speaking students.	Harcourt Assessment 19500 Bulverde Rd. San Antonio, TX 78259
Compton Speech and Language Screening Evaluation: Spanish Adaptation of Revised Edition (A. Compton and M. Kline)	Measure of speech and language in Spanish-speaking children, ages 3-6 yr.	Carousel House PO Box 4480 San Francisco, CA 94101

Name	Description	Available from
Denver Developmental Screening Test II—Spanish (W. Frankenburg et al.)	Determines whether a child's development is within normal range. Identifies children ages 1 mo to 6 yr likely to have motor, social, and/or language delays.	Denver Developmental Materials PO Box 371075 Denver, CO 80237
Developing Skills Checklist (DSC) (C.K. Tanner) (Available in Spanish)	Comprehensive checklist that evaluates a wide range of skills in children in pre-K and kindergarten. Measures language, mathematical concepts and operations, fine and gross motor skills, visual memory, auditory skills, printing, and writing.	CTB/McGraw-Hill PO Box 150 Monterey, CA 93942
Developmental Assessment of Spanish Grammar (A. Toronto)	A language-analysis procedure for Spanish-speaking children; an adaptation from the Developmental Sentence Scoring procedure in English.	In Toronto, A.S. (1976). Developmental assessment of Spanish grammar. *Journal of Speech and Hearing Disorders, 41,* 150-171.
Diagnostic Evaluation of Language Variation (DELV; Seymour, Roeper, & de Villiers, 2005)	A diagnostic instrument to assess the status of four language domains (i.e., Phonological, Syntactic, Semantic, and Pragmatic) in children ages 4:0–9:11 with assessment that is unbiased for AAE speakers.	The Psychological Corporation 19500 Bulverde Road San Antonio, TX 78259
Developmental Indicators for the Assessment of Learning—3 (DIAL-3; C. Mardell-Czudnowski and D. Goldenberg) (Available in Spanish)	Screens development in motor, concept, language, self-help, and social function areas. Identifies children ages 3-7 yr who are likely to need special services.	American Guidance Service 4201 Woodland Rd. Circle Pines, MN 55014
Developmental Programming for Infants and Young Children (D. Schafer, M. Moersch, and D. D'Eugenio) (Available in Spanish)	Assesses function and facilitates development of children, ages birth to 6 yr, in six areas: perceptual/fine motor, cognition, language, social/emotional, self-care, and gross motor.	University of Michigan Press PO Box 1104 Ann Arbor, MI 48106
Diagnostic Evaluation of Language Variation (DELV-Criterion Referenced) (H.N. Seymour, T.W. Roeper, and J. de Villiers)	Assesses comprehensive speech and language, including pragmatics, syntax, semantics, and phonology in 4- to 9-yr-olds. Helps distinguish language differences from language disorders. Criterion-referenced scoring.	Harcourt Assessment 19500 Bulverde Rd. San Antonio, TX 78259
Dos Amigos Verbal Language Scale (D. Critchlow)	Assesses language functioning in English and Spanish students between the ages of 5 and 13 yr.	United Educational Service Box 605 East Aurora, NY 14052
Early Literacy Skills Assessment (ELSA; DeBruin Parecki, 2007)	ELSA is a criterion-referenced test for use with children ages 3:0–5:11. The test is relatively short (15-20 min) and is designed to assess early literacy skills believed to be associated with later reading achievement. Spanish Version available.	High/Scope Educational Research Foundation 600 North River St. Ypsilanti, MI 48198
El CIRCO Assessment Series	Assesses comprehension of mathematical concepts and basic linguistic structures in Spanish and English. Also screens facility in Spanish before administration. Developed for Spanish-speaking children from Mexican-American, Puerto Rican, and Cuban backgrounds.	CTB/McGraw-Hill Del Monte Research Park Monterey, CA 93940
Evaluating Communicative Competence (C. Simon) (Available in French-Canadian)	Ages 10 years and older. Uses a series of 21 receptive and expressive language tasks to document a profile of functional communication proficiency.	Thinking Publications 424 Galloway St. Eau Claire, WI 54703
Expressive and Receptive One-Word Picture Vocabulary Test— Spanish-Bilingual Edition (R. Brownell, Ed.)	Offers an assessment of expressive vocabularies of individuals who are bilingual in Spanish and English. By permitting examinees to respond in both languages, this test assesses total acquired vocabulary. The tests are co-normed on a national sample of Spanish-bilingual individuals ages 4 years, 0 months through 12 years, 11 months. Record forms include acceptable responses and stimulus words in both languages.	Academic Therapy Publications 20 Commercial Blvd. Novato, CA 94949
Get Ready to Read! Revised (Whitehurst & Lonigan)	A screening tool to evaluate readiness for learning to read and write. Specifically developed for preschoolers, the test has been evaluated for its reliability, factor structure, relationship with other literacy assessments, and consistency across children from low- and middle income backgrounds. Backed by the National Center for Learning Disabilities, the instrument has been field-tested in early childhood programs. In Spanish.	Pearson Assessments 19500 Bulverde Road San Antonio, TX 78259-3701

Name	Description	Available from
Stanford English Language Proficiency Test (Harcourt Assessment)	A criterion-referenced assessment of English language proficiency designed for English language learners in Grades K–12. The test is based on the 1997 version of the standards of the Teachers of English to Speakers of Other Languages (TESOL) and on individual state standards for English as a Second Language (ESL). Its primary purpose is to determine whether the student possesses the English language skills necessary to function in instructional settings in English.	Harcourt Assessment, Inc. 19500 Bulverde Road San Antonio, TX 78259-3701
IPT 2004 Language Proficiency Tests	Grades pre-K–12, available in English and Spanish. Assesses oral, reading, and writing proficiency. Scoring software available.	Ballard and Tighe, Publishers P.O. Box 219 Brea, CA 92821-0219
Language Assessment Scales—Oral (LASA-O) (S. Duncan and E. deAvila)	Assesses oral language proficiency in English and Spanish. Available at three levels: Pre-LAS for preschoolers, LAS I for grades K-5, and LAS II for grades 6-12.	CTB/McGraw-Hill Del Monte Research Park Monterey, CA 93940
Language Experience and Proficiency Questionnaire (LEAP-Q; Marian, V., Blumenfrel, H., & Kaushanskaya)	Designed to assess bilingual individuals' linguistic profiles. It is used to assess bilingual experience and proficiency profiles in first and second languages and is a self-report questionnaire. It can be used with adolescent and adult bilinguals and multilinguals.	Journal of Speech, Language, and Hearing Research, 50, 940-67.
Lindamood Auditory Conceptualization Test—Spanish Version (C. Lindamood and P.C. Lindamood)	Criterion-referenced test that measures phonological awareness and segmentation skills. Examiner's cue sheet for testing Spanish-speaking subjects.	DLM Teaching Resources 1 DLM Park Allen, TX 75002
Logramos (Riverside Publishing)	Assesses reading, language, and math in K-12th grades. Standardized test designed to measure the academic progress of Spanish-speaking students. Depending on grade level, can require up to 8 subtests to be administered.	Riverside Publishing Company 425 Spring Lake Dr. Itasca, IL 60143
Look Listen and Tell: A Language Screening Instrument for Indian Children	Language screening device for Native American children ages 3-7 yr. Can be used by child-care workers without training in speech-language pathology. It is not standardized.	Southwest Communication Resources, Inc. PO Box 788 Bernalillo, NM 87004
MacArthur Inventarios del Desarrollo de Habilidades Comunicativas (Inventarios) (Translated and adapted by Jackson-Maldonado, Bates, & Thal, 2005)	Assesses expressive and receptive vocabulary sizes and early grammatical production in infants 8-30 mo. Parent-report instrument. Reports good validity when compared with direct observation measures. The CDIs (English version of instrument) were normed on approximately 1800 children in three locations, and the Inventarios were normed on more than 2000 children. CDIs are also available in several other languages.	Paul H. Brookes P.O. Box 10624 Baltimore, MD 21285-0624
Medida de Sintaxis Bilingue, I and II (Bilingual Syntax Measure, I and II [BSM]) (M. Burt, H. Dulay, and E. Chavez)	Uses pictures and questions to elicit language samples to be analyzed for proficiency levels in English and Spanish. BSM is available at two levels: BSM I for grades K-2, BSM II for grades 3-12.	Harcourt Assessment 19500 Bulverde Rd. San Antonio, TX 78259
Medida Espanola de Articulacion (Spanish Articulation Measure) (M. Aldrich-Mason, B. Figueroa-Smith, and M. Martinez-Hinshaw)	Assesses early development of phonemes in Spanish.	Martha Lerma San Ysidro School District 4350 Otay Mesa Rd. San Ysidro, CA 92073
Multicultural Vocabulary Test (G. Trudeau)	Test expressive vocabulary of body parts in any language. Yields age equivalents 3-13 yr.	Los Amigos Research Associates 7035 Galewood, Suite D San Diego, CA 92120
The Oral Language Acquisition Inventory & The Oracy Instructional Guide (OLAI; L. Gentile)	Provides information about the most common language structures children use expressively and shows clinicians to how elicit meaningful conversation and develop prompts that expand and refine language with English-language learners and children who could benefit from language instruction.	Pearson Assessments 19500 Bulverde Road San Antonio, TX 78259-3701
PAL Oral Language Dominance Measure (R. Apodaca)	Picture descriptions yield information for determining oral language proficiency in English or Spanish.	Susie Snyder El Paso Public Schools PO Box 2100 El Paso, TX 79998

Name	Description	Available from
Parents' Observations of Infants and Toddlers. (POINT; Mardell, & Goldenberg)	To be completed by one or two parents/guardians and/or one or two caregivers; Spanish version available; standardized in Spanish and English. POINT is a 128-item reporting tool for parents and primary caregivers of children ages 2-36 mo. It is targeted to chart normal developmental milestones and to screen for current or potential problems in cognitive, physical, social-emotional, language, or school readiness development.	Master Publishing, Inc. 6125 West Howard St. Niles, IL 60714-3401
Preschool Language Assessment Instrument: The Language of Learning in Practice−Spanish Language Edition (M. Blank, S. Rose, and L. Berlin)	Assesses 3- to 6-year-olds' ability to name, imitate, sequence, match, define, predict, remember, and describe. Provides information on how children handle language demands of the classroom and how to effect appropriate programming.	The Speech Bin 213 Clarksville Rd. PO Box 218 Princeton Junction, NJ 08550-0218
Preschool Language Scale (PLS-5) (I. Zimmerman, V. Steiner, and R. Pond) (Available in Spanish)	Diagnostic measure of receptive and expressive language. Subtests measure grammar, vocabulary, memory, attention span, temporal and spatial relations, and self-image. Record forms are available in English and Spanish (Mexican-American).	The Psychological Corporation PO Box 9954 San Antonio, TX 78204
Prueda Del Desarrollo Initial Del Lenguaje (W. Hresko, D. Reid, and D. Hammill) (Tests speakers of Spanish)	Measures spoken language, expressive and receptive syntax, and semantics in Spanish.	Pro-Ed, Inc. 8700 Shoal Creek Blvd. Austin, TX 78757-6897
Receptive One-Word Picture Vocabulary Test−Spanish-Bilingual Edition (R. Brownell, Ed.)	Offers an assessment of receptive vocabularies of individuals who are bilingual in Spanish and English. By permitting examinees to respond in both languages, this test assesses total acquired vocabulary. The test is co-normed on a national sample of Spanish-bilingual individuals ages 4:0-12:11. Record forms include acceptable responses and stimulus words in both languages.	Academic Therapy Publications 20 Commercial Blvd. Novato, CA 94949
Scales of Independent Behavior—Revised (SIB-R) (R. Buininks, R. Woodcock, R. Weatherman, and B. Hill) (Available in Spanish)	Assesses four adaptive behavior clusters: motor skills, social and communication skills, personal living skills, and community living skills. Ages birth to adult.	Riverside Publishing Company 425 Spring Lake Dr. Itasca, IL 60143
Screening Kit of Language Development (SKOLD) (L. Bliss and D. Allen)	Assesses preschool language development and aids in early identification of language disorders/delays in speakers of Standard English and AAE.	Slosson Educational Publications PO Box 280 East Aurora, NY 14052
Screening Test of Spanish Grammar (A. Toronto)	Used to identify Spanish-speaking children with grammatical difficulties who need further evaluation.	Northwestern University Press 1735 Benson Ave. Evanston, IL 60201
Spanish Articulation Measures—Revised Edition (L. Mettes)	A criterion-referenced measure using spontaneous and elicited tasks to assess speech sound production and use of phonological processes. For school-age Spanish-speaking children.	Academic Communication Associates Publications Division Department 2C PO Box 6044 Oceanside, CA 92056
Spanish Assessment of Basic Education—Second Edition (SABE-2) (CTB Macmillan/McGraw Hill)	Grades 1-8. Norm-referenced measure of Word Attack, Vocabulary, Reading Comprehension, Mechanics, Expression, Mathematics Computation, Mathematics Concepts and Applications, Total Reading, Total Mathematics, Total Battery, Spelling, Study Skills.	CTB Macmillan/McGraw-Hill 2500 Garden Rd. Monterey, CA 93940
Spanish Language Assessment Procedures: A Communication Skills Inventory—Third Edition (Revised) (L. Mattes)	Criterion-referenced measures for assessing vocabulary development, speech sound production, sentence structure, listening, pragmatics, and other aspects of a child's communication.	Academic Communication Associates Publications Division Department 2C PO Box 6044 Oceanside, CA 92056
Spanish Oral Language Screening Instrument	A screening instrument for examining language skills in Spanish-speaking children; grades K-6.	The National Hispanic University 255 E. 14th St. Oakland, CA 94606
Spanish Test for Assessing Morphologic Production (STAMP; T. Nugent, K. Shipley, and D. Provencio)	Assesses production of plurals, verb endings, and other structures as children complete sentences related to the action in pictures. Ages 5-11 yr.	Academic Communication Associates P.O. Box 566249 Oceanside, CA 92056

Name	Description	Available from
Spotting Language Problems: Pragmatic Criteria for Language Screening (J. Damico and J. Oller)	A language-screening instrument with a pragmatic focus; for use with English-speaking, bilingual, or LEP children. In-service training suggestions for teachers also are provided.	Los Amigos Research Associates 7035 Galewood, Suite D San Diego, CA 92120
Structured Photographic Expressive Language Test—II and P (E. Werner and J. Krescheck) (Available in Spanish)	Test of expressive language for Standard English or African-American English speakers. Available for preschoolers or elementary age children. Spanish version also available.	Janelle Publications PO Box 12 Sandwich, IL 60548
Test de Vocabulario en Imagenes Peabody (L. Dunn, D. Lugo, E. Padilla, and L. Dunn)	Contains items from PPVT-R, selected for universality and appropriateness is Spanish.	American Guidance Service 4201 Woodland Rd. Circle Pines, MN 55014
Test for Auditory Comprehension of Language: English and Spanish Forms—3 (E. Carrow-Woolfolk)	Designed for use with children aged 3-6 yr to measure receptive language in English or Spanish.	Pro-Ed, Inc. 8700 Shoal Creek Blvd. Austin, TX 78757-6897
Test of Auditory Perceptual Skills—Revised (TAPS-R; M. Gardner) (Available in Spanish)	For children who have diagnoses of auditory perceptual difficulties, imperceptions of auditory modality, language problems, and/or learning problems.	Academic Therapy Publications 20 Commercial Blvd. Novato, CA 94949
Test of Auditory Processing Skills, Third Edition, Spanish-Bilingual Edition (TAPS-3 SBE; Martin, N., 2009)	An individually administered test of auditory skills used in academic and everyday activities. The test was normed on Spanish-bilingual children from 5 years through 18 years of age. TAPS-3: SBE is intended to be used as part of a battery of tests to determine how children use and understand what they hear. Subtests: auditory figure-ground; word discrimination; phonological segmentation; phonological blending; number memory forward; number memory reversed; word memory; sentence memory; auditory comprehension; auditory reasoning.	Academic Therapy Publications, 20 Commercial Boulevard Novato, CA 94949
Test of Auditory Reasoning and Processing Skills (TARPS; M. Gardner) (Available in Spanish)	Age range 5-14 years. Assesses ability to think, understand, reason, and make sense out of what a child hears. Evaluates how children understand, interpret (process), draw conclusions, and make inferences from auditory information.	Slosson Educational Publications PO Box 280 East Aurora, NY 14052
Test of Phonological Awareness in Spanish (TPAS; C.A. Riccio, B. Imhoff, J. E. Hasbrouck, and G.N. Davis)	Measures phonological awareness skills in Spanish-speaking children ages 4-10:11 yr. Normed on over 1000 Spanish-speaking children. Internal consistency reliabilities from 0.87 to 0.98, test-retest reliability for composite scores are above 0.80.	Pro-Ed, Inc. 8700 Shoal Creek Blvd. Austin, TX 78757-6897
Test of Early Language Development—Third Edition: Spanish Version (TELD-3:S; Ramosm Ramos, Hresko, Reid, & Hammill, 2007)	Based on a translation and adaptation of the Test of Early Language Development—Third Edition (TELD-3; Hresko, Reid, & Hammill, 1999). It evaluates the early language development of Spanish-speaking young children (i.e., monolingual or Spanish-dominant) between the ages of 2 yr and 7:11 yr.	Pro-Ed, Inc. 8700 Shoal Creek Blvd. Austin, TX 78757-6897
Vineland Adaptive Behavior Scales—II (S. Sparrow, D. Balla, and D. Cicchetti) (Available in Spanish—interview forms and reports to parents/caregivers only)	Assesses performance of daily activities required for personal and social self-sufficiency. Ages birth-90 yr.	American Guidance Service 4201 Woodland Rd. Circle Pines, MN 55014
Woodcock-Munoz Language Survey—Revised (R. Woodcock and A. Muñoz-Sandmal) (Available in Spanish)	Measures cognitive, academic, and language proficiency. Assesses picture vocabulary, verbal analogies, letter-word identification, and dictation as measures of oral language, reading, and writing domains.	Riverside Publishing Company 425 Spring Lake Dr. Itasca, IL 60143
Woodcock Language Proficiency Battery—Revised (R. Woodcock) (English and Spanish forms available)	Measure of oral and written language skills, receptive and expressive semantics.	Riverside Publishing Company 425 Spring Lake Dr. Itasca, IL 60143
Zuni Articulation Test	Alphabet book adapted for use as a stimulus for articulation testing. Picture and word stimuli for sounds in initial and medial positions are provided. Several pictures are presented for each sound. Training in test administration procedures is required.	Zuni Public School District Speech and Language Therapy Program PO Box Drawer A Zuni, NM 87327

Name	Description	Available from
Zuni Language Screening Instrument	Assesses language proficiency in the Zuni language for children in grades K−12. Both receptive and expressive language are measured, and a language sample can be obtained. Instructions have been taped in Zuni; age-appropriate language samples obtained from the test's picture sequence stories are provided for comparison with assessment data collected. Training is required in test administration procedures.	Zuni Public School District Speech and Language Therapy Program PO Box Drawer A Zuni, NM 87327

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CHAPTER

6

Assessment and Intervention in the Prelinguistic Period

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. Discuss the principles of family-centered practice for infants and newborns.
2. Describe the elements required for service plans for prelinguistic clients.
3. List risk factors for communication disorders in infants.
4. Discuss the principles of assessment and intervention for high-risk infants and their families in the newborn intensive care nursery.
5. Describe methods for assessment and intervention for preintentional infants and their families: 1 to 8 months.
6. Describe assessment and intervention for infants at prelinguistic stages of communication: 9 to 18 months.
7. Discuss the issues relevant to communication programming for older prelinguistic clients.
8. Describe assessment and intervention strategies for prelinguistic children with autism spectrum disorders.

Janice was born with Down syndrome (DS) 8 weeks before her due date. She weighed less than 4 pounds and had to spend 1 month in the hospital before she was able to go home. She developed respiratory distress syndrome and needed to be intubated and placed on a ventilator for 2 weeks. Her mother had to travel back and forth every day from her home outside the city to visit her, and she had to find someone to care for her other two preschoolers each

time. She had arranged for a 6-week maternity leave at her job; as the end of the leave grew nearer, she became more and more worried that she would lose her position if she couldn't go back on time. She was able to get another 6 weeks to allow her to get the baby settled at home, but she didn't see how she could manage to go back to work even then. Janice's father worked in a glass factory and was working double shifts to keep up with the family's co-pays on the doctor bills. He hardly saw Janice when she was in the hospital.

When she came home, Janice weighed just 5 pounds. The tube had been removed and she was able to breathe without a ventilator, but she seemed so tiny and fragile and had been so sick that her mother was frightened to be away from the medical setting, even though she was glad to be able to stop running back and forth between there and home. Janice had trouble sucking; feeding her took close to 1 hour, and even so she needed a bottle every 3 hours or so. Her mother was frazzled with trying to get enough milk into Janice to keep her growing and still pay some attention to the other two children. She found she was hardly doing anything with Janice but giving her bottles and trying desperately to get other things done in the short time she had between feedings. And always in the back of her mind was the question: Janice was going to be retarded—how could this have happened? Could she love a child who was so different? How would she and her family manage to raise a handicapped child? Would she grow like the other children and learn to walk and talk and play? Her husband was anxious about the expenses at the hospital and resentful that Janice's mother was so exhausted that she could barely talk to him the few hours a day he was home, let alone cook a meal or get the laundry done.

FAMILY-CENTERED PRACTICE

Janice is one kind of baby who is at risk for language and communication disorders. There are many kinds of risk (see Paul & Roth, 2011); what they have in common is their impact, not only on the infant but also on the family. The burden of caring for and fostering the development of infants at risk for communication disorders falls on their families, who may already be experiencing a great deal of stress. Even caring for a healthy newborn is hard work. Imagine how much harder that work becomes when it is done in the context of constant anxiety about the infant's well-being and future. When we deal with infants at risk for communication disorders we are dealing with the family in which the infant finds a home. Although this is true for every client we see, it is especially true for the very youngest of our charges, who depend on the adults in their environment for every aspect of their existence. When thinking about the needs of the high-risk infant, we need to think about the needs of the family, too, to provide that infant with the best environment for growth and development. A variety of resources are available to help clinicians develop family-centered practice skills. Bruns and Steeples (2001)and Crais (1991), for example, made some suggestions for strategies to be used in family-centered practice. These strategies are summarized in Appendix 6-1. Additional resources include Andrews and Andrews (1990), Crais and Calculator (1998), Dinnebeil and Hale (2003), Donahue-Kilburg (1992), Griffin (2006), and McWilliams (1992).

SERVICE PLANS FOR PRELINGUISTIC CLIENTS

Recent changes in federal policy have helped to move clinicians in the direction of family-centered practice. Public Law 99-457, part of the Education of the Handicapped Act Amendments of 1986 (Part H), was the landmark legislation that established a discretionary program to help states set up early identification and intervention services for infants, toddlers, and their families. These were incorporated into the 1997 reauthorization of the Individuals with Disabilities Education Act (IDEA; PL 105-17) and into the 2004 reauthorization. This legislation establishes the requirement for an Individual Family Service Plan (IFSP) for children in the birth-to-3 age range that must include services needed not only to maximize the development of the child but also to optimize the family's capacity to address the child's special needs. The IFSP is similar to an Individual Education Program for a school-aged child, but instead of focusing on the child alone, the IFSP focuses on the child within the context of the family. In addition, the IFSP is a plan for comprehensive services to support the child's development in the context of the family; the IEP is focused exclusively on educational programming. The IFSP should include information about the family's resources, priorities, and concerns for the child's development. The plan, then, also may include some services for the family, such as skilled child care to provide respite for them, or other social services that the family feels are necessary to help them cope with the stress of raising a handicapped child.

The elements that are required by law to be included within an IFSP, according to the 2004 reauthorization of IDEA, include the following:

1. Information about the child's present level of physical, cognitive, social, emotional, communicative, and adaptive development, based on objective criteria.

2. A statement of the family's resources, priorities, and concerns related to enhancing the development of the child, with the concurrence of the family.

3. A statement of the major outcomes expected to be achieved for the child and family, and the criteria, procedures, and timelines used to determine progress and whether modifications or revisions of the outcomes or services are necessary.

4. A statement of the specific early intervention services necessary to meet the needs of the child and the family to achieve the specified outcomes including (1) the frequency, intensity, and method of delivering the services and (2) the environments in which early intervention services will be provided and a justification of the extent, if any, to which the services will not be provided in a natural environment, the location of the services, and the payment arrangements, if any.

5. A list of other services such as (1) medical and other services that the child needs and (2) the funding sources to be used in paying for those services or the steps that will be taken to secure those services through public or private sources.

6. Projected dates for initiation of the services as soon as possible after the IFSP meeting and anticipated duration of those services.

7. The name and discipline of the service coordinator who will be responsible for the implementation of the IFSP and coordination with other agencies and persons.

8. A plan for transition to preschool services.

Johnson, McGonigel, and Kaufmann (1989); Nelson and Hyter (2001); and Yaoying (2008) provided guidelines for developing IFSPs. They reported that no official form or format has been approved for these plans in order to give teams the freedom to develop whatever works best for an individual family. Some teams use only handwritten IFSPs to allow for immediate recording and to keep them dynamic and easy to revise. Other teams create model formats that can be adapted to individual families by the team members. Some teams now use hand-held or tablet electronic devices, such as the iPhone or iPad to create IFSPs from templates the team designs (e.g., Thao & Wu, 2006; Wu et al., 2007). An example of one possible format for an IFSP appears in Appendix 6-2.

For some infants who are identified at birth as high risk, an IFSP may be implemented very soon after the baby leaves the hospital. For others, a decision may be made to wait and watch the child's development before instituting a plan. The decision to provide services also depends on the particular family and the team of professionals with whom they work. A single, teenage, drug-abusing mother living in poverty may herself feel, and be considered by the team of professionals, to be in need of supportive services for her premature infant when she leaves the hospital for the first time. On the other hand, a middle-class married woman in her 20s, with a mother living nearby who has offered to help, may be able to cope on her own for a time, as long as follow-up assessment is provided to ensure that the infant is developing.

Other children in the prelinguistic stage of development may be identified some time after birth. Some will be discovered through Child Find and other screening programs. Child Find programs are mandated by the IDEA and are targeted at early identification of children with special needs who might not otherwise come to the attention of agencies who could serve them. These children may have conditions that are not identified at birth, nonspecific forms of intellectual disability that have no obvious physical signs, or autism

that does not become apparent until later when communication skills emerge in normal development. As Nelson (1998) pointed out, finding these children is not as easy as it sounds; even many professionals are unaware of the need for and appropriateness of intervention in this very early part of life. Public education of both parents and professionals is an important component of Child Find efforts, in order to increase the likelihood that children will be referred for diagnostic services. Multiple observations are often needed to establish special needs in early development, since infant behavior changes so dramatically during the first year of life.

Other children functioning at prelinguistic levels of development are those with severe to profound handicaps, who will be considerably older than the at-risk infants whom we've been discussing. These clients may have been identified at birth or early in life and may have received intervention for some time. They will, though, continue to have needs related to the development of basic preverbal communication skills. We'll talk about services for these clients in the last section of this chapter.

Many of the instruments used for screening and diagnostic assessment in the prelinguistic period are listed in Appendix 6-3. Using instruments with strong psychometric properties is just as important in early assessment as it is for any client, for all the reasons we talked about in Chapter 2. Clinicians choosing assessment instruments for prelinguistic children should apply all the same psychometric standards in making this judgment that would be used in selecting tests for older children. Similarly, we will always need to supplement standardized instruments with more flexible and ecologically valid measures. Crais (1995, 2011) and the American Speech-Language and Hearing Association (ASHA, 2008) discussed the importance of including caregivers as significant partners in the assessment, and using culturally sensitive procedures and naturalistic observations of play and other daily routines within the assessment process. These measures, which go beyond traditional instruments, will always contribute important information to the data that we collect.

When providing services to high-risk infants and their families, the language pathologist will be an integral part of the team of professionals developing the IFSP. Language disorders are the most common developmental problem that presents in the preschool period (ASHA, 2008), so any infant at risk for a developmental disorder in general is at risk for language deficits in particular. These babies do not have communication disorders yet; work with high-risk infants and their families is a preventive form of intervention. We've talked about primary and secondary prevention as important aspects of the role of the speech-language pathologist (SLP). When working with high-risk infants, primary and secondary prevention are the predominant goals. We hope that by working with these families to enhance the baby's communicative environment, we can ward off some of the deficits for which they may be at risk or minimize the extent of these deficits.

Many high-risk infants present with feeding problems, hearing losses, and neurological and behavioral difficulties that can influence communication development. For these reasons and to prevent later deficits, SLPs are very likely to be called upon to participate in the planning and delivery of services for the high-risk infant. Bear in mind that this enterprise must always be a team effort that involves professionals from a variety of disciplines and viewpoints, as well as the infant's family. The SLP needs to be ready to lend expertise on communication acquisition and its disorders in a collaborative spirit.

RISK FACTORS FOR COMMUNICATION DISORDERS IN INFANTS

Who are high-risk infants? Any condition that places a child's general development in jeopardy also constitutes a risk for language development. The March of Dimes (2003) estimates that 12% of newborns can be considered as high risk. In this chapter, we'll discuss some of the conditions that place an infant at risk and talk about strategies for serving at-risk infants and their families at three different developmental stages: the newborn period, the preintentional period from a developmental level of 1 to 8 months, and the period of prelinguistic communication from a developmental age of 9 to 18 months. First, let's look at some of the conditions that place an infant at risk for communication disorders.

Prenatal Factors

As we've discussed, anything that could lead to a developmental disorder can constitute a risk for the development of communication in infants. Certain prenatal factors place an infant at risk. These factors include maternal consumption of excessive alcohol, which may result in fetal alcohol syndrome—a pattern of deficits including small size, developmental delay, and facial abnormalities—as well as abuse of other drugs, which often occurs in conjunction with alcohol abuse. Exposure to environmental toxins such as lead, mercury, and other heavy metals, and in utero infections such as rubella, cytomegalovirus (CMV), and toxoplasmosis also place a child at risk.

Prematurity and Low Birth Weight

Prematurity is defined as birth prior to 37 weeks' gestation, with low birth weight. Low birth weight is defined as less than 2500 grams, or 5.5 pounds; very low birth weight (VLBW) is considered less than 1500 grams, or 3.3 pounds. Seriously premature birth and its consequent low birth weight can constitute both medical and developmental risks; low birth weights have been found to be associated with increased risk of developmental delay (Fanaroff, Hack, & Walsh, 2003; Gargus et al., 2009; Taylor, Burack, Holding, Lekine, & Hack, 2002). Premature infants are also more susceptible to a range of illnesses and conditions that produce developmental disabilities, such as respiratory distress syndrome, apnea (interrupted breathing), bradycardia (low heart rate), necrotizing enterocolitis (a serious intestinal disorder), and intracranial hemorrhage (Bernbaum & Batshaw, 2007). Respiratory distress in premature babies can sometimes lead to the need for intubation and the use of ventilators to aid breathing, as it did in Janice's case. This can, in a minority of instances, lead to *bronchopulmonary dysplasia,* a thickening of the immature lung wall that makes oxygen exchange difficult (Rais-Bahrami, Short, & Batshaw, 2002). For children suffering from this condition, long-term tracheostomy may be necessary, which can affect both speech and language development (Mathew, Worth, & Mhanna, 2010; McGowan, Bleile, Fus, & Barnas, 1993; Woodnorth, 2004). Furthermore, treatment of the premature child may have negative consequences, even though it is necessary to save the child's life. Newborn intensive care nurseries can be noisy and overstimulating (Aucott, Donohue, Atkins, & Allen, 2002); in the past, some infants even suffered noise-induced hearing losses (Kellman, 2002). The communicative environment also presents risks. Infants there undergo painful procedures such as suctioning

and intubation, which can cause oral defensiveness or aversion, and trauma or tissue damage to the larynx (Comrie & Helm, 1997). Parents are unable to spend as much time interacting with very small newborns as parents of larger babies, because of the infants' need for hospitalization and medical treatment. Furthermore, the parents' perception of the baby as weak and sick may result in less willingness to hold, handle, and play with the child.

The first hurdle that the premature infant faces is to survive the premature birth. The smaller and younger the baby is at birth, the greater the chances for mortality. Survival rates for very small (500 to 1500 grams) or very young (more than 10 weeks' preterm) babies are increasing, though, because of advances in intensive care for newborns. As recently as 1960, only about 50% of these babies survived, whereas by 2002 survival rates were 55% for infants weighing 501 to 750 grams, 88% for 751 to 1000, 94% for 1001 to 1250, and 96% for 1251 to 1500 (Fanaroff et al., 2007). As more of these tiny babies—who would not have lived 50 years ago—mature, the rate of developmental delays seen in the population of children with a history of prematurity also may increase. Current estimates place the risk of developmental delays near 50% for all infants born prematurely (Rosetti, 2001; Woodward et al., 2006), and, on average, full-term infants have significantly higher cognitive scores compared with children who were born preterm (Bhutta, Cleves, Casey, Cradock, & Anand, 2002). The good news is that early intervention clearly makes a difference. Blair and Ramey (1997); Bleile and Miller (1993); and Rauh, Achenbach, Nurcombe, Howell, and Teti (1988) reported that low-birth-weight babies who receive intervention consistently show benefits over untreated groups in terms of IQ. Spittle et al. (2007) reported that preterm infants treated after discharge did better than untreated peers through preschool age, although longer term follow-up suggests that children with birth weights above 2000 grams derive the most long-term benefit from early intervention (McCormick et al., 2006). Ment et al. (2003) showed that early intervention had its greatest effect on infants whose mothers had less than a high school education. These findings suggest that a relatively small investment in intervention can have important effects for children who have risks associated with prematurity and low birth weight.

Genetic and Congenital Disorders

Many congenital and inherited disorders also place children at risk for developing language and cognitive deficits. Inborn errors of metabolism, such as Hurler syndrome, Hunter's syndrome, and Morquio syndrome, are examples. Craniofacial disorders, which have adverse effects on the morphology of the auditory mechanism, as well as congenital forms of deafness, put a child at risk because information from the auditory channel is lost. A variety of chromosome abnormalities also can influence communicative development. These include DS (trisomy 21; three members of chromosome 21, instead of the normal two) and Cri du Chat syndrome (5p-, absence of the short arm of the fifth chromosome). Disorders of the sex (X and Y) chromosomes present with fewer physical stigmata than other genetic disorders. As a result, they are often undetected during infancy and may only be diagnosed later, when the child starts to exhibit delays. Sex chromosome disorders include Klinefelter's syndrome (usually an XXY chromosome complement in males, instead of the usual XY), Turner's syndrome (X0 in females, instead of the usual XX), and fragile X syndrome. Batshaw et al. (2007) provide a detailed discussion of chromosomes and hereditary disorders.

Other Risks Identified after the Newborn Period

Not all children with special needs are identified at birth. As discussed earlier, others will be identified through parent or physician referral or through Child Find efforts later in infancy. Hearing impairment is one condition that may not be identified at birth. Many, but not all, states provide newborn hearing screening. In states where screening is not available, children with hearing impairments are not identified until sometime after the newborn period. Disorders without physical stigmata, such as autism, nonspecific intellectual disability, and specific language disorders, also are identified later in the prelinguistic or emerging language period. Children who experience abuse or neglect, too, are identified only after the newborn period has passed. All these children, though, have clear risks for communication development.

Any infant known or suspected to be subject to these conditions, then, would be considered at risk for communication disorders. Now that we know something about what these risk factors are, let's see what we as speech-language pathologists can do about them.

ASSESSMENT AND INTERVENTION FOR HIGH-RISK INFANTS AND THEIR FAMILIES IN THE NEWBORN INTENSIVE CARE NURSERY

Each year approximately 12% of infants begin life in the neonatal intensive care unit (NICU) (ASHA, 2004a; Bruns & Steeples, 2001). ASHA has recently outlined the roles that SLPs can play in the NICU (ASHA, 2004a). Some SLPs spend most of their workday assisting families in the NICU; other hospital-based SLPs may be called in to consult on the management plan of an infant being cared for in the NICU in order to provide assessment and intervention in several areas. We'll take a brief look at the basic areas to consider for prelinguistic infants: feeding and oral motor development, hearing conservation and aural habilitation, infant behavior and development, and parent-child communication, with reference to NICU infants in the next few sections. It is important to know, though, that practice in the NICU is a highly specialized area and most hospitals require extensive training or demonstration of specific competencies of SLPs who work in this setting. Infants in the NICU frequently have complex medication issues and very often therapy goals are secondary to keeping the infant physiologically stable. The following sections will serve only as an introduction to this broad topic. Gardner et al. (2010) provide a more in-depth discussion.

Feeding and Oral Motor Development

Assessment

The ability to take nutrition orally is one of the criteria for discharging infants from the NICU (McGrath & Braescu, 2004). As such, promoting oral feeding is an important aspect of helping prepare the child and family for life at home. Evaluating feeding and oral motor development in the high-risk newborn involves two components: chart review and bedside feeding evaluation. Alper and Manno (1996) suggest that chart review should yield information on adjusted gestational age, excess amniotic fluid at delivery that could signal a lack of intrauterine sucking and swallowing,

type and duration of intubation, respiratory disorders, and degree of family involvement.

Bedside feeding evaluation can be used to observe the infant's behavior and state during feeding, the effects of environmental stimuli on the infant's feeding behavior, vocalizations and airway noises during feeding, and reflex patterns. According to Jaffe (1989), reflexes that should be observed in the infant during feeding include the following:

1. *Suckling*: a primitive form of sucking that includes extension and retraction of the tongue as well as up-and-down jaw movements and loose closure of the lips.
2. *Sucking*: a more mature pattern, which differs from suckling in that more intraoral negative pressure is generated, the tongue tip is elevated rather than extended and retracted, lip approximation is firmer, and jaw movement is more rhythmic.
3. *Rooting*: causes the infant to turn the head toward the source of tactile stimulation (gentle rubbing) of the lips or lower cheek.
4. *Phasic bite reflex*: When teeth or gums are stimulated, usually by placement of the bottle or nipple in the mouth, the baby exhibits a rhythmic bite-and-release pattern that can be observed as a series of small jaw openings and closings.

When looking for these reflexes in the high-risk newborn, it is important to remember that they are typically seen in full-term babies. If a seriously premature infant does not exhibit them, we should not be too surprised. The presence or absence of these reflexes, though, will both determine the need for further assessment and contribute to the development of the feeding plan for the infant.

McGrath and Braescu (2004) and Ziev (1999) provide guidelines for determining whether a baby is developmentally ready to begin nipple feeding. Using a developmental evaluation, such as Brazelton and Nugent's (1995) *Neonatal Behavioral Assessment Scale* or Lester and Tronick's (2004) *NICU Network Neurobehavioral Scale,* we can estimate developmental level and determine whether the premature infant has developed sufficiently to engage in some form of nipple feeding. Additional considerations for beginning oral feeding are presented in Box 6-1.

In addition to observational assessment, several formal procedures are available for collecting information on feeding and oral skills. These are outlined in Appendix 6-4. Howe et al. (2008) reviewed seven feeding assessments and found limitations in the representativeness of their samples, which, in turn, limit the soundness of their psychometric properties. They reported that Neonatal Oral-Motor Assessment Scale (Braun & Palmer, 1986) showed more consistent psychometric properties than the others, although, it, too, had limitations. They cautioned that results of any neonatal feeding assessment tool needs to be interpreted with caution, because of these limitations.

Barlow et al. (2010); Jelm (1990); Kedesdy and Budd (1998); Lowman, Murphy, and Snell (1999); Morris and Klein (2000); VanDahm (2010); and Wolf and Glass (1992a) provide additional information on infant and childhood feeding disorders. If formal assessment procedures are unavailable, informal interviews also can be used to gather data about the infant's feeding and oral skills. Box 6-2 provides some of the questions that could be asked in an informal interview.

Children with disabilities or those with tracheostomies often experience *gastroesophageal reflux,* or the backward flow of contents of the stomach up into the esophagus. This condition can seriously interfere with nutritional intake and desire to eat by mouth (Eicher, 2002). Special diagnostic procedures, which will be described a bit later, are often undertaken by the physician when this condition is suspected.

Management

The results of the feeding and oral assessment provide the clinician with information necessary to make decisions about whether feeding therapy is needed and what aspects of the feeding and oral behavior ought to be addressed. Very often, though, because of the neurological immaturity of the infant in the NICU or because of other medical conditions contributing to intolerance of enteral feeding (by way of the intestines), which can result in excessive vomiting and lead to esophagitis and oral defensiveness, oral feeding may not be an option. In these cases, tube feeding may be initiated. The decision to tube feed is usually made by the physician,

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BOX 6-1   Considerations for Readiness for Oral Feeding

Gestational age: Generally at least 35-37 weeks.
Severity of medical condition: Respiratory disorders contribute to delays in readiness for oral feeding.
Respiratory/cardiovascular stability: Infants needing oxygen support, with apnea, or periodic breathing are more delayed in readiness for oral feeding.
Motoric stability: Oral tone, posture, and quality of oral movements should be evaluated.
Coordination of sucking, swallowing, and breathing: Mature suck consists of ten or more sucking bursts with breathing interspersed with suck/swallow; consider evaluating in non-nutritive sucking.
Behavioral state organization: Infant must be able to maintain an alert state long enough to complete feeding.
Demonstration of hunger: Exhibits rooting, may exhibit non-nutritive sucking, crying may be weak.

Adapted from McGrath, J., and Braescu, A. (2004). State of the science. *Journal of Perinatal and Neonatal Nursing, 18,* 353-368.

BOX 6-2   Questions for Informal Assessment of Feeding and Oral Skills

Who is the baby's primary feeder?
What positions have you tried for feeding?
Does one type of nipple seem to work better than another?
Can the baby suck vigorously?
How much milk can the baby take in one feeding?
How long does the feeding take?
How long does the baby go between feedings?
How many feedings a day is the baby getting?
Does the baby seem to be alert during feedings? Does he or she look at the feeder?
How well does the baby control the jaw, head, and trunk during feeding?
Does the baby gag, choke, cough, or bite during feeding?
Does the baby have trouble or seem to delay swallowing?
Can the baby coordinate sucking, swallowing, and breathing?
Does drooling interfere with feeding?

and the SLP may not be consulted. But, as Imhoff and Wigginton (1991) pointed out, the SLP can be an important advocate for the parents in understanding the tube feeding decision and its consequences, in helping them to ask appropriate questions of the medical staff, and in making the eventual transition from tube to oral feeding. To serve in this advocate role, the SLP should be familiar with the various forms of tube feeding.

Three options currently are in use for nonoral feeding, and each has certain advantages and disadvantages for the baby and the family. The *nasogastric,* or *N-G,* tube is inserted through the nose and descends down the pharynx and into the stomach, whereas the *orogastric,* or *gavage,* tube is inserted through the mouth; a *nasojejunal* tube might also be used; this is inserted into the second part of the intestine. These methods preclude oral feeding while they are in place and can lead to hypersensitivity of the oral cavity. Both also are visible and remind the parents every time they see the child about how sick the baby is. Physicians generally prefer these methods because they do not involve the surgical risk of the third option, the *gastronomy,* or *G-tube.* The G-tube brings food directly into the stomach and frees the oral cavity for exploration as well as for supplementary oral feeding and is typically used when nonoral feeding will be needed for an extended period of time.

Infants who need nonoral feeding for extended periods, particularly if they need endotracheal tubes to help them breathe as well, may show decreased sucking and oral motor development (Barlow et al., 2010; Comrie & Helm, 1997). An important contribution that the SLP can make to this situation is to encourage parents and medical personnel to offer the baby opportunities for non-nutritive sucking (e.g., pacifier) during the tube feeding. This will help strengthen the sucking reflex and also help the baby learn to associate sucking with feeling contented from feeding. Other oral stimulation, such as stroking the cheek, lips, and gums, may also help make the child ready for oral feeding (Fucile, Gisel, & Lau, 2005). Arvedson et al. (2010) showed that non-nutritive sucking alone and combined with oral stimulation showed strong positive results for reducing transition time to oral feeding. The SLP also can take the time, which medical personnel will not always be able to do, to explain why the feeding tube is needed and to reassure the family that normal feeding will eventually be achieved. Furthermore, the SLP can encourage the family to ask about supplementary oral feedings and may encourage the parents to ask the physician about using a G-tube to minimize effects on oral development if prolonged nonoral feeding (more than 1 month) is necessary.

If our assessment suggests that the baby is ready to graduate from nonoral to oral feeding, or is able to feed orally from the first, the SLP can use several techniques to help the infant succeed. Spatz (2004) discussed ways to promote breastfeeding for premature infants. These include working with nurses to help mothers maintain their milk supply by pumping and to safely store and track each mother's milk, encouraging the mother to hold the baby skin-to-skin during nonoral feeding and to provide non-nutritive sucking experiences while holding the baby at the breast. When making the transition to breastfeeding, the SLP can help with positioning the infant, using a "football" hold to support the head and neck. Although hospitals are more likely to encourage breastfeeding for premature infants than they were only a few years ago, since breast milk contains many nutrients and antibodies that are beneficial to the baby's health, some premature or high-risk infants may be unable to nurse, and their feeding times will be long and closely spaced, making nursing very difficult for the mother. Some mothers may still want to pump breast milk for the baby to drink

from a bottle, and many NICUs provide breast pumps for this purpose. When the mother feels she wants to contribute to her infant's well-being in this way, she should certainly be encouraged to do so. Fletcher and Ash (2005) discuss the importance of working with other professionals to support mothers who wish to breastfeed babies in the NICU. However, mothers should also be guided to understand that the infant can thrive on formula as well. Interaction is just as important, and perhaps more important to the babies' development, than the milk they drink. In counseling the mother of a baby in NICU, the SLP will want to help her do for the baby what she can do best and to feel that she is making a contribution to the baby's overcoming a difficult start. If the mother can nurse or express milk, fine. If a particular mother cannot or feels uncomfortable with these options, she can help her baby in many other ways. The SLP can play a crucial role in helping the mother to understand the importance of interaction and communication in the baby's development and in making her see that these are her most crucial contributions to her child's well-being. It is especially important to stress to these mothers that feeding time must be communicative as well as nutritional and to encourage mothers to develop interaction and communication early in the feeding process.

Feeding is almost as important to the mother's development as it is to the infant's. If a mother cannot feed her baby, her sense of herself as the primary source of nurture in the baby's life is seriously threatened. The SLP developing a feeding plan for a baby in the NICU can help the mother to feel her way toward this nurturing role. Specific techniques and instruction for facilitating feeding by either breast or bottle can be provided, such as the following:

1. *Positioning.* Jaffe (1989) suggested that the premature baby be placed in a flexed position, with the chin tucked into the neck and the shoulders and arms pressed forward. This is an ideal "cuddling" position and can aid in bonding as well as feeding. Ideal positioning also can be achieved by placing the baby in a positioning device such as "Boppy" pillow, infant seat, or tumbleform seating. Hall, Circello, Reed, and Hylton (1987) advocated keeping the child's face near the feeder's to encourage eye contact and social interaction. Comrie and Helm (1997) provide additional detailed positioning alternatives. The mother's comfort and the baby's success are most important in deciding on a position for feeding. Trial and error may be necessary to find the best position.

2. *Jaw stabilization.* The mother can place her thumb or finger on the baby's chin, just below the lower lip, another finger on the temporomandibular joint, and a third finger under the chin. This support allows her to stabilize the head and jaw and to provide more control as the infant sucks. This control on the mother's part should be gradually faded as the infant's feeding skills develop.

3. *Negative resistance.* Comrie and Helm (1997) suggest using negative resistance to help infants who bite rather than suck or have an inefficient sucking pattern. As the infant pulls on the nipple during sucking, the feeder tugs gently back. This often stimulates a longer and stronger suck.

4. *Using specialized feeding equipment.* Comrie and Helm also suggest that nipple characteristics can influence sucking patterns, and suggest that if breastfeeding is not possible, nipples with various characteristics of flow rate, suction, and compression should be tried, as well as angled bottles. Spatz (2004) advocates using a nipple shield for breastfeeding mothers, to increase baby's milk intake.

5. *Modifying temperature and consistency*. Alper and Manno (1996) point out that chilling liquids has been tried to increase swallowing rate and decrease pooling of liquid in the pharynx. However, the main effect of this change may be to thicken the liquid, which may make it easier to swallow. Formulas also can be thickened by adding rice cereal.

6. *Oral stimulation in feeding*. McGowan and Kerwin (1993) suggested providing oral stimulation during feeding. They advised having parents use the following sequence to introduce bottle feeding:

    a. Stroking the nipple on the side of the baby's cheek to elicit a rooting reflex.

    b. Touching the nipple to the center of the lips and gum surface to produce mouth opening.

    c. Allowing the baby to close on the nipple and start sucking, then stroking upward on the palate in a rhythmic motion with the nipple to encourage continued sucking.

7. *Nonfeeding oral stimulation*. In addition to being encouraged to touch and stroke their babies' bodies in the NICU, mothers also should be encouraged to provide gentle stimulation to the baby's face, rubbing it gently with fingers or soft toys and providing non-nutritive sucking of a pacifier or finger whenever possible (Fucile, Gisel, & Lau, 2005). McGowan and Kerwin (1993) gave some specific suggestions for oral stimulation activities, including the following:

    a. Putting a finger (nail down) in the baby's mouth and rubbing the palate with an upward motion (midsection to front) to stimulate non-nutritive sucking.

    b. Rhythmically stroking the midsection of the tongue, front to back.

    c. Rubbing the infant's cheeks, one at a time, with a circular motion.

    d. Tapping around the baby's lips in a complete circle.

    e. Placing a finger or toothbrush in the mouth and massaging the upper and lower gums.

Additional resources for assessing and managing infant feeding problems include Alper and Manno (1996); Arvedson and Brodsky (1993); Eicher (2002); Johnson-Martin, Hacker, and Attermeier (2004); Kedesdy and Budd (1998); Lowman, Murphy, and Snell (1999); McGrath and Braescu (2004); Morris and Klein (2000); Spatz (2004); Tuchman and Walter (1993); van Dahm (2010); and Wolf and Glass (1992a).

Hearing Conservation and Aural Habilitation

Forty-four states mandate hearing screening for all newborns in the NICU. But, as we discussed earlier, the NICU itself may be hazardous to the baby's health. Clark (1989) reported that the incubators, cardiorespiratory monitors, and ventilators present in the NICU can generate noise levels of more than 85 dB, which not only interferes with sleep but may result in hearing loss by means of cochlear damage. This risk to hearing is in addition to the high incidence of hearing loss associated with many of the syndromes and conditions that resulted in the child being placed in the NICU in the first place. As we saw earlier, many congenital and genetic syndromes affect the development of the auditory structures, and hearing loss is one of the most important causes of the language disorders we see in such children. The SLP can play a crucial role in conserving the hearing of the high-risk newborn by making sure

that aural habilitation is part of the management plan if screening indicates hearing loss. Further, the SLP should encourage the parents to have the infant's hearing tested by an audiologist periodically throughout the child's early years, even if losses are not identified during the newborn period. In this way any loss that occurs can be treated at the earliest possible time.

Child Behavior and Development

Assessment

Sparks (1989) emphasized that the purpose of assessment for infants should *not* be to predict future behavior, but to determine the infant's *current* strengths and needs. First, it is important to know as much as we can about what risks the infant faces. This knowledge can help us decide how much and what kind of intervention to propose. If the child has DS, for example, we know that the risk for future speech and language delays, as well as for middle-ear dysfunction, is high. This knowledge may lead us to argue more strongly for early communication intervention than we might in the case of a child with prematurity alone. Careful interviewing of family and medical staff, as well as medical chart review, can provide this information.

Second, we need to evaluate the infant's level of physiological organization. The premature infant's functioning is immature in every way. Even the simplest ability to maintain physiological stability is affected. Premature infants experience irregular respiration; color changes; bodily instability, including jitteriness and flaccidity; and disorganized patterns of alertness. The infant's level of behavioral organization and homeostasis will, in large measure, determine the ability to participate in interactions. So an important part of the assessment of the at-risk newborn involves evaluating the extent to which the baby can maintain physiological and attentional states.

The *Neonatal Behavioral Assessment Scale* (Brazelton & Nugent, 1995), *The Neurological Assessment of the Preterm and Full-term Newborn Infant* (Dubowitz, Dubowitz, & Mercuri, 1999), the *Naturalistic Observations of the Newborn, Assessment of Preterm Infant Behavior* (Als, 1985), the *Assessment of Preterm Infant Behavior* (*APIB;* Als, Lester, Tronick, & Brazelton, 1982), *Developmental and Therapeutic Interventions in the NICU* (Vergara & Bigsby, 2004), and the *NICU Network Neurobehavioral Scale* (Lester & Tronick, 2005) are instruments designed to look at a range of abilities for infants 28 to 40 weeks of gestational age. They help the clinician to identify the conditions under which the baby functions best, what places stress on the baby, how much handling and stimulation the baby can tolerate, how easily the baby's homeostasis is disrupted, what supports are useful to the baby in maintaining self-control, and how much endurance the baby has for interactive functioning. Many NICUs use these instruments routinely to evaluate patients. When this evaluation has been done by medical staff, the SLP should carefully review the results for information that will help in the planning of a communicative intervention program. If no formal instrument is routinely used, the SLP should consider administering a developmental assessment.

Management

According to Gorski (1983), the goal of intervention for the baby in the NICU is to achieve stabilization and homeostasis of physiological and behavioral states and to prevent or minimize any secondary disorders that might be associated with the child's condition, rather than to attain milestones appropriate for full-term

babies. The best way for us to achieve these goals is to become a member of the NICU team and to earn the respect of the medical staff for our in-depth knowledge of early communicative and oral-motor development. When this has been achieved, the SLP can offer suggestions that will benefit communicative development. Gorski (1983), Griffer (2000), Nugent et al. (2007), and VandenBerg (1997) advocated developmentally supportive care that uses strategies like the following:

1. Encourage careful monitoring both of noise levels and infant hearing within the NICU.
2. Develop staff awareness of the dangers of ototoxic effects of medications.
3. Foster sensitivity to laryngeal damage from endotracheal tubes (Sparks, 1984).
4. Work to alleviate sensory overstimulation because of constant bright light.
5. Suggest ways to counteract the dangers of low language and interactive stimulation that can result from infrequent handling in the NICU.
6. Encourage consideration of the oral-motor consequences of continued use of N-G and gavage tube feeding, bearing in mind the surgical risks that G-tube feeding entails. The SLP can help families and medical staff to work together to consider how these risks can be balanced.
7. Advocate for the importance of non-nutritive sucking and oral stimulation to aid in the baby's oral-motor development.
8. Educate staff about the efficacy of early intervention (Rossetti, 2001).
9. Provide information about services offered by other disciplines (e.g., SLP, occupational therapy, physical therapy, counseling) that may be of help to families of babies in the NICU.
10. Support parents in achieving their goals for the child during the NICU stay.
11. Encourage parents to talk to, touch, and hold the baby; help with positioning.
12. Help parents recognize, understand, and interpret the infants' signals; help time caregiving and interaction to promote the infants state regulation and allow for natural sleep-wake cycles.

Parent-Child Communication

As we've seen, the newborn in the NICU is at risk for an inadequate interactive experience because medical needs and the appearance of frailty make it difficult for parents to respond to the baby in the usual way. Furthermore, the infant's neurological immaturity may render the baby less able to take advantage of the interactions that the parent offers. Let's see how the SLP can facilitate the parent-infant interaction in the NICU.

Assessment

Assessing Infant Readiness for Communication

Information gathered from an instrument, such as the *APIB,* will help identify the level of interactive, motor, and organizational development that the infant in the NICU is showing. This information is crucial for deciding whether the infant is ready to take advantage of communicative interaction. Gorski, Davison, and Brazelton (1979) defined three stages of behavioral organization in high-risk newborns. The child's state of organization determines

Communication intervention for at-risk infants can begin in the newborn intensive care unit.

when he or she is ready to participate in interactions. These states include the following:

1. *Turning In* (or physiological state). During this stage the baby is very sick and cannot really participate in reciprocal interactions. All the infant's energies are devoted to maintaining biological stability.
2. *Coming Out*. The baby first becomes responsive to the environment when he or she is no longer acutely ill, can breathe adequately, and begins to gain weight. This stage usually occurs while the baby is still in the NICU, and this is the time when he or she can begin to benefit from interactions with parents. It is essential that the SLP be aware when this stage is reached so that interactions can be encouraged.
3. *Reciprocity*. This final stage in the progression usually occurs at some point before the baby is released from the hospital. Now the infant can respond to parental interaction in predictable ways. Failure to achieve this stage, once physiological stability has been achieved, is a signal that developmental deficits may persist.

An important function that the SLP can serve in fostering communicative development in an infant in the NICU is to acquaint the parents with this progression and help them to learn from the medical staff when the child turns the corner from the first to the second stage. At this time, more active parental involvement with the infant should be encouraged by the SLP.

Assessing Parent Communication and Family Functioning

Several instruments are available to assess parent-child communication. These may be used once the baby is ready to participate in communicative interactions. The *Parent Behavior Progression* (Bromwich et al., 1981) is an instrument that provides a clinician with guidelines for observing a parent's behavior with the infant to assess what the parent needs in order to improve or maximize the value of the interactions. This instrument rates the parent's

apparent pleasure in the interaction; the sensitivity of the parent to the child's behavioral cues; the stability and mutuality of the interactions; and the developmental appropriateness of the parent's choice of actions, objects, and activities. The *Observation of Communicative Interaction* (Klein & Briggs, 1987), *Newborn Behavioral Observations System* (Nugent et al., 2007), and *Parent-Infant Relationships Global Assessment Scale* (Aoki, Iseharashi, Heller, & Bakshi, 2002) are similar instruments.

Some danger exists, though, in using formal procedures to assess parent-child communication and family functioning. Although communication is, of course, a two-way street, we do not want to convey to the family in any way that we think they are the problem. As Slentz and Bricker (1992) pointed out, when parent-child interactions or family function are assessed, the implication to family members is often that they have a problem that needs assessment or that their child has a problem because they have a problem. Slentz, Walker, and Bricker (1989) found that the most threatening aspect of early intervention for parents of handicapped children is the assessment of the family. Mahoney and Spiker (1996) discuss similar concerns. The intent of IDEA, through the IFSP, is to provide support to the family in promoting the infant's development. Although the IFSP mandates participation of the family and identification of *their* "priorities and concerns," it does not specifically mandate formal assessments.

A simple and effective way to find out about family priorities and concerns is to ask. Slentz and Bricker (1992) suggested that the time it would take to do extensive formal assessment of family functioning is better spent developing a relationship with the family and giving them the opportunity to talk at length with the clinician about the frustrations and joys of raising their baby. This formation of an alliance with the family is more likely to lead to valid insights into their strengths and needs than will misguided attempts at pseudoscientific assessment. Cripe and Bricker (1993) have developed the *Family Interest Survey,* not to evaluate the family, but to simply find out what they think about their child's needs. It is intended to be a nonjudgmental means of identifying areas of the family's interest in both intervention goals and social services and can help the SLP see the family's perspective on the child's needs and the services required to provide for them. The *How Can We Help* survey (Child Development Resources, 1989) is a similar instrument. This survey appears in Appendix 6-5.

What about the truly dysfunctional family? The one that presents a danger to the infant or appears unable to meet the baby's needs in an even minimally adequate way? Here the SLP's responsibility is referral to appropriate social services and advocacy for the services the family needs to provide for the baby. Even if formal assessment were needed to identify such a family, the SLP would not be able to provide the financial assistance, drug and alcohol counseling, and other services that would be required to set this family on the right track. A straightforward statement of the SLP's concerns about the family to the appropriate agency is enough to alert social service personnel to the family's situation. In truth, we should be aware that the family's needs will not always be adequately addressed. Since this is the case, the justification for intrusive and threatening probes into the family's psyche seems even less compelling. Again, the role of the SLP as advocate and ally is most important to preserve, to get the parents to cooperate to any extent they can in enhancing the baby's learning environment.

As we've discussed, one of the best ways to find out about family members' priorities and concerns is to talk with them. In discussing how a family can best cope with a handicapped or at-risk child, it is a good idea to remember that the family is probably experiencing a good deal of shock, grief, guilt, confusion, fear, and a feeling of loss of the perfect baby they dreamed of having. They also may be experiencing information overload as a result of the well-meaning efforts of the hospital staff to keep them up-to-date on their baby's condition and prospects. The SLP is uniquely suited to give the family the opportunity to express these conflicting feelings and to be a model for the family in listening to and responding to their needs, as we hope the family will do for the infant.

The feelings the family is expressing may not be pretty. They may be angry at the medical staff or at no one in particular at the blow they have been dealt and the burden they will have to carry, perhaps for the rest of their lives. Who wouldn't be angry and frightened? The notion of family-centered intervention dictates that we acknowledge and respect both the unrelenting difficulties parents of babies in the NICU are experiencing and the ways in which they are able to cope. Our goal is to support the family, not to engineer them; to give them the information they need at the present time and to be ready to provide more information when it is wanted; and to respond to the family's needs and desires rather than to dictate what they should do. Thus a family-centered approach involves not a complicated psychology, but rather a simple, human attempt to treat others as we would wish to be treated if we were experiencing the difficult transition that the NICU infant's family must face.

Management

A recent innovation in the care of the medically stable infant in the NICU is "kangaroo care" (Rossetti, 2001; Ruiz-Palaez, Charpak, & Cuervo, 2004). This technique involves skin-to-skin contact between parent and child during the NICU stay. Parents are encouraged to swaddle the infant to their unclothed chest for about 30 minutes each day. The method has been shown to be associated with decreased length of hospital stay; shorter periods of assisted ventilation; increased periods of alertness; and, perhaps as importantly, with an enhanced sense of nurturance of the child on the parent's part (Dodd, 2005; Ruiz-Palaez, Charpak, & Cuervo, 2004). This technique seems to have great potential for improving parent-child interactions during the infant's first days, and can be used as part of the preparation for oral feeding, as we discussed earlier.

Still, the very sick neonate may not be ready to take advantage of interactions with parents during the period of acute illness for some time after birth. When this is the case, SLPs can still encourage one important activity in parents: we can help parents to learn to observe their babies and, specifically, to identify states the baby is exhibiting. Learning to identify the baby's state will be very useful for parents when the time arrives to begin communicative interactions with the baby. Babies are only receptive to interactions in certain states. A parent who can recognize these states and use them as interactive opportunities will have a better chance to engage the baby's attention and elicit reciprocity. Brazelton (1973) gave a description of the various states seen in the healthy newborn. Each state carries implications for the kinds of caregiving activities that can go on when the infant is in that state (Blackburn, 1978). These states and their implications are summarized in Table 6-1.

We can facilitate parents' identification of the infant's state by encouraging them to observe their babies and by talking with them about what they see. We can use the behaviors listed in Table 6-1

TABLE 6-1 Infant States*

State	Behaviors	Implications for Interaction
Deep sleep	1. Body still, except for occasional twitch 2. Eyes closed 3. Still face 4. Breathing smooth 5. Threshold to stimuli high–only very intense stimuli will cause arousal.	Little possible, adults will do better to wait to feed or interact until child arouses naturally
Light sleep	1. Some body movement 2. Eyes flutter beneath closed lids 3. May smile or cry briefly 4. Breathing irregular 5. More responsive to stimuli; may arouse to drowsy state if stimulus occurs	Makes up largest part of newborn sleep pattern; brief fuss sounds may cause adults to try to feed, rouse, or interact with babies before they are ready.
Drowsy	1. Variable activity, usually smooth 2. Eyes open and close, appear dull 3. Face often appears still 4. Breathing irregular 5. Reacts to stimuli, but reactions are delayed; this state often changes after reaction	Infants left alone in this state may return to sleep, but if parents provide something for the baby to look at, listen to, or suck on, baby may be aroused to a more responsive state.
Quiet alert	1. Little bodily movement 2. Eyes brighten and widen 3. Face appears bright 4. Breathing regular 5. Attends to environment stimuli	Providing something for baby to look at, listen to, or suck may maintain this state, which is ideal for interaction.
Active alert	1. Much bodily movement 2. Eyes are open and bright 3. Much facial movement 4. Breathing irregular 5. increasingly sensitive to disturbing stimuli (e.g., hunger, noise)	Parents can cuddle and console to bring baby to a less aroused state.
Crying	1. Increased motor activity, color changes 2. Eyes may be tightly closed or open 3. Facial grimaces 4. Breathing irregular 5. Highly responsive to unpleasant stimuli	Tells parents the child has reached his or her limits; needs to be fed or consoled.

Adapted from Blackburn, S. (1978). State organizations in the newborn: Implications for caregiving. In K.E. Barend, S. Blackburn, R. Kang & A.L. Saetz (Eds.), *Early parent-infant relationships. Series 1: The first six hours of life, module* 3. White Plains, NY: The National Foundation/March of Dimes.
*"State" is a group of behaviors that regularly occur together, including (1) bodily activity, (2) eye movement, (3) facial movement, (4) breathing pattern, and (5) responses to stimuli.

to distinguish deep sleep from light sleep, for example, and discuss what the parent would do differently, depending on which type of sleep was observed. We also can encourage parents to learn to distinguish among the various waking states and ask similar questions about these. Although the very sick neonate may exhibit few states of alertness, the parent can be encouraged to observe alertness in other babies in the NICU and to identify the fleeting alert states that do occur in the baby who is still in the Turning In stage. When more frequent alert states do emerge, the parents will be ready to recognize and take advantage of them. Hussey-Gardner's *Understanding My Signals* (1999) is also helpful for this purpose.

Once the infant has progressed to the Coming Out stage and can take advantage of parental communication, our most important job is to get parents to start communicating with their babies. By keeping in close touch with medical staff, we can be sure that parents are alerted to their baby's transition to this stage. Once it occurs, we will be in a position to encourage the parents to use their knowledge of the baby's states to tune in on when the baby is alert and able to interact. We can encourage the parents to look at, handle, talk to, sing, and show things to the baby during this state. A second

important aspect of these interactions is to help the parent identify when the infant can no longer interact and allow the baby to recoup his or her resources so that further interaction will be possible later.

Parents can be helped to identify the infant's signs of stress, such as averting the gaze, turning the head away, spreading the fingers, arching the back, and grunting. Parents can be encouraged to see these signs of stress as a natural part of the baby's transition from one state to another, rather than as a rejection of their efforts to interact. We can teach parents to give the baby "time out" to reorganize. They can be asked not to try to re-establish mutual gaze if the baby has broken it. Instead, they should be counseled to wait for signals, such as bodily quieting and a reinitiation of mutual gaze by the baby, that he or she is ready for more interaction. These same skills can be fostered during feedings, helping the parent to become aware of the baby's readiness both to feed and to interact in this very important communicative context.

Rossetti (2001) suggests that another way to increase the parents' role with the newborn in the NICU is to encourage the parent to participate in charting the child's behavior. The SLP can discuss this option with other staff and try to make them understand the

advantages of enlisting the parents' help in the big job of keeping the copious records required in the hospital. Not only will the parents feel more a part of the baby's care team, but charting can help them learn to be better observers of the child's behavior, a skill that will serve them well throughout the child's development.

ASSESSMENT AND INTERVENTION FOR PREINTENTIONAL INFANTS AND THEIR FAMILIES: 1 TO 8 MONTHS

Although life with a baby in the NICU is difficult, taking that baby home for the first time can be just as daunting. In the hospital the parents may have felt isolated and shut out of the baby's care; at home the same parents may feel overwhelmed by the responsibility that they must now face alone. If the IFSP includes follow-up by the SLP during this difficult period, there are many ways in which we can support the family in its new capacity.

Before learning what they are, though, let's make sure we understand the terminology used to describe this period of development. Infants in this phase are referred to as *preintentional* because they have not yet developed the cognitive skills to represent ideas in their minds and to pursue goals through planned actions. Bates (1976) referred to this stage of development as "perlocutionary." This term implies two important things: first, infants do not intend any particular outcome by their behavior, and secondly, that adults act as if they do. Adults' willingness to attribute intentionality to the young infant's behavior is one way babies are "taught" how to have these intentions, which will eventually lay the basis for communication later in the first year of life. Let's examine the same four areas that we looked at for the newborn to see how the SLP can provide effective services to preintentional infants and their families.

Feeding and Oral-Motor Development

Feeding Assessment

Many infants who leave the NICU continue to show feeding problems at home throughout the first year of life (Swift & Scholten, 2010). The same instruments that we discussed using to assess feeding and oral-motor development in the newborn are relevant for assessing these older infants. Similarly, informal interviews that include questions such as those given in Box 6-2 also can be used to gather information about the child's feeding ability. Toward the middle of the first year of life, though, the normally developing infant begins to acquire new feeding patterns that facilitate the introduction of solid foods into the diet. These patterns include integrating the front-to-back movement of the tongue used in sucking with rhythmic up-and-down jaw movements to produce the "munching pattern" that enables the child to eat solids (Eicher, 2007). During the next year or so, additional patterns develop. These are summarized in Table 6-2. Informal oral-motor assessment of the preintentional infant can include attempts to observe these patterns during feeding at the appropriate developmental level.

For infants with tracheostomies or neurological involvement, some specialized assessments may be necessary to evaluate the safety of oral feeding, particularly for solid foods. ASHA (2004a) holds that some of these studies can be carried out by SLPs, such as the following:

Cervical auscultation detects changes in upper aerodigestive tract sounds and is the most noninvasive of these measures.

Videofluoroscopic swallowing function studies, similar to those used with adults who have acquired dysphagia, can also be used to examine oral and pharyngeal movement during feeding and to assess risk for aspiration in children with neurological involvement.

Ultrasound studies allow for the visualization of relations between movement patterns and oral/pharyngeal structures.

Endoscopy involves passing a fiberoptic tube through the mouth down the esophagus and into the stomach while the child is sedated.

Other procedures are completed by medical personnel. Eicher (2007) and Lefton-Grief and Loughlin (1996) described additional tests that may be used to assess danger of aspiration or gastro-esophageal reflux (GER):

The *upper gastrointestinal study (upper GI)* involves the child's ingesting a liquid containing barium that is visible on x-ray. This allows a radiologist to observe structural abnormalities or reflux into the esophagus.

TABLE 6-2 Development of Feeding and Oral-Motor Skills

Age (Mo)	Food Type	Oral-Motor Skill	Development Skill
0–4	Liquid	Suckle on nipple	Head control acquired
4–6	Purees	Suckle off spoon Progress to sucking	Sitting, hands to midline
6–9	Soft chewables	Vertical munching "Sippy" cup drinking Limited lateral tongue movements	Hand-to-mouth reach, grasp Finger feeding; assist with spoon
9–12	Lumpy textures	Independent "sippy" cup drinking	Pincer grasp Grasps spoon
12–18	All textures	Lateral tongue action Straw drinking	Scoops food to mouth Increased independence in feeding
18–24	More chewable food	Rotary chewing	Independent walking Can obtain food/nonfood objects on own
24	Tougher solids	Mature chewing	Total self-feeding Use of fork, open cup

Adapted from Arvedson, J., & Lefton-Greif, M. (1996). Anatomy, physiology and development of feeding. *Seminars in Speech and Language 17,* 261-268; and Jaffe, M. (1989). Feeding at-risk infants and toddlers. *Topics in Language Disorders, 10(1),* 13-25.

The *milk scan* also uses a radioactively marked fluid. Here the radiologist sees where the marker fluid settles. If it is seen in the lungs, aspiration can be inferred.

Additional assessments that might be required include the following:

Radionuclide imaging studies (scintigraphy) help to quantify esophageal and gastric emptying and aspiration and provide multiple static images of concentrated regions of tracer residue over prolonged periods.

The *pH probe* measures acidity by placing a nasogastric-like tube at the junction of the stomach and esophagus. The probe at the end of the tube can detect acid that refluxes through an incompetent valve from the stomach. Results of this assessment can help to determine positioning needs during feeding to avoid reflux. The physician can then visualize the tissues and take small biopsy specimens to examine for inflammation.

Methylene blue screening is used to determine whether a child with a tracheostomy is aspirating food into the lungs, which can lead to recurrent pneumonia. In this procedure, food is dyed and evidence of emission of dye in the tracheal stoma, which would indicate aspiration, is monitored.

The pH probe and gastroesophageal endoscopy are considered the "gold standards" in the evaluation of feeding and swallowing (Eicher, 2007).

Vocal Assessment

In addition to concern about feeding, we also have concerns at this stage of development about the infant's vocal ability. Proctor (1989) has provided a detailed instrument for assessing the baby's vocal skills from birth to 12 months. Bleile and Miller (1993) and Mitchell (1997) also provided guidelines for this assessment. Figure 6-1 presents a worksheet for assessing early vocal development adapted from these sources. Mitchell (1997) suggests that the sample consist of what she calls "comfort state" vocalizations. These include sounds the child makes when in an alert and contented state and are typically heard during familiar caretaking routines, such as changing, feeding, bathing, or playing. Her findings indicate that 20 minutes is usually adequate to collect a sample of up to 70 vocalizations and that this constitutes a reasonably representative sample. If the infant becomes fussy, however, she suggests collecting the sample over several observations, until 50 to 70 comfort state vocalizations have been produced. Vocalizations included in the sample are those that contain a vowel-like and/or consonant-like element, are produced with an egressive air stream, and sound speech-like. Mitchell advocates practicing the analysis with a colleague until 80% to 90% agreement is reached on the classification of vocalizations.

To record the child's performance, the SLP begins by observing the child and parent and listening carefully to each vocalization produced by the child. Vocalizations are divided either by intonation contours, pauses, or an inhalation by the infant. If the child is vocalizing frequently, it may be necessary to audiorecord the session for later analysis. In many cases, though, it will be possible to do the assessment in real time, especially when the clinician is familiar with the assessment recording form. The clinician then codes each vocalization heard during the observation according to the criteria on the form and notes it with a checkmark in the corresponding box in the "observed directly" column. For vocal behaviors listed at the child's developmental level (in the first column of Figure 6-1) that are not observed directly, the clinician can demonstrate the behavior for the parent and ask whether the child ever

produces that behavior. If so, a checkmark can be recorded in the "parent report" column on the form. If the parent reports that the behavior does not occur at home and the clinician does not observe it, a (—) should be recorded for that vocal behavior. If most behaviors at the child's age level are observed, the clinician can ask the parent about behaviors at subsequent levels. If the direct observation indicates few behaviors at the child's developmental level, the clinician can ask parents about behaviors typical of earlier levels. The clinician also can indicate on the form the vowel-like or consonant-like productions heard, using phonetic transcription, in the "phonetics/comments" column. The number of vocalizations produced in the time frame of the observation also can be recorded there.

Although this is not a norm-referenced assessment, Figure 6-1 may be used to help determine whether vocal development appears to be progressing appropriately and whether intervention ought to include stimulation of vocalization. The number of checkmarks and (—)s on the form can be used to determine the general stage of vocal development. The stage at which at least one appropriate type of vocalization occurs can be seen as the stage of vocalization in which the child is emerging. If this stage corresponds to chronological age, then vocal development can be considered to be progressing adequately.

One particularly important benchmark to be aware of is the emergence of what Oller and colleagues call *canonical babbling*. Oller, Levine, Cobo-Lewis, Eilers, and Pearson (1998) define canonical babbling as the production of well-formed syllables that consist of at least one vowel-like element and one consonant-like element that are connected in quick transition and are recognized to contain sounds similar enough to speech to be transcribable. Examples include /baba/, /dIdI/, /iba/, and /ta/. Oller et al. have shown that the failure to produce these syllables by 10 months of age predicts delays in the acquisition of words and word combinations in the second year of life. These forms are, then, an important benchmark to monitor as the child reaches the last quarter of the first year. Oller, Eilers, and Basinger (2001) show that parents can reliably report whether or not these forms are present in children's speech, so that for children over 10 months of age, parents should be asked if they hear these forms if the infant does not produce them during the assessment.

Other important features to note in the child's babbling are the rate of vocalization, proportion of consonants, and multisyllabic babbling (Mitchell, 1997). Rate of babbling is computed by counting the number of vocalizations (not syllables) and dividing by the number of minutes the sample includes. Although there are no norms for rate in infants younger than 12 months, in general the rate should increase with age. If rate fails to advance for 6 months or so, some stimulation of vocal production should be considered as part of the management program, and hearing should be assessed. Ratio of consonants to vowels also should increase during the first year. By 16 months, the sample should include more consonants than vowels. Babbling that contains more than one syllable also should increase during the first year and a half, and vocalizations that include more than one type of consonant should begin to appear by the end of the first year (Mitchell, 1997). An additional milestone is the beginning of the imitation of the intonation contour of the ambient language (Rothganger, 2003). The babble of children toward the end of the first year should begin to mimic the melody, or prosodic contour, of sentences. These milestones, too, can help determine whether vocal development is proceeding typically. This assessment can be repeated periodically to ensure that

Child's name: _____   Birthdate: _____

Address: _____   Phone: _____

_____   Parents: _____

	Observed directly	Parent report	Phonetics/comments
Stage 1 (birth to 2 months)			
Vocalization Types			
Crying with sudden pitch shifts, extremely high pitch			
Fussing or discomfort			
Vegetative sounds (burps, sounds accompanying feeding)			
Neutral sounds (grunts, sighs)			
Vowel-like sounds: (i, I, e, ∧, u, U, o, a]			
Stage 2 (2 to 4 months)			
Vocalization Types			
Vowel sounds predominate, but a few consonants emerge (primarily velars and glottals)			
Marked decrease in crying (after 12 weeks)			
Begins consonant plus vowel; mostly " coo" and "goo"			
Begins to produce pleasure sounds, such as "mmmmm"			
Stage 3 (4 to 6 months)			
Vocalization Types			
Consistent production of consonant-vowel (CV) (syllabic) combinations			
Imitation of sounds in back-and-forth babbling games with others			
More variations in vowel production			
Number of consonant segments increases to include front stops and nasals			
Laughter emerges (around 16 weeks)			
Front sounds begin to predominate, including blowing "raspberries," bilabial trills, lip smacks			
Begins variation of intonational (pitch) contours, often when playing alone with toys			
Extreme pitch glides, such as yells, squeals, and low-pitched growls			
Stage 4 (6 to 10 months)			
Vocalization Types			
Canonical, repetitive, or reduplicated babbling (CV or CVCV-like structure) begins to appear (|mama|, |dada|, and |n∧n∧|)			
Consistent variation of intonational contours			
Early nonreduplicated CV sequences appear			
Parent may report hearing first word around 10 months			
Utterances produced with full-stop consonant (p, b, t, d, are most common)			
Short exclamations such as "ooh!" begin to appear			
Stage 5 (10 to 12 months)			
Vocalization Types			
Variegated babbling (successive syllables not identical) appears			
Variety of CV and CVC combinations with sentence-like intonation			
Syllables other than CVs produced			
Use of jargon, protowords, or phonetically consistent forms emerges			
Increased development of prosodic contours to match intonation patterns of ambient language			
Approximations of meaningful single words; phonological processes may operate on word approximations			

FIGURE 6-1   Developmental vocal assessment form.   (Adapted from Proctor, A. [1989]. States of normal noncry vocal development in infancy: A protocol for assessment. *Topics in Language Disorders, 10[1],* 26-42; used with permission of Aspen Publishers; Bleile, K., and Miller, S. [1993]. Infants and toddlers. In J. bernthal [Ed.], *Articulatory and phonological disorders in special populations.* New York: Thieme; McCune, L., & Vihman, M. [2001]. Early phonetic and lexical development: A productivity approach. *Journal of Speech, Language, and Hearing Research, 44,* 670-684.)

vocal development is continuing and to determine the efficacy of any intervention that is initiated.

For children with a history of prematurity, corrected gestational age (CGA) should be used as the standard for comparison during the first year of life (Rossetti, 2001). CGA is computed by subtracting the number of weeks of prematurity from the child's chronological age. If, for example, Janice were assessed at 3 months after birth, her 8 weeks of prematurity would be subtracted from her chronological age of 12 weeks. Her CGA, then, would be 4 weeks, and vocal behaviors typical of a 4-week-old would be considered appropriate for her developmental level.

Managing Feeding

For the nursing or bottle-feeding infant, the same strategies we discussed earlier can be used to improve sucking and feeding behavior. Oral stimulation, in the form of gentle touching; encouragement of non-nutritive sucking; and presentation of safe items for the baby to mouth, such as soft rubber toys, a toothbrush, or teething ring, also can be encouraged. Care should be taken to help parents become aware of what items should and should not be mouthed. Balloons, coins, and toys with small parts are particularly dangerous.

As the baby approaches the second half of the first year, feeding of solid foods may be introduced, if assessment indicates that this will be safe for the infant. Babies with orofacial anomalies or conditions involving depressed muscle tone, such as DS, may have difficulty making this transition. Jaffe (1989) offered a series of suggestions for improving feeding skills, summarized in Box 6-3. In addition, many of the suggestions presented in Appendix 6-6 for feeding older prelinguistic clients also can be adapted for feeding

at-risk preintentional infants. The resources we outlined earlier for assessing and managing feeding in the newborn also will be helpful for addressing feeding issues at the preintentional stage of development.

Managing Vocal Development

For infants whose vocal behavior appears to be less frequent or less mature than would be expected for their age (or age corrected for gestational age in the case of premature babies), hearing should always be assessed. In addition, encouraging vocalization should be part of the intervention plan. As with any intervention developed for the infant, the family must be involved and will probably be the ones to deliver the intervention. Encouraging vocalization in an infant is an activity in which all family members, even siblings, can engage. The family should be encouraged both to talk and to babble to the baby. The clinician can demonstrate the kinds of vocalizations that the infant is ready to learn to produce. These can be identified from the form in Figure 6-1 by choosing vocal behaviors that are produced rarely or not at all but are at the stage into which the child is emerging. For a child emerging into stage 2, for example, who is currently producing only /a/ and /u/ vowels, the clinician can demonstrate the other vowels that are appropriate at this level, such as /I/ and /i/, and can encourage everyone in the family to babble and sing these vowels to the baby. If the baby is producing a very low frequency of comfort vocalization in general, the clinician can encourage everyone in the family to imitate any comfort vocalization the baby produces, anywhere, anytime. Goldstein & Schwade (2008), showed that when caregivers coordinated their behavior with their infants' babbling, infants increased their rate of vocalization and vocalized more advanced

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BOX 6-3   Suggestions for Improving Feeding Skills

Sit below the baby's eye level to feed—This will help to control head flexion.

Start with single-consistency foods—Foods with more than one consistency, such as soups or packaged cereal with milk, may present problems resulting from lack of discrimination and coordination.

Vary texture gradually—Use applesauce, cereal, cracker crumbs, wheat germ, or yogurt to vary consistency until an optimal form is found. Avoid foods that are lumpy or extreme in temperature. Experiment until foods that child will accept are found.

Start with unheated food—gradually alternate temperatures, tastes, and textures when feeding.

Tap the lip or tongue to alert the child prior to presenting the bite.

Present small amounts of food on the spoon in early spoon feeding—Present the spoon from just below mouth level and withdraw it straight out to prevent hyperextension of the neck; press on the center in the front part of the tongue to inhibit bite reflex and encourage lip closure around the spoon.

Minimize spoon-to-teeth/jaw stimulation to decrease elicitation of bite reflex.

If the child bites the spoon, wait for the bite to be released. Don't pull against the spoon. Use coated or non-metal spoons.

Avoid constant face wiping. When wiping a child's face, tell him or her what you are going to do before you do it.

Identify preferred tastes—Finding foods that the baby likes may be more important than a balanced diet in the early stages.

Present a bite of a new or seldom-eaten food between bites of favorite foods.

Mix a small amount of a new food in with a favorite food to increase acceptance. Slowly decrease the amount of the favorite food in each subsequent bite.

Improve chewing—When child is ready, use crunchy foods, such as dry cereal, crackers, and cookies.

Place food directly between gums and molars—This will help stimulate chewing.

Cut food into strips—Use foods such as cooked carrots, fishsticks, and cold cuts, and place them on the biting surfaces to teach chewing.

Wrap cooked meat or fruit in gauze attached to a string—This prevents swallowing but gets the client to practice chewing.

Place finger food on the center of the tongue—Press down to encourage tongue lateralization. Finger food also may be placed on the nonpreferred side.

Place a cup on the baby's lower lip—Use downward pressure while controlling the flow of liquid to encourage cup feeding; thicken liquids with cereal at first, if necessary.

Adapted from Jaffe, M. (1989). Feeding at-risk infants and toddlers. *Topics in Language Disorders, 10,* 13-25; Bailey, R. L. and Angell, M. E. (2008, January 22). The ABCs of dysphagia management in schools: An overview of practical strategies. *The ASHA Leader.*

forms, such as canonical syllables. So encouraging parents to engage in higher-than-normal levels of back-and-forth babbling play, can increase the frequency and maturity of infant sound production. McGowan et al. (1993) suggested using rattles, tickling games, and mirrors to elicit infant vocalization in these back-and-forth games. For any baby with deficits in vocal development, all family members can be encouraged to talk "baby talk" to the baby as often as possible. If family members are uncomfortable with or not proficient in baby talk, the clinician can teach baby-talk register—including high-pitched speech; exaggerated intonation; simple words; and short, repetitive sentences—directly through modeling. Alternatively, some of the parent education sources discussed in the next section can be used.

Hearing Conservation and Aural Habilitation

It is important to monitor hearing closely in the high-risk infant. Hearing should be evaluated by an audiologist every 3 to 6 months during the first year. Furthermore, parents should be counseled to be aware of signs of otitis media, such as pulling on the ear or jaw, fever, or unexplained fussiness accompanying a cold. They should be encouraged to have the baby visit the pediatrician if any of these signs occur so that otitis media can be treated early and aggressively. For infants with identified hearing impairments, use and maintenance of hearing aids is, of course, crucial to optimal communicative development. Some of these children will be candidates for cochlear implants. According to Chute and Nevins (2003) and Papsin & Gordon (2007), good candidates for cochlear implants are children who meet the following criteria:

- Are at least 8 to 12 months of age;
- Have profound hearing loss in both ears;
- Can receive little or no useful benefit from hearing aids;
- Have no other medical conditions that would make the surgery risky;
- Have families who are involved in all aspects of the informed consent process, understand their roles in successful use of cochlear implants, have realistic expectations for cochlear implant use and are willing to be involved in intensive rehabilitation services;
- Have support from their educational program to emphasize the development of auditory skills.

Research has demonstrated that, for children with appropriate candidate status, cochlear implantation before 2 years of age promotes the efficient acquisition of expressive language (Ertmer et al., 2002), as well as receptive language and speech intelligibility (Peng, Spencer, & Tomblin, 2004). Some studies suggest that these children's language development approximates the normal rate (Ertmer, Strong, & Sadagopan, 2003). For these reasons, it is important that SLPs discuss implantation with families of young children with severe hearing losses. Detailed information on cochlear implants can be obtained from ASHA's (2004b) *Technical Report on Cochlear Implants*.

Child Behavior and Development

Assessment

For many high-risk infants, the management plan contains ongoing follow-up assessment of behavior and development. For some babies, ongoing assessment is the sole component of the intervention.

When we assess infant development we need to remember, again, that the goal is not to predict future status but only to identify current strengths and needs. A variety of instruments are available for assessing early development. The *Bayley Scales of Infant Development—III* (Bayley, 2005) and the *Mullen Scales of Early Learning* (Mullen, 1995) are perhaps most widely used. These scales sample behavior in several domains: cognitive, language, motor, social-emotional, and adaptive behavior on the *Bayley*, and verbal, nonverbal, and motor on the *Mullen*. Infants can receive credit for behaviors observed directly or reported by parents. The *Vineland Adaptive Behavior* Scales—*II* (Sparrow, Cicchetti, & Balla, 2005), a parent-interview instrument, can be used with children from birth to assess communicative, social, self-help, and motor development areas. Areas identified in the assessment can be used to develop intervention plans that are suggested in the expanded form of the interview. The *Denver II* (Frankenburg et al., 1990) is a direct assessment often used by pediatricians in their offices to assess development. The WILSTAAR screener (Alston & James-Roberts, 2005; Ward, 1999) is another instrument with some potential for this purpose. A more comprehensive list of infant assessment instruments appears in Appendix 6-3. In addition to general developmental assessment instruments, several instruments are designed to look more specifically at early communicative and vocal behavior. A sampling of these is presented in Table 6-3.

Any of these instruments can be used to get a picture of where the child is functioning in terms of general and communicative development. For children whose general developmental level or level of communication appears to be behind what would be expected for chronological age (or for corrected gestational age in the case of premature babies), a general stimulation program to enhance motor and cognitive development may be initiated. Such a program would be implemented in collaboration with a team of professionals that might include a physical therapist, occupational therapist, special educator, and nurse.

Parent interviews provide useful information about infant communication and development.

TABLE 6-3 A Sample of Language Assessment Tools for Infants in the Prelinguistic Period

Title	Comments
Assessing Linguistic Behavior (ALB) (Olswang, Stoel-Gammon, Coggins, & Carpenter, 1987)	Ages birth to 2 yr; observational and structured scales; includes assessment in cognitive antecedents, play, communicative intention, language production, and comprehension
Assessment, Evaluation, and Programming System for Infants and Children (ed. 2) (Bricker, 2002)	Criterion-referenced assessment, evaluation and family participation components; measures abilities in the following areas: fine and gross motor skills, adaptive, cognitive, and social communication development; also includes a Family Report Measure for parents to assess their children.
Birth to Three Assessment and Intervention System (ed. 2) (Ammer & Bangs, 2000)	Comprehensive program that allows examiners to identify, measure, and address developmental delays; includes a norm-referenced screening test and a criterion-referenced checklist; measures receptive and expressive language, avenues for learning, social-emotional development and motor ability.
British Picture Vocabulary Scale—2nd Edition (BPVS II) (Dunn, Dunn, Whetton, & Burley, 1997)	Quick, easy measure to assess a child's understanding of English vocabulary; individually administered picture-based test of receptive vocabulary; does not require reading, writing, or spelling.
Clinical Linguistic and Auditory Milestone Scale (Capute, Palmer, Shapiro, Wachtel, Schmidt, & Ross, 1986)	Assessment of behaviors and infant communication skills
Communication and Symbolic Behavior Scale (CSBS) (Wetherby & Prizant, 1993)	Used to provide early identification of children at risk for having or developing communication impairment; examines and measures communication, social-affective, and symbolic abilities; results are used to monitor changes in behavior and plan treatment.
Early Language Milestones Scale (ed. 2) (Coplan, 1993)	Assesses auditory, receptive language, expressive language, and visual skills and development; passing criterion for this test is noted as liberal, and failure of this test is recognized as severe impairment.
MacArthur-Bates Communicative Development Inventories (Fenson, Dale, Reznick, Thal, Bates, Hartung, Pethick, & Reilly, 1993)	Parent-report instruments used to determine child's comprehension and production vocabularies for children using words and gestures, and production vocabulary for children using word combinations; assessment of early child language from first nonverbal gestural signals through expansion of early vocabulary and the beginning of grammar.
Pediatric Language Acquisition Screening Tool for Early Referral—Revised (Shulman & Sherman, 1996)	Designed to identify potential communication problems in at-risk children; uses parent report.
Receptive-Expressive Emergent Language Scale—3rd Edition (REEL-3) (Bzoch, League, & Brown, 2003)	Designed to identify major receptive and expressive language problems in infants and toddlers.
Rossetti Infant and Toddler Language Scale (Rossetti, 1990)	Developed for birth to 3-year-olds; includes parent questionnaire and test protocol to gather observed, elicited, and parent-report information; areas assessed include play, interaction-attachment, gesture, pragmatics, language comprehension and expression; also includes questionnaire and addresses parental concerns regarding interaction and communication development.
Sequenced Inventory of Communicative Development—Revised (SICD-R) (Hedrick, Prather, & Tobin, 1995)	Designed to evaluate expressive and receptive communication abilities of children with and without retardation who are functioning between 4 mo and 4 yr of age; SICD-R can also be used in remedial programming for children with language disorders, mental retardation, and specific language problems.

Management

The management of behavior and development is, again, a team effort focused on the family as well as the child. Some localities provide center-based infant stimulation programs that place the baby in a setting with other handicapped or at-risk infants. These programs provide general motor and cognitive stimulation as well as more specialized services designed to target small motor, fine motor, and oral-motor behavior. When these programs are used, the SLP may be called upon to develop a plan for oral-motor and feeding development, including some of the elements already discussed, as well as to provide communicative intervention, which focuses on the interaction patterns discussed in the next section.

Most services for infants at this stage will be home-based, however. Rossetti (2001) discussed the efficacy of home-based treatment for infants and reported the Infant Health and Development Project finding that highly positive outcomes result from this model. When services are home-based the SLP will, again, be a member of a team providing counseling and advice to the parents of the at-risk infant. When the team uses an interdisciplinary or multidisciplinary approach, SLPs may visit homes themselves and provide direct consultation to families. In settings using a transdisciplinary model, the SLP may provide information to another professional who will work directly with the family to implement the SLP's plan. Either way, the SLP can play an important role in emphasizing the relatedness of motor, cognitive, and communicative development. The language pathologist can stress to the parents that all the activities the other specialists suggest should be presented in the context of back-and-forth, warm, affectionate

communication. If this communicative aspect of the intervention is lost, it can become a lifeless exercise for both parents and child. The SLP can help to remind everyone on the team, parents and professionals alike, that babies develop within the context of human communication and that this communication is what makes entrance into the human community possible.

Another important function the SLP can fulfill in the home-based interdisciplinary program for the at-risk infant is to serve as coordinator and parent advocate. The team approach provides a broad range of expertise to the family. It also can mean that the family must deal with a lot of different people, each with a different personality and style and each offering different advice. Imagine how a new mother of a handicapped or at-risk baby must feel in this situation. She's just brought her sick baby home from the hospital. The physical therapist visits her and tells her to do exercises with the baby. The nurse tells her to be sure to give the baby medication on time. The occupational therapist tells her to position the baby a certain way for feeding. The physician has told her to watch for a set of danger signs. She's worried and frightened and wonders how she can follow everyone's prescriptions and still care for her other children, manage her household, and do whatever else she did before the baby came. The multitude of professionals inundating her with advice and assignments can be overwhelming, especially in a situation already fraught with worry.

SLPs can take on the role of putting this all in context. We can help the parents sort through the advice; decide on an overall schedule for delivering therapy and medication to the baby; and help the mother seek support from her network of resources, including family, neighbors, and friends, to get her through the difficult first few months. Most importantly, perhaps, the SLP can remind the mother that what the baby needs most is the same thing every other baby needs—to be loved and played with. Furthermore, the baby needs a family that is healthy and rested. If that means skipping the baby's exercises once in a while so that the mother can take a nap, there is always tomorrow. The SLP's awareness of the importance of effective communication as the basis of the baby's development can help us to integrate the information the family receives about their at-risk baby and to put it in perspective. In a transdisciplinary team setting, the SLP can emphasize this perspective to team members and encourage the case manager to communicate it to the family.

Parent-Child Communication

Assessment

The *Parent-Infant Relationships Global Assessment Scale* (Aoki, Iseharashi, Heller, & Bakshi, 2002), the *Parent Behavior Progression* (Bromwich et al., 1981), and the *Observation of Communicative Interaction* (Klein & Briggs, 1987) were discussed earlier as means of assessing parent-child interactions. The *Parent-Child Play Scale* (Dunst, 1986a), the *Parent-Child Interaction Scale* (Farran, Kasari, & Jay, 1983), and the *Caregiver Styles of Interaction Scale* (Dunst, 1986b) are additional instruments that can be used to rate parental communication. These are somewhat formalized means of looking at how parents interact with the young baby who is not yet initiating much communication but is beginning to be able to respond consistently to the interactions of the family.

Parent-child interaction can be assessed informally, too. When observing parents interacting with their at-risk babies, we can look for the following:

1. Pleasure and positive affect.
2. Responsiveness to the child's cues of readiness and unreadiness to interact.

3. Acceptance of the baby's overall style and temperament.
4. Reciprocity and mutuality—the degree to which the parent and infant seem to be in tune with each other.
5. Appropriateness of choice of objects and activities for interactions; the parent's awareness of safety issues and choice of activities and objects that interest and engage the baby.
6. Language stimulation and responsiveness; the degree to which the mother talks to the baby appropriately, engages in back-and-forth and "choral" babbling activities.
7. Encouragement of joint attention and scaffolding the baby's participation, the extent to which the mother is effective in directing the baby's attention to objects of mutual interest, and the ways she evokes progressively more elaborated responses from the baby.

Establishing which aspects of parent-child interaction can be improved will serve as the basis for the intervention program designed to facilitate parent-infant communication. It is crucial to remember, though, that when assessing parent-child interaction patterns, we must show respect and appreciation of the parent's attempts to get through to the child. If we behave as if we know better than the parents how to interact with this baby, we will be undermining rather than supporting them.

And it is important to know, as Whitehurst et al. (1988) pointed out, that even normal parent-child interactions may not be optimal. In other words, it is always possible to intensify and increase the frequency of parental input, even when the parent is doing everything right. The stance we want to project to the parents of a handicapped or at-risk infant is that of maximizing the parents' effectiveness, rather than correcting their mistakes. We want the parents to feel that they are partners in providing an enhanced communicative environment for their child and that we are simply making some suggestions for that enhancement. Using data from the assessment of parent-child interactions can help us to identify *with the parent* the aspects of the interaction that can be enhanced. This approach is greatly preferable to using the assessment to identify what the parent is doing wrong. Everything we discussed in the newborn section about the dangers of formal assessment of parent-child communication and family function applies to the older baby, too.

Management

Intervention in the area of parent-infant communication, in either a home- or center-based setting, involves three components. First, we need to make parents and other caregivers aware of the normal communicative patterns of infants and how to tune in to the baby's communicative capacities. Second, we need to provide instruction and modeling of adult-infant communication. Third, we need to help the parents develop self-monitoring skills so that they can evaluate and modify their own performance.

Awareness of Infant Communication Patterns
Communication with babies is a two-way street. Mothers tend to interact more frequently with and respond more consistently to babies who smile and vocalize at them more often (Clarke-Stewart, 1977; Rossetti, 2001). So if a parent seems unresponsive to the baby, our first task is to remind ourselves that the mother's earlier communicative attempts may have been extinguished by a lack of consistent response from the child. Communication may have to be reinvigorated, no matter whose behavior is extinguishing whose. But we should refrain from being too quick to blame the parent for the dyad's failure to achieve optimal communication. Parents are more likely to cooperate if they feel that we understand the difficulties of communicating with an at-risk baby, who may not be normally responsive and interactive. If the parents feel they

are being blamed for the child's problem, collaboration is more difficult.

Remember, too, that we don't always have to say out loud that we blame the parents. Even unspoken censure can be perceived by parents. However, by reassuring the parent explicitly and repeatedly that we know that communicating with this baby can be hard, we can protect against the potential of this unspoken disapproval to interfere with our relationship with the parent. By acknowledging the difficulty of communicating with the child, we tell parents that we know they are not to blame, that the child participates in forming the quality of the interaction, that it takes two to tango. With this acknowledgment, we can get on cooperatively with the difficult job of providing a mutually positive communicative environment for the parent and child.

Helping parents become aware of basic interactive patterns of preintentional infants can be part of a general program of parent education, involving direct instruction about infant development and directed observation of videotapes or live interactions between infants and caregivers. Many parent education materials, including videotapes, are available for this purpose. Some of these are listed in Appendix 6-7 and 6-8. Parent education also can be a more circumscribed exercise, in which the SLP provides information specifically about communication to the infant's family. Either way, we want parents to know several things about how babies communicate. First, we want them to know that, although the infant participates in structuring the interaction, the infant—because of his or her immaturity—has very little choice about how to interact. The infant is not choosing to be difficult or consciously rejecting the parents' advances. Infants are simply expressing their inborn style, as well as their physiological and neurological immaturity in these behaviors. The preintentional infant does not "mean" to be naughty. The parent, though, as a mature adult, has choices. Parents need to know that they are the ones who need to adapt for the interaction to succeed, even when it is the infant who is causing the problem by being difficult or unresponsive.

Second, the parents need to know that the most important thing they can do for their babies is to enjoy them. Whatever they and the baby like to do together is what constitutes an ideal interactive context. If they enjoy making silly faces or funny noises or swinging the baby around, these activities should be encouraged.

SLPs can help parents become aware of interactive patterns of preintentional infants.

Similarly, if the baby's siblings like jostling the baby and the baby giggles and coos, these activities, too, should be fostered, even if they make the parents a little nervous. A bit of extra watchfulness, rather than a prohibition on these sibling interactions, may be needed.

The third thing we want parents to know is that communication that enhances development has two major characteristics: it is *enriching* and *responsive* (Clarke-Stewart, 1973; Poehlmann & Fiese, 2001). This means that as they interact with their high-risk babies, parents should think about providing visual, auditory, and tactile experiences that engage the baby's attention and allow the child to explore novel stimuli that have been carefully chosen for safety and interest. They also should attempt to make their interactions responsive to and contingent on what the infant is doing. This involves needing to tune in to the baby to observe and learn to recognize the baby's signals of need for attention and readiness for interaction. Some parents may need to be educated about the impossibility of "spoiling" the preintentional infant. Parents need to know that being consistently responsive to the infant's cries and moods at this stage can only enhance development.

Modeling Interactive Behaviors

Four types of interactive behaviors should be encouraged in parents to foster communication with their infants. These are: *turn-taking, imitation, establishing joint attention,* and *developing anticipatory sets.* Gazdag and Warren (2000) showed that adult contingent vocal imitation, particularly, increased the amount of imitation produced by babies with developmental disabilities. These behaviors can first be observed by the parents, using videotapes if they are available. If not, the clinician can provide models directly.

Effective modeling of turn-taking, imitation, and establishing joint attention and anticipatory sets involves, first, being sure that the parent is sensitive to the infant's readiness to interact. It will not be possible to set aside a particular time of day for these activities. The parent must be prepared to engage in them whenever the infant signals readiness through a state of alertness, gaze at the parent, and the expression of comfort vocalizations. When these signals are perceived, the interactions should be initiated. So it is important to be sure parents can recognize and respond to these signs when they occur. Parents should be reminded that these signals can come at any time—during meals, diapering, at bath time, or during a myriad of ordinary daily living routines. Parents can be encouraged to take advantage of the baby's alertness whenever they observe it and can be helped to learn to integrate ordinary caretaking activities with interactive stimulation.

Once parents can recognize the baby's readiness to interact, the four aspects of interaction can be modeled by the clinician. We can use the acronym TIPS to help with this modeling (Box 6-4). To model *turn-taking* and *imitation,* we can demonstrate observing the infant; using smiles and vocalization to elicit infant behavior; and waiting while the infant performs some behavior, whether it be vocalizing, moving the limbs, or making a face. Once the infant does something, the clinician can imitate it, then wait for the infant to do something else. MacDonald's ECO program (see Appendix 6-7) for example, encourages parents to use a "match and wait" strategy in developing turn-taking and imitation skills. Parents are advised to imitate or "match" something the child does, then wait for the child to provide a response that the parent can "match" again. The parent can be encouraged to try this turn-taking and imitation while the infant remains in an alert state. Vocalization to the infant and imitation of infant vocalization should be particularly encouraged, since

BOX 6-4	TIPS for Working with Parents of Preintentional Infants to Optimize Parent-Child Communication

T: *Take turns*: Coach parents to engage in back-and-forth interactions with babies through songs, games such as peek-a-boo, and play with toys. Encourage parents to do something the baby enjoys, then wait for the child to do something (anything!) before the adult takes another turn.

I: *Imitate*: Coach families to play "monkey see, monkey do" or "copy cat" by mirroring any infant actions or sounds.

P: *Point things out*: coach families to engage the baby in joint attention routines by bringing things the child likes within view, and monitoring that the child is looking at them before making them move, sound, or operate. Later, when the child is 6 to 10 months old, use gestural pointing to establish joint attention to objects at a distance in addition to bringing objects near the child.

S: *Set the stage*: Coach parents to establish anticipatory sets by repeating simple games and songs the child likes. When the child has become very familiar with these, encourage parents to stop momentarily in the middle to allow the child to anticipate and request the next part of the action.

these are especially helpful techniques for encouraging infant vocal development.

In addition to fostering turn-taking and imitation skills, it is important to help parents learn to develop *joint attentional routines* with their babies. Bruner (1981) emphasized the importance of establishing joint attention to help the baby learn to share focus on a topic and elaborate on it. This ability to share a topic and make additional comments upon it lays the basis for the topic-comment structure of mature conversation, in which a shared topic is established, then elaborated by additional comments from the participants.

The establishment of joint attention can begin by modeling for the parent how to identify the infant's focus and share attention to that. The clinician can show the parent how to follow the infant's line of regard, look at what he or she is looking at, and then make a comment about it or a gesture toward it. For example, we can demonstrate looking at the baby's hands as the baby focuses on them. We can then say, "Hands. You have such little hands!" and gently stroke them as the baby continues to regard them. If the baby's gaze then shifts to the clinician's face, we can return the gaze and remark, "I see you, too!" The clinician can then introduce an attractive toy and demonstrate showing it to the baby to engage his or her attention. When the baby looks at it or reaches for it, the clinician can demonstrate commenting on it or using it in a new way. In this way the clinician can model establishing joint attentional activities with the infant. "Choral" vocalization, saying what the infant says at the same time he or she says it, as if singing together, also can be encouraged as a joint attentional activity.

Another joint attentional activity that can be fostered is the use of baby games. These games also are useful in *establishing anticipatory sets*. Anticipatory sets are expectations that actions that have been repeated often for the baby will occur in a particular sequence, so that the infant "gets ready" to observe them when part of the sequence is enacted. These anticipatory sets provide the baby with predictable series of sound and action that lay the basis for the development of knowledge of scripts or schemata. It is thought that these scripts help organize knowledge and the acquisition of language used to encode this knowledge (see Milosky, 1990, for further discussion). "Peek-a-boo," "gonna getcha," and other games that foster predictable series of actions and words are especially useful in laying the groundwork in this process. By observing the parent repeatedly reenact the same actions using the same words, the infant learns to anticipate the climax of the routine. This pleasurable anticipation not only intensifies the baby's interest in the joint action, but also heightens awareness of the

sequence, making it more salient and "learnable." Once the baby learns the routine as a script, it becomes available for the child to manipulate, as when, for example, the child spontaneously uses an action in the routine as a request for the parent to play the game. Predictable joint action sequences also foster in the baby a sense of trust and reliability, a feeling of knowing what can be expected from people. This sense has obvious consequences for socioemotional development, but it has consequences for communication, too. A child who feels others are dependable and predictable, particularly if they are predictable in providing fun and interesting things for the baby to see and do, is more likely to think that communicating with these people is worthwhile and worth the effort to learn.

It is important for the clinician to determine which games are culturally appropriate for the family. Not all cultures play "peek-a-boo" exactly the same way, and each culture has its own set of baby games that the parents learned from their own parents. The family should be encouraged to recall and to ask older family members if they recall what baby games are traditionally used. These games will have the greatest affective value for the parent and so are likely to be more engaging for the child than games taught by the clinician. If the family is really unable to come up with games that have been used traditionally in their social group, only then should the clinician offer to introduce baby games from the mainstream culture.

Developing Self-Monitoring Skills

Once parents have learned the basics of communication development in the preintentional infant and have had the opportunity to observe the clinician demonstrate appropriate interactive techniques, they need to develop confidence in their own ability to communicate with the baby. One very effective way to achieve this result is through the use of videorecording to monitor communicative interactions and allow the parent to self-monitor. If videorecording equipment is available, parents can be encouraged to interact with their babies, and later, when the baby is no longer alert, review the recording to observe themselves with the baby.

The clinician must be very careful to do this training in a non-threatening atmosphere. It is essential to give the parent a feeling of acceptance and safety. Doing so requires establishing an atmosphere in which both the clinician and parent are attempting to learn about what works best with this baby, rather than one in which the clinician is dictating, or even teaching behavior to the parent. In this accepting atmosphere, parents can learn to observe their own and the baby's behavior, determine whether they have

made a good match between the two, and develop strategies for assessing the effectiveness of the interactions and modifying them when necessary. Allowing parents to view videos and analyze their own performance, rather than having it analyzed by the clinician, can facilitate this process. The clinician can comment on the positive aspects of the interaction. If the parent fails to note some changes that the clinician feels should be made, the SLP can ask the parent how the interaction might be conducted differently or whether there were any times when the baby seemed to be unresponsive. These episodes of unresponsiveness can be used as a springboard for discussing how the interaction might have been made more effective.

After several video sessions, parents will probably benefit from watching a recording of the earliest interactions. They can observe how much the baby has grown, as well as how their own interactions have changed and become more attuned to the child. The clinician can use these occasions to praise and appreciate the efforts the parents have made. The development of confidence in their own ability to do what is best for the baby is what will encourage parents to further progress in providing an optimal environment for their child's growth. The *Hanen Early Language Parent Program* (Girolametto, Greenberg, & Manolson, 1986) is one commercially available program that incorporates many of these principles we've been discussing. Other programs include MacDonald's (1989) ECO program, Bricker's (2002) system, and the *Carolina Curriculum for Infants and Toddlers with Special Needs* (Johnson-Martin, Hacker, & Attermeier, 2004). Additional resources can be found in Appendix 6-7.

ASSESSMENT AND INTERVENTION FOR INFANTS AT PRELINGUISTIC STAGES OF COMMUNICATION: 9 TO 18 MONTHS

In the last quarter of the first year of life, infants undergo an important transition. They move from being participants in interactions to being intentional communicators. Children in this developmental stage, in Halliday's (1975) terms, "learn how to mean." In Bates's (1976) parlance, these children are in the *illocutionary* stage of communication, when they express intentions through signals to others but do not yet use conventional language. At this level, children need interactions that both acknowledge and enhance their growing understanding of the functions and meanings of communication. The techniques used in the preintentional period to evaluate and encourage vocal and oral-motor development, as well as those for assessing and enhancing general cognitive growth and monitoring hearing, are still applicable to the prelinguistic communicator. However, the needs of the child in the 9- to 18-month developmental level will change in terms of the types of communicative interactions that will best foster development. It is important to remember that we are talking about children whose *developmental* level is 9 to 18 months. For children with a history of prematurity, CGA will still determine expectations for performance at this stage. Ten months after Janice's birth, for example, her CGA would be 8 months (40 weeks CA minus 8 weeks prematurity), and she would not be considered delayed if intentional communicative behavior had not yet emerged. Other children with disabilities who are 9 to 18 months old chronologically also may remain in the preintentional stage of development for some time. When cognitive assessment suggests that this is the case for children in the first 2 years of life, intervention should continue at the preintentional level. Only when a toddler evidences through play and other behavior that intentionality is emerging should the intervention begin to "up the ante," to require more initiation of communication and more conventional forms of communicative behavior from the child.

Assessment

How do we know that the infant has made this transition to intentionality? This question can be answered either formally or informally. The formal assessment procedures listed in Appendix 6-3 can be used for the older infant. When the child achieves a developmental level of 9 to 10 months or more on one of these instruments, readiness for intentional behavior can be inferred.

Intentionality also can be assessed through observation of the child's play. This can be done using one of the formal play assessments listed in Chapter 2, such as the *Symbolic Play Test* (Lowe & Costello, 1976), Carpenter's (1987) *Play Scale,* Casby's (2003) *Developmental Assessment of Play,* or the *Communication and Symbolic Behavior Scales* (Wetherby & Prizant, 2003). It also can be done informally, by providing the child with common objects that invite conventional and pretend play, such as dolls, child-sized common utensils, and familiar household objects. The observation can be used to determine whether the child is demonstrating some recognition of common objects and their uses, such as using a comb to comb hair or putting a toy telephone to the ear, and can engage in simple pretend play schemes, such as pretending to eat from an empty spoon. More detailed information on informal play assessment is provided in Chapter 7. If these conventional uses of objects and early representational behaviors are observed during the play session, the clinician can be confident that the child is ready to engage in intentional communication.

Alternatively, we can use a parent-report instrument to elicit information about early communicative behavior. The Words and Gestures form of the *Communicative Development Inventory* (Fenson et al., 1993), for example, provides a checklist that parents can fill out to answer questions about early communicative and symbolic gestural production. The *Vineland Adaptive Behavior Scales—II* (Sparrow, Cicchetti, & Balla, 2005) also contains items on play development. This information, too, can be used to help determine whether the child is demonstrating behaviors that imply intentionality.

If intentional behaviors are neither observed nor reported, the clinician can attempt to elicit them by modeling conventional use of objects and engagement in simple pretend schemes and observing whether the infant can use the models in his or her own play. If the infant can produce these behaviors in response to a model, some intentionality is likely to be present and the infant could probably benefit from intervention focused on eliciting intentional communication. At least it can't hurt to try. If repeated attempts to elicit conventional and early pretend play do not succeed, however, the clinician may decide to postpone moving to a program for eliciting intentional communication. Instead, we can continue to encourage the parents to engage in turn-taking, imitation, building anticipatory sets, and joint attentional activities in their interactions with the baby, and we can look for evidence of intentional behavior as time progresses.

Once it has been established that the infant can benefit from a program focused on intentional communication, assessment may be useful in determining the frequency and types of communication that the baby is demonstrating. The *Communication and*

Symbolic Behavior Scales (Wetherby & Prizant, 2003) is a formal instrument for assessing infant and toddler communication skills. This procedure involves videorecording the baby engaged in play interaction and using a standard format for examining the child's means of communicating, speech production capacity, receptive language, and related cognitive abilities and social-affective behavior. Paul (1991b) provided a less formalized approach that uses direct observation rather than videorecording to examine intentional communication. We will discuss procedures for assessing early intentional communication in detail in Chapter 7.

The point of assessing communicative behavior in the child with a developmental level of 9 to 18 months is simply to determine whether any functional communication is present. When the intentional underpinnings, as evidenced by the appearance of conventional and early pretend play, are observed in children at this level, functional communication should begin to enter their behavioral repertoire. We simply want to find out whether a play interaction with a familiar adult elicits any communicative behaviors, whether they are gestural, vocal, or verbal. We also would like to know what kinds of intentions are being expressed. Typical functions expressed at this level include requesting objects or actions; attempting to get the adult's attention on what the child is interested in; and initiating social interactions through greeting, calling, or showing off. If any intentional communication on the child's part is observed, we can infer that a child in the 9- to 18-month developmental range is progressing adequately. If intentional communication does not appear to be present in a child functioning at a 9- to 18-month level and parents confirm that the child's behavior during the observation was typical, we can infer that communication development is beginning to lag.

Management

If the child's communication development does seem on target, this does *not* imply that we can stop providing advice or support to the family of an at-risk infant. On the contrary, we want to foster the communication the child is showing, and primary and secondary prevention of later language disorders is still our main concern. For the at-risk child at a 9- to 18-month developmental level who is expressing some communicative intent, we need to encourage parents to learn how to scaffold or support the child's move toward more conventional communication. Brady, Marquis, Fleming, and McLean (2004) showed that parent responsiveness is a significant predictor of language development in children with disabilities. "Upping the ante" is Bruner's (1981) term for the techniques parents normally use to elicit a higher level of response from a child, once a response of some kind has been evoked.

For example, suppose a baby at a developmental level of 9 to 18 months has been playing peek-a-boo for some time with his mother, consistently showing joint attention to her when she covers her face to start the game and demonstrating anticipation of her revealing her face again. The mother can "up the ante" by keeping her face covered until the child does something. At first, she can keep her face covered until he reaches up and pulls her hands away. When the baby does this consistently, she can refuse to move her hands until he vocalizes along with his reaching toward her. By requiring increasingly more mature and sophisticated behaviors on the baby's part to complete the routine, the mother is shaping his behavioral repertoire to include more conventional ways of expressing his intents.

Rossetti (2001) suggested helping parents of infants in this stage to demonstrate contingent relations between words and actions. For example, parents can be asked to produce a verbal accompaniment to their response to a child's signal to be picked up. They can say, "Up!" when they pick up the child in response to the child's raising arms as a signal. Rossetti also encouraged teaching parents to amply reward any gesture or vocalization used as a communicative signal during this stage.

Warren and Yoder (1998) advocate the use of *prelinguistic milieu teaching (PMT)* to help in making the transition to intentional behavior. You may remember that we discussed milieu teaching as one of the hybrid forms of intervention in Chapter 3. In the prelinguistic period, it involves, first, arranging the environment by putting things the child will want in view but out of reach or by violating the order of events the child has come to expect. So we might put a new stuffed animal on a shelf where the child cannot reach it or offer the child juice before we have given a cup. The next step is to follow the child's attentional lead and focus on the child's item of focus. If the child looks at the new stuffed animal, we can look at it, too, then at the child, and wait expectantly for the child to do something (almost anything!) we can interpret as a request. Warren and Yoder stress that it is important to adapt our expectations to the child's initiation rate, which may be lower than we would like. It is more important to wait for the child to do something, then make our actions contingent on the child's, than it is to get the child to do something as a response to our own action. For children who just do not initiate, Warren and Yoder suggest two contingent strategies. *Contingent motor imitation* is an exact, reduced, or slightly expanded imitation of a child's motor act performed by the adult immediately after the child does it. *Contingent vocal imitation* occurs when the adult follows a child's vocalization with a partial, exact, or modified vocal imitation. Both these techniques allow the child to regulate the amount of social stimulation and may encourage him or her to produce more behavior for the adult to imitate.

Once the child has established some initiation of communication, Warren and Yoder suggest using some additional techniques to increase the frequency of initiation, so long as the teaching episodes are brief, positive, and embedded in ongoing natural interactions. These techniques include using three types of prompts: *time delay, verbal,* and *gaze intersection. Time-delay* prompts involve interrupting an ongoing turn-taking activity or routine and withholding the continuation until the child initiates some form of request to resume. For example, if the adult and child are rolling a

SLPs can work with parents of at-risk infants to optimize interaction for the purpose of secondary prevention.

ball back and forth, the adult can hold onto the ball during one turn, look at the child, and wait expectantly until the child does something (again, almost anything) to initiate a request to continue. *Verbal* prompts can be open-ended questions ("What?") or directions ("Look at me"). *Gaze intersection* involves the adult's moving into the child's gaze when the child does not make eye contact. This prompt is gradually faded as the child begins to use eye contact more consistently for regulating interaction. Another technique is *modeling.* Models are used to increase the child's use of vocal and gestural communication. Vocal models of sounds that the adult has heard the child use are matched to communicative events to show how vocalization can express intentions. For example, if the child has been heard to produce /ba/, the adult can use this syllable when blowing bubbles, saying /ba/, /ba/ as each bubble pops. Gestural models can be used in a similar way to encourage the child to imitate communicative actions. For example, if the child has been seen to reach for an object, the adult can point to it. An additional technique that can be used to encourage communication is *natural consequences,* in which the child's communication is rewarded with its intended goal. If the child points to a cookie jar, the child is given a cookie (even if it is right before dinner). In addition to the natural consequence, though, the adult can provide a simple linguistic mapping ("You want a cookie!") as well as an acknowledgment that an appropriate form of communication was used ("I can tell because you pointed. Nice job!"). Yoder and Warren (2002) showed that PMT did accelerate growth in frequency of child-initiated comments, frequency of child-initiated requests, and lexical density in some, though not all, children in an experimental study of the technique.

Book-reading situations are particularly apt settings for encouraging communication. Elliott-Templeton, Van Kleeck, Richardson, and Imholz (1992) showed that parents begin reading books to babies when the children are as young as 6 months. Snow (1983) has documented how parents of children with typical development use book-reading situations to scaffold language acquisition, and Bedrosian (1997) discussed this context for use with children with disabilities. Book-reading interactions have been shown to be effective in fostering both language and literacy development (Chomsky, 1972; Whitehurst et al., 1988). Parents of at-risk youngsters should be encouraged to begin engaging babies in looking at simple picture books as soon as the child can sit up. They can first have the babies sit with them and look at the pictures as the parent names each page with a simple label. Girolametto and Weitzman (2002) identify behaviors that can facilitate communication development in this setting, which include the following:

- Waiting for the child to initiate interest in something in the book by looking or pointing;
- Being face-to-face during book sharing;
- Asking questions;
- Verbally inviting children to interact;
- Labeling and talking about pictures in the book.

The child's first level of response is simply to share joint attention to the pictures. Once the child has seen the book and heard it read several times, the parent can stop on one page and wait for the child to do something. If the child points to the picture, the parent can name it. Later the pointing gesture can be "upped" to a vocalization. Eventually the child will be expected to name or approximate the names of some of the pictures. Upping the ante in this way comes naturally to some parents and caregivers. They spontaneously recognize when the baby is ready to be nudged to a higher level of response or will do so readily once the clinician

points out the baby's readiness to them. Other parents may need more explicit instruction. Yoder and Warren (2002) showed that training parents to use responsive strategies in communicative interactions does result in positive changes in their ability to respond to child communication. Again, direct modeling by the clinician, showing the parents ways to up the ante in familiar day-to-day routines and activities, is helpful. Parents should then be encouraged to follow the clinician's example in the same routines. Monitoring, discussion of the effectiveness of the techniques, and self-monitoring using videos are, again, useful adjuncts in this enterprise.

Another technique used to foster the development of communication at this level is *communication temptations.* These involve creating situations in which the child is strongly motivated to try to get a message across to the adult and then responding swiftly and positively when the child does attempt to communicate. Warren and Yoder (1998) and Wetherby and Prizant (1989) presented some examples of communication temptations, which are listed in Box 6-5. These temptations can be used to increase the frequency of communication in at-risk children and to give them practice with using intentional behavior and seeing its positive results. In these activities, the focus is not on the form of communication. Any gesture or vocalization that is clearly intended to send a message receives the desired response. Communication temptations also can be used to elicit initial communicative behaviors from children at this level who are not yet demonstrating such behavior spontaneously.

In addition to fostering the child's expression of communicative intents, we want to provide experiences in which the child can develop comprehension of language. Rossetti (2001) suggested using baby games to pair words with gestures and referents. Parents can start out demonstrating meaning for the infant by saying, for example, "Show me your nose" and taking the baby's hand and placing it on the nose. Later, the ante can be "upped" by having the parent say, "Show me your nose" and then waiting until the baby produces some gesture. In addition to developing communicative skills, these kinds of routines are ideal for expanding the child's comprehension repertoire, by adding new items (eye, ear, mouth) to the game. The same modeling, monitoring, and self-monitoring techniques used to work with parents of younger babies, including use of video to facilitate self-monitoring, can be used as part of these kinds of interactions. Published programs in Appendix 6-7 and 6-8 also can be useful at this stage.

These suggestions outline a prevention program for the at-risk child at a 9- to 18-month developmental level who appears to be developing adequately in terms of communication. What about the child who functions at a 9- to 18-month level but who has not yet evidenced intentional use of communication? We would suggest that for this child, intervention should focus on providing intensified input using a "motherese" speech style (Newman, 2003); focusing on developing comprehension skills; encouraging vocalization; and making the adult's communication contingent on what the child does, rather than on eliciting communication just yet. Providing a responsive atmosphere and a range of models of intentional communication is, in our view, a sufficient goal at this stage. There will be time for more intensive efforts to increase the frequency and maturity of communication when the child moves on to the next developmental stage. For now, both parent and child can benefit from what enriched, contingent input has to offer: for the parent, practice in providing responsive and contingent language stimulation, and for the child, the opportunity to

BOX 6-5   Suggestions for Communication Temptations

- Eat a desirable food item in front of the child without offering any to him or her.
- Activate a wind-up toy, let it run down, then hand it to the child.
- Give the child several blocks, one at a time, to drop in a can, then give the child a small toy figure to drop in.
- Initiate a familiar game, play it until the child expresses pleasure, then wait. Look expectantly at the child, and give a prompt ("What do you want?").
- Open a jar of bubbles, blow some bubbles, then close the jar tightly, and hand it to the child.
- Blow up a balloon, and let the air out. Then hand the deflated balloon to the child.
- Hold a food item the child does not like near his or her mouth.
- Place a desired toy or food item in a clear container with a tight lid that the child cannot open. Give the child the container and wait.
- Put the child's hand in a cold, wet, or sticky substance such as pudding or paste.
- Roll a ball to the child. After several rolls back and forth, substitute a car or other wheeled toy.
- Put a toy that makes noise in an opaque bag. Shake the bag and hold it up to the child.
- Bring the child a new toy, or initiate a silly or unusual event (wear a clown nose). Wait for the child to do something. When he or she does, map the child's action onto a linguistic form ("You think my nose is silly!").
- Pay less attention than usual to the child; back away or turn your back during an ongoing game. Wait for the child to try to elicit your attention.
- Give the child the run of the room for a few minutes. Wait for the child to direct your attention to an object he or she finds of interest.

Adapted from Warren, S., and Yoder, D. (1998). Facilitating the transition from preintentional to intentional communication. In A. Wetherby, S. Warren, & J. Riechle (Eds.), *Transitions in Prelinguistic Communication* (pp. 365-384). Baltimore, MD: Paul H. Brookes; Wetherby, A., and Prizant, B. (1989). The expression of communicative intent: Assessment guidelines. *Seminars on Speech and Language, 10,* 77-91.

experience its benefits for understanding language and providing a reliable scaffold toward linguistic production. Parents and caregivers ought to be encouraged to respond consistently to any initiation on the child's part, of course, even if it is in the form of gestures or nonconventional vocalizations. Focusing on the linguistic environment seems to us to be the most sensible approach for the infant who has not yet figured out the purpose of communication. Although there are no empirical data to support this position, we offer it to you as our best clinical hunch.

Some of the activities outlined in the preceding paragraphs for the emerging communicator can certainly be tried with the 9- to 18-month-level noncommunicator as well. Book reading is clearly an appropriate activity, as are the continuation of joint attention routines and baby games, whether or not the ante gets upped in this

It is never too early to encourage parents to share books with their children.

context. Some communication temptations can be tried to elicit intentional communication. However, if they don't elicit the desired behaviors, we advocate returning to basic joint attention activities and enriched contingent input, rather than continuing the temptations for now. They can be tried again when the developmental level moves closer to 2 years. Activities to encourage oral and vocal imitation, including imitating the child's vocal behaviors and providing simple, conventional single words in response to the baby's vocalizations, also can be suggested to parents of these reluctant communicators.

The key, in our opinion, is to keep the focus on responding to the baby's needs and interests, making the parent's communication contingent on the infant's actions, and making sure that the parents and baby are still enjoying each other. Insisting too soon on particular behaviors from infants instead of responding contingently to all their behaviors runs the risk of teaching babies the opposite of what we want them to learn. We want to teach that communication is an effective, pleasurable way to influence those around us and to exert some control over our environment. This is the message that we need to bring home to the baby who is emerging as a communicating human being. This lesson is best taught by example, by providing babies with models of communication that respond to their wants and needs.

CONSIDERATIONS FOR OLDER PRELINGUISTIC CLIENTS AND THOSE WITH AUTISM SPECTRUM DISORDERS

Some clients who function at prelinguistic levels of communication are older than the infants we've been discussing. Who are these clients? Some are severely or profoundly impaired individuals with cognitive deficits that limit their ability to develop symbolic communication skills. Many of the syndromes of intellectual disability that we discussed in Chapter 4 can present this picture. Some older children with autism may function at prelinguistic levels of

communication, with very little use of words. Young hearing-impaired children who were not identified or amplified early and who did not receive early introduction to sign language can communicate at prelinguistic levels beyond the age of 18 months. Children with severe speech impairments who have not been provided with alternative forms of communication may function at this level beyond the first 2 years of life. Finally, children who suffer severe or profound acquired brain damage through trauma or disease can lose their ability to use language to communicate.

Let's clarify one important distinction, though. A child can be nonspeaking yet still be a linguistic communicator. Children with cerebral palsy, for example, may be unable to speak because of neuromotor difficulties but can communicate linguistically through spelling on a communication board with a headlight or by means of an electronic device that prints out or speaks messages the client creates on a keyboard. These children with severe speech production impairments were discussed in Chapter 4. In this section we are concerned with children who have deficits that extend beyond the neuromotor act of speaking to include limitations in the ability to understand and use words or symbols to communicate. These children, who function within the first 2 years of cognitive development, are considered *prelinguistic* communicators. Let's examine the same issues for this group of clients that we looked at for prelinguistic infants: feeding and oral-motor development, hearing conservation and aural habilitation, behavior and development, and communication.

Feeding and Oral-Motor Development in Older Prelinguistic Clients

Many older children with prelinguistic communication skills have difficulties feeding because of neuromotor involvement. For these children, feeding and swallowing issues clearly need to be addressed. Although an in-depth discussion of feeding and swallowing is beyond the scope of this text, many of the references cited earlier for use with infants in these areas also are useful for addressing feeding issues in older clients. ASHA (2010) discussed the role of SLPs in pediatric feeding, and Claude and Bernard (2006) provided an evidence-based review and practice guidelines for feeding infants and toddlers. McNeilly & Sheppard (2008) provide an extensive discussion of dysphagia treatment in school settings. Arvedson (2008) and Bailey and Angell (2008) provide additional guidelines for SLPs working in schools. Abraham (2003) and McGowan and Kerwin (1993) discussed these issues in detail for children with long-term tracheostomies, with suggestions that can apply to children with a variety of types of feeding disorders. Alexander (2001), Bricker (2002), Eicher (2007), and Hall et al. (1987) provided discussions of feeding issues for children with neuromuscular disorders that are helpful in working with parents on developing children's feeding skills. Box 6-3 and Appendix 6-6 summarize some of the suggestions of these writers. Pressman and Berkowitz (2003) emphasize that before initiating a feeding program, any associated medical problems must be addressed. Arvedson (2000) provides comprehensive guidelines for conducting the major portions of the evaluation of children with feeding and swallowing disorders, which include the following:

- Review of medical, developmental, and feeding history.
- Physical examination, including growth and nutrition, neurodevelopmental, oral-facial, cranial nerve, respiratory, and gastrointestinal elements.
- Prefeeding assessments, such as posture and position,

oral-motor structure and function, and social and affective aspects of feeding.
- Direct observations of chewing, biting, swallowing, and interactions during feeding.
- Assessment of food preferences.
- Deciding whether to employ instrumental assessments, such as the videofluoroscopic swallow study.

Bailey and Angell (2008) suggest that feeding issues, like others, can often be addressed with behavioral approaches, involving new skill acquisition, generalization, and reinforcement. In addition, Jaffe (1989) and Lowman, Murphy, and Snell (1999) are careful to point out the importance of helping parents learn not only the physical skills involved in feeding a child with a disability, but also of emphasizing the communicative aspects of feeding. Eating is a social experience; a pleasant, interactive atmosphere is essential to developing a good feeling about food and eating. If the parent (or therapist) treats eating as a mechanical exercise, this crucial social component can be lost. As a result, both child and parent may come to see eating as a purely biological function, rather than an event in which people participate and interact. Hall et al. (1987) suggested that parents be encouraged to maintain a pleasant, positive facial expression and voice during feeding; that they give lots of praise and verbal encouragement; and that they speak to children during feeding, being careful to time remarks so that they don't excite abnormal patterns of chewing or swallowing. For older children in school programs, developing social opportunities during eating times also is important. Morris (1981) suggested setting up "lunch clubs" for children with feeding problems. These would give the child with a disability the opportunity to eat with small groups of mainstream children, who are chosen as a special privilege, to eat with the client in a special place (such as a classroom or teachers' room), perhaps on a rotating basis. This approach provides social opportunities and reduces the distractions present in a large cafeteria. Lowman, Murphy, and Snell (1999) and Bailey, Stoner, Angell, and Fetzer (2008) provide additional discussion. And because food is so deeply embedded within culture, SLPs need to be aware of and sensitive to the attitudes of families about feeding (Davis-McFarland, 2008).

Hall et al. (1987) emphasized the role of developing feeding skills as a foundation for vocalization and speech. As Ruscello (2008) pointed out, though, it is important to be aware that oral-motor skills such as those used in feeding are necessary, but not sufficient, for learning to talk. Steeve and Moore (2009), for example, showed that mandibular control and coordination for babble and chewing or jaw oscillation were categorically different in infants, and that independent sets of coordinations underlie the two activities. Morris (1981) found that many children who make gains in oral-motor skills do not necessarily translate these skills into speech production. In other words, developing oral-motor skills through feeding is important because eating is important, but it will not guarantee that these skills will generalize to speech. To develop speech skills, speech must be addressed directly in an intervention program. We cannot assume that work on the vegetative function of eating will ensure the development of the voluntary function of speech.

For prelinguistic preschoolers, then, it makes sense to address vocal production explicitly as part of the intervention program. Several approaches are available. Ling (1976) developed a sequenced approach to acquiring vocal skills that was designed for children with impaired hearing but can be adapted for children with other types of impairments. Hayden (1984) advocates the use

of a program of tactile stimulation, derived from work with adults with apraxia, the PROMPT program, although little empirical evidence of its efficacy exists. Since Yoder and Warren (2002) found that production of canonical (CV) syllables was predictive of speech development in preschoolers with disabilities, clinicians might encourage families to stimulate these productions, through modeling and enthusiastic imitation, as we discussed for prelinguistic infants. In addition, the development of consonant production in early childhood has been shown to be a good predictor of speech outcome (Whitehurst, Fischel, Arnold, & Lonigan, 1992), so working on expanding consonant repertoires in prelinguistic children is also important. Bleile and Miller (1993) and De Thorne et al. (2009) presented suggestions that can help facilitate consonant production in children in the earliest stages of speech production. These contexts are summarized in Box 6-6. Even if young children are using augmentative and alternative forms of communication (AAC), vocal communication can still be helpful if the child needs to get others' attention, so enhancing the frequency, volume, and maturity of vocal production may be addressed along with AAC provision.

Hearing Conservation and Aural Habilitation

Older children at prelinguistic levels of development can't tell their parents when they have an earache or if they aren't hearing as well as usual. For these reasons, it is especially important to assess hearing regularly in these populations and to be aggressive, as Roland and Brown (1990) suggested, in identifying and treating otitis media. For children who are found to have impaired hearing, early identification and amplification are two of the most important factors in determining good outcomes. If a hearing impairment is identified in an older prelinguistic child, amplification needs to be introduced immediately. Even a child with hearing impairment (HI) who has significant impairments in cognitive and motor areas can benefit from amplification. If amplification can boost auditory stimulation and increase prespeech vocalization in a prelinguistic client, there will be more vocalization that the clinician can work with and shape into speech-like communication. Parents and teachers also need to learn how to manage and maintain the child's aids in good working order. In addition, as with any child with HI, the older prelinguistic client may benefit from assistive listening devices, such as auditory trainers, to improve signal-to-noise ratio and maximize the benefit the child can receive from the auditory environment. For children who are good candidates, cochlear implantation can also be considered.

Child Behavior and Development

Older prelinguistic clients may become frustrated over the difficulty of getting their messages across to others. For this reason they sometimes display aberrant or maladaptive behaviors such as aggression or self-abuse. Donnellan, Mirenda, Mesaros, and Fassbender (1984) were among the first to suggest that these behaviors can be understood as a form of communication for clients who do not have more conventional, comprehensible means at their disposal. These behaviors are sometimes inadvertently reinforced by parents and teachers, who pay a great deal of attention to a child who is engaging in them. In these cases, one goal of intervention is to provide clients with more acceptable means of expressing their intentions. If, for example, analysis of a child's maladaptive behavior indicates that it is being used to signal frustration with an intervention activity, the child can be given a conventional means of expressing the same idea. A client might, for example, be taught to use the sign for "stop" to signal that he or she has had enough. When the client uses this signal, it must, of course, be respected to reinforce its communicative value. The teacher or clinician will have to do something else with the client once he or she has asked in this more conventional way to have the activity cease. Bopp, Brown, and Mirenda (2004) and Prizant and Wetherby (2005b) discuss the use of positive behavioral support to achieve this end; more detail on their discussion can be found in Chapter 9.

Another approach to coping with maladaptive communication in older prelinguistic clients is to use what LaVigna (1987) called *differential reinforcement of other behavior (DRO)*. If clients are using maladaptive forms of communication to secure attention from adults, these behaviors can be decreased by systematically paying attention to more acceptable behaviors. In this way the client learns that it is not necessary to be disruptive to gain adults' attention.

BOX 6-6   Suggestions for Facilitating Consonant Production in Early Speech

- To increase length and rhythm of productions, engage the child in simple repetitive motor activities, such as bouncing on a large ball while modeling repetitive syllables in time with his movement (/ba, /ba/, /ba/). Stop periodically to attempt to get him to make the sound in order to continue the activity. When he can produce one syllable fairly consistently, switch to a different single syllable (/mi, /mi/, /mi/), then string repeating syllables together (/baba/, /baba/, /baba/), then nonrepeating syllables (/bama/, /bama/, /bama/). Eventually add words ("go, go, go," "jump, jump, jump").
- To connect sounds to with meaning, teach songs such as "The Wheels on the Bus," with verses that include simple sounds (the wipers on the bus go whoosh, whoosh whoosh; the babies on the bus go wah, wah, wah . . .).
- Encourage expression of emotion with conventional vocalizations. Set up games and routines in which exclamations such as "yeah!" "wow!" "uh-oh!" "haha!" and "whee!" are used in playful interactions.
- Use stressed syllables to facilitate consonant production (*baby* to facilitate /b/).
- Use velar consonants to facilitate closed syllables.
- Introduce alveolar consonants before a front vowel (*tea* to facilitate /t/).
- To facilitate production of a consonant at a new place of articulation, use a word that contains another consonant at the same place of articulation (*toss* to facilitate /s/).
- Use words with fricatives between vowels (*taffy* to facilitate /f/) to elicit first fricatives.

Adapted from Bleile, K., and Miller, S. (1993). Infants and toddlers. In J. Bernthal (Ed.), *Articulatory and phonological disorders in toddlers with medical needs* (pp. 81-109). New York: Thieme; DeThorne, L. S., Johnson, C. J., Walder, L., and Mahurin-Smith, J. (2009). When "Simon Says" Doesn't Work: Alternatives to Imitation for Facilitating Early Speech Development. *American Journal of Speech-Language Pathology, 18(2),* 133-145.

In addition to maladaptive forms of communication, a second area of concern for the older prelinguistic client's development has to do with the progression of cognitive and communicative skills. For older prelinguistic clients, ongoing assessment is necessary to detect whether a shift from preverbal to verbal communication is taking place or could take place with a "push" from the environment. Evidence presented by Pickett et al. (2009) suggested that children as old as 12 have been known to acquire speech. For prelinguistic clients, even when an AAC system is used, continual probes should be used to investigate whether symbolic skills, including linguistic communication, can be acquired. Ongoing cognitive and play assessment using instruments such as the *Developmental Assessment for Individuals with Severe Disabilities—2nd Edition (DASH–2;* Dykes & Erin, 1999) can help to identify the point at which cognitive skills capable of supporting more symbolic communication—in forms such as speech, sign, print, or Blissymbols—can be added to the client's communicative repertoire. For clients with autism particularly, written language may be a useful augmentative modality for aiding in the acquisition of symbolic language.

Intentionality and Communication

Although clients in the prelinguistic stage may not communicate by conventional means, they do communicate, as Siegel-Causey and Guess (1989) pointed out, but these communications may be difficult to interpret. We need to be prepared to search for and identify any such nonconventional forms, whether they appear in guise of *echolalia* (the echoing of others' speech); aggressive or self-abusive behaviors; touching or manipulating others; bodily orientation; generalized movements; or changes in muscle tone (Seigel-Causey & Guess, 1989). Johnson, Baumgart, Helmstetter, and Curry (1996) suggest looking for a behavior that tends to precede the maladaptive one and attempting to use that as a communicative gesture. For example, if the client protests by hitting, the clinician can interrupt the hitting and prompt the client to simply raise an open hand as an alternative. Some formal assessment procedures for guiding this process have been developed by Coggins, Olswang, and Guthrie (1987); Johnson et al. (1996); Linder (1993); Lund and Duchan (1993); Kleiman (2003); Matson and Minshawi (2007); Norris and Hoffman (1990a); and Wetherby and Prizant (2003). Giving children acceptable, readable means to express the intentions they have, whether the form is spoken or through AAC, is a primary goal of intervention for older prelinguistic clients.

In addition to helping older prelinguistic clients map intentions onto acceptable forms of expression, we may need to expand the frequency and range of intentions they express. Wetherby, Yonclas, and Bryan (1989), for example, showed that children with various types of disorders showed different patterns of communication. Children with DS showed communicative skills that were similar to those of normal children. Children with autism (Mundy & Burnette, 2005) have been shown to demonstrate a normal frequency of communicative acts but an abnormal preponderance of regulatory acts (e.g., requests and protests), unlike normal children, who use predominantly joint attentional acts (e.g., showing, directing attention, showing off). Paul and Shiffer (1991) found that toddlers with slow language development also showed a dearth of joint attentional conversational acts when compared with normally developing toddlers. Mirenda and Santogrossi (1985) discussed the fact that clients with severe intellectual disability often don't

communicate much at all without prompting, even when they have communicative means available. These studies suggest that differences in the frequency and range of communicative function need to be addressed in older clients at the prelinguistic stage. Such clients may need to develop a broader base of preverbal intentions at the same time that conventional communication, in speech or AAC, is being acquired. Several commercially available programs can address this issue, including the Ski-Hi curriculum developed for children with hearing impairment (Clark & Watkins, 1985), the INSITE program (Clark, Morgan, & Wilson-Vlotman, 1984), and the ECO Model (MacDonald, 1989). Romski and Sevcik's (1996) System for Augmenting Language (SAL) also is a useful model. Communication temptations are another way to help elicit communicative functions that a child is not showing spontaneously.

Mirenda and Santogrossi (1985) suggest using a "prompt-free" approach as a way to elicit beginning intentional communication. The client can be rewarded with a piece of cereal each time he or she accidentally touches a picture of the cereal box that has been set in his or her view, for example. As these touches become more frequent and intentional, the ante can be "upped" by requiring that the child not only touch the picture but look at the adult to accomplish a request. More pictures can then be added, until a communication board or a book with a variety of pictures and symbols can be used by the client to get messages across. In this way the frequency of communication can be expanded as a functional AAC system is introduced. Communication temptation activities adapted to the client's physical abilities also can be an important part of this process.

Yoder and colleagues have done several studies (e.g., Yoder & Stone, 2006; Yoder & Warren, 2001) to demonstrate the efficacy of Milieu Communication Training (MCT), which we discussed in Chapter 3. They have shown it is particularly effective for helping children with disabilities make the transition from preintentional to communicative behavior. The major characteristics of MCT include:

- Training is undertaken in everyday environments (e.g., home or classroom) rather than a "therapy room."
- Activities take place throughout the day, rather than only at "therapy time."
- Preferred toys and activities are included in the environment so that participation in activities is self-reinforcing.
- Adults encourage spontaneous communication by refraining from prompting and using "expectant waiting" (use of gaze, posture, and facial expression to indicate the adult expects the child to do something).
- The child initiates teaching situation by gesturing or indicating interest in a desired object or activity.
- Teachers provide prompts and cues for expansion of the child's initiation.
- Expanded child responses are rewarded with access to a desired object or activity.

AAC approaches are often appropriate for students at the prelinguistic stage. These may include books with a small set of simple pictures or photographs that the client can easily transport and point to in order to request objects or activities. Electronic devices such as iPhones and iPads also have applications that can be adapted to display pictures a child can point to. Some of these applications serve as voice output devices that will speak the word for a picture the child touches. These devices are less stigmatizing than a picture book, and they may aid in providing avenues for social interaction, since typical children will find them both familiar and

attractive, and may even want to use them to "talk" with the client. Simple switch devices, those specifically designed for AAC, or consumer products like talking picture frames can be programmed to speak a small number of words or phrases to allow a client to make simple requests. Sources such as Binger and Kent-Walsh (2009), McNaughton and Beukelman (2010), and Mirenda and Beukelman (2006) are available as references for work with clients who require AAC.

Part of the difficulty for prelinguistic communicators is not only that they don't talk; they also don't have the underlying linguistic knowledge to make connections readily between words and their referents or to acquire grammatical structures. Developing AAC for these clients requires identifying a relatively small number of ideas the child will be taught in order to maximize communicative potential. Cannon and Edmond (2009) call this small set of functional, high frequency words that can be used across a range of situations a "core vocabulary." Choosing what to include in this core set of words/symbols to teach can be a challenge, but they advise being sure to teach not only nouns, but functional verbs such as *want, give, go, help,* and *come*, and other important words such as *more, good, bad, yes, no, mine,* and *wow,* as well as words from a set of functional categories such as foods, toys, self-help items, and favored activities. Choosing pictures, symbols or written forms the child can learn to identify for each concept, placing them in easy-to-transport containers (either paper or electronic), and providing arrays that are easy to locate are all part of the job of designing effective AAC systems for prelinguistic communicators. In addition to the resources cited above, many Web-based resources are available to provide help with AAC issues. Just a few examples include:

www.asha.org/public/speech/disorders/AAC.htm
http://trace.wisc.edu/
http://aac.unl.edu/
www.isaac-online.org

Halle, Brady, and Drasgow (2004) and Keen (2003) discussed the fact that the prelinguistic communications of children with severe disabilities are often misunderstood, so that frequent communication breakdowns occur. Halle et al. suggested guidelines for programs to help clients repair these breakdowns. These appear in Box 6-7. Attention to repairing communicative breakdowns can help to decrease frustration and provide more effective communication for these individuals. Kevan (2003) reminds us also that communication difficulties may arise not only from expressive limitations, but also from inability to comprehend language spoken to these clients. She emphasizes the importance of careful and thorough assessment of receptive language as part of the evaluation of these students.

A final consideration in organizing a communication system for children with severe impairments involves helping to create more transactional support in their environment and their communication partners for their communicative attempts. Several methods are available for assessing the interactive environment in order to determine how to make it more congenial for the client's communication. McCarthy et al.'s (1998) *Communication Supports Checklist* and Rowland and Schweigert's (1993) *Analyzing the Communicative Environment,* the *Functional Communication* Profile—Revised (Kleiman, 2003), and the *SCERTS Assessment Process* (Prizant et al., 2006) are instruments to assist in doing these evaluations. It is vital to learn how the communicative environment responds to prelinguistic clients because nonspeaking children (even those with typical cognition) use less communication than would be expected for their developmental level (Falkman, Sandberg, and Hjelmquist, 2002) primarily because environmental supports for communication via AAC are lacking. When developing AAC

BOX 6-7   Guidelines for Teaching Repair of Prelinguistic Communication Breakdowns

- Identify (1) situations in which communication breakdowns are occurring or are likely to occur, (2) function of the communicative behavior associated with the breakdowns, and (3) the responses of social partners in those situations.
- Select AT LEAST two new forms to teach as repairs. Focus intervention on teaching replacement forms that produce a good contextual fit with the demands of the situation.
- Select forms that have wide application and are more efficient than existing repairs. For example, if a child is at the one-word stage, a socially appropriate alternative response might be to point to the desired object. Be sure the new behavior has immediate, consistent, and positive responses from the communication partner.
- Teach the new forms by creating situations that replicate the natural situations in which breakdowns are likely to occur. Have team members agree upon a prompting system, such as graduated guidance or verbal prompts that they can use to ensure that the child will use the new forms. Use a milieu teaching approach, in which adults observe the child carefully and then insert teaching trials at motivating moments. Help the child learn to use an alternate repair strategy if the first fails. This can be accomplished by responding quickly to most opportunities when the child uses a new repair form and, on some small number of occasions, waiting and prompting a second new repair form when the child has already attempted repair. Be sure social partners do not respond to any existing socially unacceptable communication. When it is not possible to ignore unacceptable communication, attempt to ensure that the consequence is less immediate, less consistent, and of lesser quality than consequences for socially appropriate communication.
- Encourage social partners to be responsive to the new forms. Select communication forms that are easily recognized and understood by a variety of social partners. Model the forms for the social partners and alert them to the situations in which the new forms are most likely to occur. Encourage social partners to respond more quickly, more often, and with greater magnitude to the new repair forms.
- Monitor use of new repair forms. Look for instances of new repairs in the child's everyday settings under communicative breakdown situations. This information can be used to guide and refine instructional strategies because it provides ongoing assessment information about the progress of the interventions.

Adapted from Halle, J., Brady, N., & Drasgow, E. (2004). Enhancing socially adaptive communicative repairs of beginning communicators with disabilities, *American Journal of Speech-Language Pathology,13,* 43-54.

systems, then, it will be crucial to work with parents, teachers, and other caregivers to be sure they are responsive to the use of these systems in real communicative situations. Duchan (1997) developed a model for optimizing functional communication in natural settings by preparing both the environment and communication partners to ensure successful inclusion of the client and by programming various kinds of ongoing support. These supports are outlined in Box 6-8.

AUTISM SPECTRUM DISORDERS (ASD)

Children with ASD show a wide range of communication abilities, but almost all are delayed in the acquisition of spoken language (Paul et al., 2007), and show a restricted range of prelinguistic communicative intentions (e.g., Clifford & Dissanayake, 2008; Watt et al., 2006; Wetherby et al., 2007). So many children with ASD will present as prelinguistic communicators throughout the preschool period, and 20% to 40% will continue as such into school age. Many of the approaches we have discussed for other prelinguistic communicators, aimed at eliciting first communicative intentions and expanding the range of intentions expressed are appropriate for children with ASD, as well. Methods that have an evidence base specifically for the ASD population include AAC

and MCT (Prelock et al., 2011). In addition to methods we have discussed for other diagnoses, one additional approach is particularly relevant for children with ASD: the discrete trial and behaviorist techniques we discussed under the heading of clinician-directed intervention in Chapter 3. These methods are usually referred to under the general umbrella of applied behavior analysis (ABA). ABA is the broad term used to describe a range of procedures developed by psychologists from a behaviorist or operant school of thought. The methods of this approach include:

- *functional analysis:* This involves objective assessment of the antecedents and consequences of behaviors to be elicited or eliminated. Behavioral theory assumes that behaviors are triggered by environmental events; its goal is to engineer the environment so that desirable behaviors are evoked and undesirable behaviors are extinguished. To do this, antecedents for undesirable behaviors must be identified, so that they can be removed from the child's experience and do not trigger the maladaptive behavior. Similarly, consequences that increase the frequency of desirable behaviors must be identified, so these can be provided to evoke new adaptive behaviors.
- *task analysis:* Goals targeted by functional analysis are broken down into their most fundamental steps. The first step is trained intensively until the child can produce it in response to the appropriate environmental stimulus with minimal

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BOX 6-8   Providing Transactional Support to Enhance Communication

SUPPORT	EXPLANATION	EXAMPLE STRATEGIES
Social Support	Helping each communication partner to understand and expand on their assigned roles	• Adjusting the complexity of input, using simpler language • Modeling use of communicative device in *input to client* as well as by client
Emotional Support	Helping partners to respond to the emotional state of one another	• Providing and responding to client requests to "stop," "start over," etc. • Adjusting task difficulty if client becomes frustrated • Choosing motivating, chronologically age-appropriate materials
Functional Support	Helping partners to achieve their communication goals and to understand and support their partner's goals	• Creating clear opportunities for client to fill in a turn in a back-and-forth activity • Providing a predictable sequence of activities • Arranging the environment to minimize distraction and enhance attention • Providing a clear beginning and end to each interchange
Physical Support	Providing access to communication and physical support for enhancing communication	• Using visual supports to provide a predictable, organized sequence, enhance attention, and encourage involvement in group activities • Using AAC devices and methods • Using prompts and cues to encourage participation • Providing activities that include movement as well as sitting
Event Support	Scaffolding events to provide contextual support for communication, to establish participation patterns, and to let participants know what to expect	• Providing visual schedules to enhance predictability and ease transitions • Offering repeated opportunities to practice new skills with different partners • Coaching within natural interactions to remind client of skills taught
Discourse Support	Providing scaffolds, discourse markers, and discourse support to expand on and encourage communication of others	• Providing opportunities and scaffolds to initiate interactions • Using coaching and modeling to extend interactions

Adapted from Duchan, J. (1997). A situated pragmatics approach for supporting children with severe communication disorders. *Topics in Language Disorders, 17 (2),* 14; Prizant, B. and Wetherby, A. (2005). Enhancing communication abilities for persons with autism spectrum disorders. In F. Volkmar, R. Paul, A. Klin, and D. Cohen (Eds.) *Handbook of Autism and Pervasive Developmental Disorders.* (pp. 925-945). N.Y.: Wiley.

prompting. The next step in the sequence is then "chained" to the first, so that the child must now produce both steps in the sequence to obtain reinforcement. "Backward chaining" is sometimes used in which the child is initially required only to produce the last step in a sequence, then earlier steps are systematically chained to the last, until the child can produce the entire sequence.

• *selection and systematic implementation of effective reinforcers:* Children with ASD often find unusual objects and activities rewarding. ABA approaches identify what serves as a reward for each individual, and then use these rewards according to systematically determined schedules in order to manage maladaptive behaviors and elicit more adaptive ones. Correct responses and behaviors are rewarded with positive reinforce-ment; incorrect responses and undesirable behaviors are disregarded to as great a degree as possible.

These methods can be incorporated into highly structured activities such as discrete trial training (see Chapter 3) using edible or other tangible reinforcement, or into somewhat more loosely structured activities, such as drill-play (see Chapter 3) that include social or natural reinforcers. It is important to understand that ABA methods are not limited to discrete trials. Activities that we would call hybrid, such as MCT or Picture Exchange Communication System (PECS), can be included under the ABA umbrella. A range of ABA methods, including discrete trials, have been shown to be effective in increasing communicative and other adaptive behavior for chil-dren with ASD (see Rogers, 2006; Paul, 2008a; Prelock et al., 2011; Reichow & Wolery, 2009; Smith, 2001 for review), most likely because these children benefit from the highly structured, routine, predictable organization of ABA procedures. Smith (2001) advised that these methods be part of any program for children with ASD, although other methods should also be included. Several ABA programs have been specifically designed to teach language to children on the autism spectrum. These include *Teach Me Language* (Freeman & Dake, 1997), *Verbal Behavior* (Partington & Sundberg, 1998), and *The Me Book* (Lovaas et al., 1980).

An additional method developed specifically for prelinguis-tic children with ASD was Bondy and Frost's (2002) PECS. Its primary aim is teaching functional communication initiations. Its goal is to avoid prompts or directives, but to get the client to communicate spontaneously. The client is presented with a desired object (e.g., a cookie) and its picture. When the client reaches for the cookie, an aide standing behind him directs his hand to the picture and guides him to give it to the clinician. When she receives the picture, she exchanges it for the cookie. This procedure is continued, through backward chaining (Sulzer-Azaroff & Mayer, 1991), until the client hands the picture to the clinician spontaneously. The program then focuses on enhancing spontaneity, discriminating among symbols, and acquiring other functions of communication beyond requesting. Several meta-analyses (Flippin, Reszka, & Watson, 2010; Banda, McAfee, & Hart, 2009; Kai-Chen, 2008; Prelock et al., 2011) have established that PECS instruction improves communication, although not necessarily speech.

Yoder and McDuffie (2006) emphasized that many prelinguis-tic children with ASD will need to develop the foundations for communication before they acquire spoken language. They argued that these foundations include symbolic play and nonverbal com-munication accomplished through gestures and vocalizations coor-dinated with gaze. Rogers, Cook, & Meryl (2005) argue that an additional foundation skill is gestural and vocal imitation, which is also significantly impaired in ASD. Koegel and Koegel (2006) call

all these *pivotal* skills, because acquiring them tends to increase children's responsiveness to treatment. The pivotal skills of sym-bolic play, nonverbal communication, and imitation have been shown to increase response to language treatment specifically. But Yoder and McDuffie argue that it is not necessary to wait for a child to acquire these pivotal skills before starting treatment to elicit speech. They advocate working on both pivotal and language skills simultaneously. Paul (2009) suggested that intervention for preverbal preschoolers with ASD should include short, daily ses-sions of discrete trial intervention aimed at motor, vocal, and even-tually verbal imitation, while the remainder of intervention time should be focused on hybrid and child-centered activities to en-hance pivotal skills, and should include parent training, using methods such as *More Than Words* (Sussman, 1999), Ingersoll, & Dvortcsak's (2010) Social Communication training program for parents, or *Parent Responsiveness Training* (Yoder & Warren, 2002) to help parents enhance their children's communication in everyday activities and routines.

The provision of AAC for nonspeaking children with ASD, using methods such as PECS or voice-output communication devices, has also been studied in this population. Like AAC for other communi-cation disorders, this approach has been shown not to preclude the development of speech, although it is not associated with dramatic increases in speech, either (Nunes, 2008; Schlosser & Wendt, 2008). Toth (2009) suggested that AAC may serve as a temporary bridge to speech for some children with ASD. As such, work with AAC may also take place during the same time period that pivotal skills and specific speech treatment is being provided. Since the National Research Council (2001) has recommended that preschool children with ASD receive 15 to 30 hours per week of focused intervention, there should be time for the inclusion of all these elements—as well as work on peer interactions, pre-academic skills, motor abilities, self-help skills, and replacement of maladaptive behavior—in com-prehensive programs for these young children.

The role of the SLP, however, will be primarily to establish pivotal skills for language acquisition (i.e., symbolic play, nonver-bal communication, and imitation), to work toward the acquisition and generalization of speech as a mode of communication, to pro-vide AAC as a transitional approach for those children who need it, and to train parents and other educators to enhance social com-munication opportunities and responsiveness throughout the child's day. The methods for teaching all these skills can include a range of approaches such as discrete trials; naturalistic, hybrid ABA approaches such as MCT; as well as facilitative play and coaching of social interactions with typical peers. It is also impor-tant to be aware that many children with ASD have feeding diffi-culties. Twachtman-Reilly, Amaral, & Zebrowski (2008) provide guidance in addressing these issues in school settings.

There will be some children with ASD, as there are children with intellectual disability, who do not acquire spoken language during their preschool years. Although the proportion of these children has decreased—and there are numerous examples of school-aged children with ASD who have acquired spoken lan-guage for the first time, usually through the application discreet trial procedures (Pickett et al., 2009)—in general, nonspeaking children over the age of 6 require a long-term AAC system that will provide as effective a means of communication as possible. SLPs will be primarily responsible for establishing AAC for these indi-viduals. The system that will work best for a particular child will have to be discovered by experimentation. Options include Signs, pictures, Bliss Symbols, as well as written language. Some

children with ASD show special affinity for alphabet letters and can be taught to read even when other abilities would not suggest readiness for reading. Aided systems such as voice output communication aides (VOCAs) that use either pictures or written words as input have been used successfully with this population, and should be considered when developing an AAC system for nonspeaking older children with ASD, using normative platforms such as smart phones and notepad computers whenever possible to decrease stigma. Cafiero (2005) and Mirenda (2008) provide resources on the use of AAC for children with ASD.

CONCLUSIONS

Although infants and other children at prelinguistic levels of communication may look like two very different groups of clients, our goals for these two categories are in some ways very similar: helping caregivers learn to read and respond to the child's signals and supporting the family in providing an enhanced communicative environment for the child, improving feeding and vocal skills, conserving and making best use of hearing, and developing functional communication that has the potential to grow into symbolic language. The SLP has two unique goals in working with at-risk infants and their families: primary and secondary prevention of communication disorders in the infant. The vehicle by which we accomplish these goals in the first years of life is the IFSP. Remember Janice? Box 6-9 gives an example of an IFSP that might have been developed for her and her family. An additional IFSP sample format appears in Appendix 6-2.

The IFSP in Box 6-9 exemplifies several of the critical elements we discussed with regard to work with high-risk infants and their families. First, it looks at the baby in the context of the family. Notice that the intervention services outlined in the plan are exactly the ones that the family identified as their priorities and concerns in their discussion with the IFSP team. Second, the goal of the IFSP is not concerned with prediction of the baby's ultimate outcome but provision of what the baby needs now to achieve maximal potential. Goals are not chronologically age-appropriate milestones, but simply those behaviors that Janice's family feels are important for her to develop now. Finally, the IFSP integrates services from a variety of providers under the watchful eye of a case manager, who develops a real relationship with the family and advocates for them and their concerns.

The SLP has a unique opportunity when working with the family of an at-risk infant. Very often in our profession we are trying to fix what is already broken. With a baby who starts out with risk factors, though, we may have the chance to prevent things from getting broken in the first place. This is a rare opportunity and one that we ought, as a profession, to embrace. Despite our best efforts at primary and secondary prevention, many of the babies we work with will develop communicative problems that we will need to address with rehabilitative methods. However, for some infants, we may be able to ward off the effects of early difficulties. A detailed and comprehensive understanding of infant development and communication, as well as knowledge of the techniques to enhance that development, will ensure that we can take advantage of this invaluable opportunity.

We have some special opportunities when we work with older prelinguistic clients as well. These children may have spent a good part of their lives in enforced isolation because of their inability to find ways to express their interests and desires. Developing a conventional communication system for a child who has never had

one can make a tremendous difference in the quality of that child's life. Giving the gift of communication to such a child is also an achievement in which we can take a good deal of pride.

STUDY GUIDE

I. Family-Centered Practice
  A. What is IDEA?
  B. Describe the Individual Family Service Plan. Name its required elements. How is it used to provide family-centered services to handicapped infants?
  C. Discuss the uses and dangers of family assessment.
  D. Discuss communication strategies that can be used in family-centered practice.
  E. Why is a speech-language pathologist needed on the team that plans services for the at-risk infant?
II. Risk Factors for Communication Disorders in Infants
  A. Discuss some of the prenatal factors that can place a child at risk for developmental and communicative disorders.
  B. How does prematurity influence communicative development?
  C. Name and describe six genetic conditions that place an infant at risk for communication disorders.
III. Assessment and Intervention for High-Risk Infants and Their Families in the Newborn Intensive Care Nursery
  A. Discuss the formal and informal methods available for assessing feeding and oral-motor development in infants.
  B. Discuss the pros and cons of three major types of nonoral feeding used in the NICU.
  C. Describe three ways the SLP can facilitate oral feeding in at-risk newborns. What instruments can be used to assess feeding skills?
  D. How and why should the SLP promote hearing conservation in the NICU?
  E. What is the purpose of assessment of infant behavior and development?
  F. What information can the SLP gather in the NICU to assess infant development? What are some of the ways the SLP can contribute to the infant's development in the NICU?
  G. When is a newborn ready to take advantage of interaction? Discuss the signs of readiness. How can we help families recognize them?
IV. Assessment and Intervention for Preintentional Infants and Their Families: 1 to 8 Months
  A. Discuss methods for improving feeding skills in a 6-month-old baby.
  B. Describe how you would use the assessment of vocal behavior to evaluate an 8-month-old baby. What could be done to enhance vocal production during the first year of life for a baby showing poor vocal skills?
  C. List several instruments that can be used to assess infant development. What instruments are available for assessing early communicative development?
  D. How can the SLP work to coordinate services for infants and their families?
  E. How can assessment of parent-child communication be made family-centered?
  F. Discuss the three areas in which the SLP can work to enhance parent-infant communication.

BOX 6-9   Example of an IFSP for Janice

Name: Janice XXX
Date of Birth: May 22, 2011
Chronological age: 7 ½ weeks, uncorrected
Sex: Female
SSN: 000-00-000
Case Manager: Kay Jones, CCC-SLP
Assessment date: July 14, 2011
Legal Guardian: Mary and Henry XXX
Siblings: Jenna, 2.6, Harry, 4.8
Address: 6500 S. 36th Ave.
Phone: (205) 555-3788
Referred by: University Hospital

HISTORY

This is the first follow-up assessment for Janice after she left the NICU. She was the product of an otherwise uneventful pregnancy and was identified as having DS at birth. She was born at 32 weeks, weighing 3 lb. 2 oz. Ventilator treatment was needed for respiratory distress syndrome. She was intubated and received gavage tube feeding for the first 2 weeks in the NICU, then graduated to bottle feeding. Initially, feeding was difficult, but her mother was very determined to make the bottle feeding succeed, which it soon did. Janice was removed from the incubator after 3 weeks and did well in the NICU until discharge, at which point she weighed 5 lb. 3 oz.

CURRENT STATUS

The *Brazelton Neonatal Behavioral Assessment Scale* was administered to Janice just before discharge from the NICU. Janice's performance on three of the Brazelton scales-motor capacities, organizational capacities (state), and organizational capacities (stress)-was considered within normal limits. Her score on the interactive capacities scale, however, indicated reduced ability to attend to and process environmental events and to respond to faces and voices.

Hearing status was found to be normal on auditory brainstem-evoked response testing. Vision screening could not be accomplished and should be performed at the next assessment. Hearing status should be monitored regularly because of risks associated with DS.

FAMILY RESOURCES, PRIORITIES, AND CONCERNS

Extensive discussion with Janice's mother and some less extensive conversations with her father revealed the following:
Resources
Janice's mother says she is determined to do the best she can for this baby, even if she has to give up her job; she will stay home with Janice as long as she feels Janice needs it. The mother reports that she was frightened about Janice's retardation, but now that she's seen how far Janice has come in the last few weeks, she feels confident that she can help Janice to achieve her potential.
Priorities
Janice's mother has been expressing breast milk throughout her stay in the NICU and would like very much to breastfeed Janice now that she is home. She is willing to do so even on a supplementary basis and to continue bottle feeding to maintain weight gains. The mother also is very interested in having Janice interact with her brother and sister, so that they can "get to know the baby." Janice's father wants life at home to return to some semblance of normal and hopes now that Janice is home he will see more of his wife and have things run more smoothly. He would like to give Janice's mother some help at home but cannot afford to hire help.
Concerns
Janice's mother is worried about her job and wonders whether she will be able to keep it and still give Janice what she needs. She and her husband are both concerned about the financial repercussions of Janice's hospitalization. They are concerned about their ability to care for a child with intellectual disability over the long term. Their main concern now is to be sure that Janice get everything she needs to grow and develop, but they also are worried that their children will feel slighted or abandoned because of all the flurry around Janice.

OUTCOMES

1. Encourage breastfeeding. SLP will work with mother on positioning to maximize baby's intake during breastfeeding. *Criteria/timeline:* Mother will report on success of breastfeeding at next IFSP meeting; weight gain will be monitored by a pediatrician.
2. Effect of vision on Janice's difficulty in attending to faces will be evaluated. *Criteria/timeline:* Vision check at next pediatrician visit.
3. Provide emotional and financial support to family. Social work service will explore supplementary insurance issues as well as visiting nurse and home health aide services for Janice. *Criteria/timeline:* Check with family at next IFSP meeting; home health aide should be provided within the next month, if at all possible.
4. Provide home visits to develop Janice's interactive skills, particularly with siblings. SLP will meet with both parents to discuss interactive activities and will focus particularly on ways that the siblings can play with the baby. *Criteria/timeline:* SLP will meet monthly with the family to teach and monitor interactive activities. Janice's communicative development will be evaluated formally at 6 months to decide what further intervention is needed at that time.

BOX 6-9   Example of an IFSP for Janice—cont'd

EARLY INTERVENTION SERVICES AND DATES OF INITIATION OF SERVICES
1. Monthly meetings with SLP to develop breastfeeding and interactive activities. Begin July 21, 2011.
2. Social work services to explore financial and other assistance. Meet with social worker before the end of July 2011.
3. Visiting nurse or home health care to provide help to the mother as soon as can be arranged by social work service.
4. Explore possibility of classroom-based program for Janice with Regional Early Intervention Collaborative when Janice reaches eligibility age for program (12 to 18 months).

Case Manager
SLP Kay Jones will coordinate services, do monthly home visits with family, contact social work services, and arrange next IFSP meeting after Janice's 6-month development assessment by the pediatrician.

TRANSITION TO PRESCHOOL SERVICES AT AGE 3
SLP will coordinate multidisciplinary development evaluation at 30 months and arrange for coordination and transfer of information to school system Child Find team and oversee their evaluation and recommendations for preschool services. Case manager will argue for need for early intervention services in light of Janice's DS diagnosis.

G. Name four interactive behaviors the SLP can encourage parents to use with their babies.
H. To what cultural issues must the SLP be sensitive in teaching baby games to parents?
V. Assessment and Intervention for Infants at Prelinguistic Stages of Communication: 9 to 18 Months
  A. How do the infant's communicative needs change in the last quarter of the first year of life?
  B. How can play assessment be used to evaluate the cognitive level in the prelinguistic infant?
  C. Discuss the term *upping the ante*. How does it apply to intervention for the prelinguistic infant?
  D. How and when should communication temptations be used?
  E. How is language comprehension fostered in the prelinguistic infant?
  F. What parent training programs are available for the SLP to use in fostering parent-infant communication?
VI. Considerations for Older Prelinguistic Clients and Those with ASD
  A. Describe techniques that can be helpful in developing feeding skills in prelinguistic clients.

B. How do communication issues relate to feeding? Give examples of some strategies to deal with these issues.
C. How are the development of feeding and speech related?
D. Describe five methods used to assess feeding skills in infants or older prelinguistic clients.
E. How can maladaptive forms of communication be addressed?
F. How can we find out whether a client is ready to move from illocutionary to locutionary communication?
G. Describe the PECS and talk about clients for whom it might be appropriate.
H. Discuss methods of helping clients with prelinguistic communication repair communicative breakdowns.
I. Discuss several approaches to communication intervention that are appropriate specifically for prelinguistic children with ASD.
J. What are pivotal skills for communication development in prelinguistic children with ASD?

Developing Family-Centered Clinical Practice

Situation	Guidelines for Practice	Intended Outcomes	Communications Strategies
First encounter with family	1. Allow and encourage family members to describe interests before describing services. 2. Provide choices and allow family to make decisions. 3. Avoid being too nosy. 4. Let family know what information you have received from other professional and ask whether they feel it is accurate and unbiased. 5. Reaffirm confidentiality. 6. Respond quickly and don't push families off until "later."	1. To convey to families that you respect them 2. To offer immediate assistance if it is wanted (information, resources, emotional support, services, skills) 3. To give family members control over entry into services (decision making, choices) 4. To let family members know who you are and what you do (e.g., philosophy, qualifications, services) 5. To understand the family's major areas of concern and priorities	1. How are things going with (client)?
Gathering client and family data	1. Requires continuous opportunities for gathering exchanging, and interpreting information. 2. Families should have the opportunity to be present for all discussion. 3. It should be convenient for the family to participate. 4. The language used in communicating with families should be readily understood (e.g., jargon-free, using the family's own words).	1. To identify what families hope to achieve through involvement with you and your agency 2. To determine how families define the issues related to the client's handicapping condition within the context of their family values, structures, and daily routines 3. To establish yourself as a family ally	1. What have you been told about (client's name) (hearing, vision, motor skills, etc., using words of family members)? 2. How does this fit with what you know and believe about (client's name)? 3. What else do you know about (client's identified disability)? 4. In what ways has this information been helpful? Or not helpful?
Involving family in assessment process	1. Assessment should be shaped by family priorities and information needs. 2. Assessment should meet the needs of the family rather than the needs of the program or staff. 3. Preferences for family involvement should be identified and honored.	1. To request and use information provided by family members to understand the client's abilities and plan intervention 2. To promote the building of consensus about the nature of the presenting client and family needs 3. To underscore the client's and family's abilities and potential	1. For what areas do you need or want more information concerning (client's name)? 2. What kinds of information would be most useful to you regarding (client)? 3. Where and what would be the best place and time to assess (client)? 4. Are there other people who you might like to be involved in the assessment? 5. How have you been involved in assessment activities previously? 6. Was that type and level of participation satisfactory to you? 7. Are there additional ways you would like to be involved? 8. If so, which activities would you like to be a part of (e.g., stay with client, sit outside and observe, fill out checklist or survey, perform actual testing)?

Continued

Situation	Guidelines for Practice	Intended Outcomes	Communications Strategies
Reporting assessment information to family	1. Assessment information should be shared at a time and place that are suitable for family members. 2. Families should decide who will be present and how the information will be shared. 3. Families should decide what type of assessment information will be helpful to them. 4. Families should determine when intervention planning will take place.	1. To promote the building of consensus on the nature of the needs of the client and family and the need for treatment 2. To provide family members with information about the client so that they may be able to make informed decisions regarding further assessment and intervention 3. To promote and support family decision making regarding further assessment and/or intervention 4. To promote the building of consensus on the course of action that follows`	1. Where and when would you like the assessment information shared? 2. Who would you like to be present when the information is shared? 3. What part in the information sharing would you like to take? 4. How would you like the information to be shared (e.g., face to face, in writing, in detail, just in an overview, citing age levels)? 5. If face-to-face interaction, whom would you like to go first in presenting information? 6. Are there particular topics you would like discussed first? 7. What would you like to take place after the information sharing (e.g., talk about future plans, wait and talk later, follow-up call)? 8. How did you feel about the assessment activities performed with (client)? 9. Do you think that what we saw today was typical of (client)? If not, what kinds of differences did you observe and how are things typically? 10. Were there any areas that we did not assess that you feel would be helpful to assess? 11. What did you think overall of (client's) interactions with the assessors? 12. Were there things that happened today that surprised you? If so, what? 13. How do you feel about the assessment results? 14. What would you like the next step to be?
Planning intervention program with the family	1. Parents should have the opportunity to be involved in all planning meetings related to the client and family. 2. Intervention plans should be designed to fit within the family's daily routine. 3. Families should be the ultimate decision makers regarding intervention planning; individualize practices to match parent needs and preferences. 4. The written plan should be easy for families to understand and use, and flexible enough to allow ongoing changes.	1. To identify priorities and to promote solution development with families related to their priorities 2. To support family decisions	1. If you were to focus you energies on one thing for (client's name), what would it be? 2. If you could change one thing about (event of importance), what would that be? 3. Imagining 6 months down the road, what would you like to be different in terms of (event or area of importance)? Are there some things that you would like to be the same? 4. What would you like to accomplish in 6 weeks? 6 months? 5. What are some ways of getting to where you want to go? Who would need to be involved in accomplishing what you want to do? 6. What would each of you need to do to accomplish what you want? 7. How will you know when you've done what you want to do? 8. How will you know when (client's name) has made progress in the ways you described? 9. How long do you think it will take to get to where you want to go?

Situation	Guidelines for Practice	Intended Outcomes	Communications Strategies
Throughout all contacts	1. Support, trust, and respect parents. 2. Use a strengths-based approach. 3. Understand and accept parent's perceptions and experiences. 4. Coordinate professional team.	1. To maximize receptiveness and effective bonds 2. To support parent's perceptions of child 3. To overcome past negative experiences and form partnerships with professionals 4. To avoid confusing or overwhelming families	

Adapted from Crais, E. (1991). *A practical guide to embedding family-centered content into existing speech-language pathology coursework.* Chapel Hill, NC: University of North Carolina; and Bruns, D., & Steeples, T. (2001). Partners from the beginning: Guidelines for encouraging partnerships between parents and NICU and EI professionals. *Infant-Toddler Intervention, 11, 237-247.*

Sample Individualized Family Service Plan

Date of Referral: _____   Sample Format
Beginning IFSP Date: _____
Review Dates: _____

Child's Name: _____
  County of Residence: _____
  Date of Birth: _____
  School District: _____
  Current Placement/Services: _____
Mother's Name: _____
  Address: _____
Father's Name: _____
  Address: _____
  Phone (home): _____
       (work): _____
Case Coordinator: _____
  Phone: _____
Diagnosis: _____

Medical Information

Vision: _____
Hearing: _____
Medication: _____
Precautions: _____

IFSP Committee Signatures   **Date** _____

Parents(s): _____
Teacher: _____
Therapist: _____
County Representative: _____
Local Educational Agency Representative: _____
Speech-Language Pathologist: _____
Nurse/Pediatrician: _____
Social Worker: _____
Case Manager: _____

Adapted from Johnson B., McGonigel, M., and Kaufmann, R. (1989). *Guidelines and recommended practices for the Individualized Family Service Plan.*
Washington, DC: Association for the Care of Children's Health; Fewell, R., Snyder, P., Sexton, D., Bertrand, S., and Hockless, M. (1991). Implementing IFSPs
in Louisiana: Different formats for family-centered practices under Part H. *Topics in Early Childhood Special Education, 11,* 54-65.

DEVELOPMENTAL HISTORY

Date: _____

Child's Name: _____

    DOB: _____

    Address: _____

    Phone: _____

Family Composition

Mother: _____

Father: _____

Step-Parent: _____

Foster Parent: _____

Other Children: _____

Others Living in Home: _____

Grandparents, Relatives: _____

Pregnancy

Pregnancy was _____ normal _____ problem

    If problems, what kind: (please circle)

chronic disease	viral infection	Rh incompatibility
vaginal bleeding	toxemia	hypertension
trauma	other _____	

Birth History

Child's birth weight: _____

Length of labor: _____

Special considerations: (please circle)

cesarean	cord around neck	premature (# of weeks) _____
jaundice	breech	transfused
baby rotated	Rh negative	twin (1st born, 2nd born)
other _____		

Length of child's hospital stay: _____

List any special cares that were needed (e.g., oxygen, incubator, tube feedings, surgery): _____

_____

CHILD'S PRESENT LEVELS OF DEVELOPMENT

Physical Development

    Vision: _____

               _____

    Hearing: _____

               _____

    Health Status: _____

               _____

               _____

AREA	TEST/OBS.USED	DATE	CHRON. AGE/ CGA AGE AT TESTING	AGE-EQUIVALENT SCORE*
Cognitive	_____	_____	_____	_____
Speech/Lang.	_____	_____	_____	_____
Motor: Gross	_____	_____	_____	_____
Psychosocial	_____	_____	_____	_____
Self-Help	_____	_____	_____	_____
Additional Information:	_____			

*Age-equivalent score is reported only if test standard score indicates performance is significantly below age level. Otherwise WNL (within normal limits) is reported.

Continued

Family Resources, Priorities and Concerns/Outcome Statements

| Child/Family Needs and/or Concerns (present status): | Outcome Statement (includes criteria timelines): | Resources/Who's Responsible: |

EARLY INTERVENTION SERVICES/DATES OF INITIATION AND DURATION OF SERVICES

Suggested Early Intervention Services

_____ Family Service Coordination   _____ Speech-Language Pathology
_____ Health Services   _____ Occupational Therapy
_____ Special Instruction   _____ Physical Therapy
_____ Family Training, Counseling, and Home Visits   _____ Audiology
_____ Medical Services (for diagnostic/evaluation purposes)

Services Parent(s) Feel Are Necessary to Meet Needs

Service Provided by	Frequency	Time	Location	Method	Begin	End	Payor	Contact Person	Phone No.

Case Manager/Transition Services

Case Manager/Family Service Coordinator:

Name: _____

Title: _____

Agency: _____

Phone: _____

Transition Plan (if applicable):

Date	Plan of Operation	Who's Responsible	Time Line	Date Achieved

Tools for Assessing Infant Development

Scale	Areas Assessed	Comment
Ages and Stages Questionnaires: A Parent-Completed Child— Monitoring System—Third Edition (ASQ-3; Bricker & Squires, 2009)	4–60 mo; Developmental questionnaires sent to parents of at-risk children. Areas screened include gross and fine motor control, communication, personal-social, and problem solving.	Involves parents in the assessment process. Questions available in Spanish, French, and Korean.
Albert Einstein Scales (Escalona & Corman, 1966)	Tactile exploration activities not readily available in other scales.	Provides a qualitative assessment of behaviors.
Assessing Linguistic Behavior (ALB; Olswang, Stoel-Gammon, Coggins, & Carpenter, 1987)	Birth–2 yr; observational scales to assess the performance of cognitive antecedents, play, communicative intention, language production and comprehension.	Provides a developmental level comparison and detailed instructions for administering assessments.
Assessment in Infancy: Ordinal Scales of Infant Psychological Development (Uzgiris & Hunt, 1989)	Follows Piagetian sequences to measure infant development in communicative and social domains.	Used during the sensorimotor period of development; helpful in the development of functional, generative, instructional objectives; useful as a tool to explain the child's level of achievement across developmental domains to parents.
Assessment, Evaluation, and Programming System for Infants and Children—Second Edition (AEPS; Bricker, 2002)	Birth–6 yr; assessment and evaluation of fine and gross motor movements and adaptive, cognitive, and social communication.	Criterion-referenced assessment and evaluation; also includes a family report measure for parents to assess their child.
Battelle Developmental Inventory— Second Edition (BDI-2; Newborg, Stock, Wnek, Guidubaldi, & Svinicki, 2004)	Birth–7:11; cognitive, perceptual, discrimination, memory, reasoning, academic, conceptual behaviors; personal-social, motor, communication, and adaptive.	Specific adaptations for specific handicapping conditions; very comprehensive standardization data for normally developing children; provisions for testing directly, by observation, and by interview; sparse number of items provided for each age range; a good screening tool.
Bayley Scales of Infant Development— Third Edition (Bayley-III; Bayley, 2005)	12–42 mo; sensorimotor skills; cognitive, psychomotor, social, visual, and auditory. Motor scale can be administered separately.	Used with handicapped infants and children; excellent standardization properties; measures a large number of behaviors; some items may be scored based on observations, omissions, refusals, and caregiver reports; not appropriate for children with moderate to severe sensory and motor deficits; most appropriate with children who exhibit mild cognitive delays or mild sensory communication impairments.
Birth to Three Checklist of Language and Learning Behaviors (BTC-3; Ammer, 1999)	A criterion-referenced tool that measures five categories of early skill acquisition, including language comprehension, language expression, avenues to learning, and social behaviors.	Results yield IFSP for the family and child.
The Brigance Infant and Toddler Screen (Brigance & Glascoe, 2002)	Birth–23 mo; fine motor, receptive language, expressive language, gross motor, self-help, and social-emotional.	Parent-report and direct elicitation versions. Spanish direction booklets available.
Carolina Curriculum for Infants and Toddlers with Special Needs— Third Edition (Johnson-Martin, Attermeier, & Hacker, 2004)	Birth–36 mo; cognition, language, self-help, fine motor, gross motor; includes daily routine integration strategies.	Criterion-referenced procedure for developing intervention targets.
Casati-Lezine Scales (Casati & Lezine, 1968)	Searching for hidden objects; use of intermediaries, exploration of objects, and the combination of objects.	Offers additional Piagetian items not included on the Dunst scales.

Continued

Scale	Areas Assessed	Comment
Denver Developmental Screening Test—II (DDST-II; Frankenburg et al., 1990)	Birth–6 yr; assesses four developmental areas: personal-social development, fine motor–adaptive development, language development, gross motor development.	Determines whether a child performs within normal range on various tasks in the areas of personal-social, fine motor–adaptive, language, and gross motor skills; identifies whether a child is likely to have delays in any of those areas.
Developmental Assessment of Young Children (DAYC; Voress & Maddox, 1999)	Birth–5 yr; communication, cognition, social-emotional development, physical development, adaptive behavior.	Normed on 1269 children. One subtest for each of the five domains listed at left. Administration time: 10-20 min. for all 5 subtests
Developmental Assessment for Students with Severe Disabilities—Second Edition (DASH-2; Dykes & Erin, 1999)	For individiauls whose developmental age is birth–6 yr; assesses language, sensorimotor function, activities of daily living, and preacademic and social-emotional performance.	Determines developmental functioning age.
Manual of Developmental Diagnosis (Knobloch, Stevens, & Malone, 1980)	Adaptive, gross motor, fine motor, language, and personal-social behaviors.	Provides examples of developmental skills.
Developmental Profile 3 (DP-3; Alpern, 2007)	Used to evaluate a child's functioning and risk of delayed development in five key areas: physical age, self-help age, social age, academic age, and communication age.	Assesses development in the following areas respectively: muscle coordination and sequential motor skills; ability to cope independently; interpersonal abilities, emotional needs; intellectual abilities and prerequisite skills; expressive and receptive communication skills.
Developmental Programming for Infants and Young Children (Moersch & Schafer, 1981)	Assesses function and facilitates development of children in five areas: perceptual and fine motor, cognition, language, social and emotional skills, and gross motor skills.	Provides direct transition to intervention goals and programming.
Early Intervention Developmental Profile (Rogers et al., 1981)	Perceptual and fine motor, cognition, language, social-emotional, self-care, and gross motor domains.	The motor scales are strengths of this scale; comprehensive developmental coverage, intended for use in a team approach; graphic profile of children's abilities; limited number of items at each age range; desirable for screening.
Early Learning Accomplishment Profile (E-LAP; Glover, Priminger, & Sanford, 1988)	Birth–36 mo; cognition, language, communication, adaptive behavior, social and emotional, motor skills.	Criterion-referenced assessment; especially useful in educational settings.
Griffiths' Mental Developmental Scale (Griffiths, 1954)	Locomotor, personal-social, hearing and speech, eye and hand coordination and performance.	Designed for use with children who have delays and deficits; contains the Abilities of Babies Subtest for assessment during the first 2 yr; includes information on performance of children with various handicaps; comparisons of client can be made to children with similar deficits; practical items relate to everyday activities; a general intelligence quotient may be derived; test administration may be limited by the many perceptual motor items that are timed; normed on the British population.
Hawaii Early Learning Profile (Furuno et al., 1994)	Cognitive, language, fine and gross motor, self-help, and social.	Performance is rated on four levels of mastery, rather than pass-fail; provides sequential approach to a Piagetian assessment of cognition particularly during the first 2 yr; sensitive to attachment and bonding behaviors; provides a good number of behaviors to assess; readily integrates into intervention programs.
Infant Developmental Screening Scale (Proctor, 1995)	Screens for developmental delays in six domains: habituation, attention, interaction, motor, physiological movements, and reflexes.	Useful for hospital-based practice with infants.

Scale	Areas Assessed	Comment
Infant Intelligence Scale (Cattell, 1960)	Sensorimotor skills, cognitive, psychomotor, and social.	Very similar to the Bayley, although not as comprehensive; additional items are provided if one item is administered in error; designed to be administered by teachers and instructional personnel.
The Rossetti Infant-Toddler Language Scale (Rossetti, 1990)	Birth–3 yr; areas assessed include play, interaction, attachment, gesture, pragmatics, language comprehension, and expression.	Includes parent questionnaire and test protocol to gather observed, elicited, and parent-report information; also includes a vocabulary checklist for comprehension and production.
Mehrabian and Williams Scale (Mehrabian & Williams, 1971)	Denotation and representational ability, linguistic and nonverbal communication abilities, domains of denotation and representation, observing response, reciprocal assimilation, object stability, imitation, and causality.	Gives level of cognitive development in months; provides assessment framework for the development of nonverbal behaviors and for the cognitive relationship between early "motor gestural" and later linguistic development.
Mullen Scales of Early Learning (Mullen, 1995)	Five brief scales that measure gross motor skills, visual-reception skills, fine motor skills, expressive and receptive language.	Provides examiner with a good picture of early cognitive and motor development; for each scale there is a T-score, percentile, and an age-equivalent score.
Reynell Developmental Language Scales III (Edwards et al., 1999)	Social adaptation, sensorimotor under-standing, exploration of environment, response to sound and verbal compre-hension, vocalization and expressive language (structure), expressive language (vocabulary and content), and communication.	Designed specifically to assess visually impaired children with additional handicapping conditions; provides norms for sighted, partially sighted, and totally blind children; divides expressive language testing into structure and content areas.
The Portage Guide: Birth to Six (Portage Project, 2003)	General development.	Set of tools for assessment and curriculum planning. One set of materials for birth to 3 yr. Each set of materials includes Tool for Observation and Planning (TOP) Assessment, spiral bound set of Activity and Routines Resource books corresponding to each TOP item, and User's Guide.
Schedule of Growing Skills, Second Edition (Bellman, Lingam, & Auckett, 1996)	Assesses a range of areas for identification of normal or delayed development.	A rapid and reliable standardized assessment of child development; based on recent data from UK health surveillance.
Syracuse Dynamic Assessment for Birth to Three (SDA; Ensher et al., 1998)	Evaluates development of neuromotor sensation, perception, cognition, language, communication, social emotional behavior, and adaptive behavior, with priority to an integrated assessment of the whole child in the most familiar and natural contexts.	Play-based assessment of early development.
Test of Pretend Play (ToPP; Lewis & Boucher, 1999)	Ages 1–6 yr; measures a child's ability to play symbolically in structured play conditions and in free play conditions.	Measures conceptual development, ability to use symbols, emotional status, and imagination and creativity.
The Vulpe Assessment Battery–Revised (VAB-R; Vulpe, 1997)	Birth–6 yr; object, body, shape, size, and space concepts; visual memory; auditory discrimination; auditory attention; comprehension; memory; cause-effect or means-ends behaviors; categorizing and combining schema.	Comprehensive, process-oriented, criterion-referenced assessment that emphasizes children's functional abilities; the VAB-R provides a systematic interactive assessment/analysis of several key developmental domains to identify children who may be at risk of educational failure.
Vineland Adaptive Behavior Scales, Second Edition (Vineland-II; Sparrow, Balla, & Cicchetti, 2005)	Expressive and receptive communication, socialization, daily living, motor.	Extremely well-standardized with norming groups containing normal and handicapped individuals. Structured interview format.

Infant Feeding Assessment Instruments

Instrument	Description
Clinical Feeding Evaluation of Infants (Wolf & Glass, 1992a)	Provides a checklist for recording behaviors as well as a description of normal oral movement patterns.
Early Feeding Skills Assessment (Thoyre, Shaker, & Pridham, 2005)	A checklist for assessing infant readiness for oral feeding.
Feeding Flow Sheet (VandenBerg, 1990)	Used to document feeding progress during NICU stay.
Feeding Assessment (Morris & Klein, 2000)	Provides a questionnaire in both English and Spanish that the clinician can use with whoever is feeding the infant, whether parent or medical staff, and also provides guidance in developing a treatment plan.
The Infant Breastfeeding Assessment Tool (IBFAT; Matthews, 1988)	Used by parent or medical professional to measure infant's rooting, fixing, and sucking behaviors.
LATCH: A Breastfeeding Charting System and Documentation Tool (Jensen, Wallace, & Kelsay, 1994)	Consists of a scale for evaluating breastfeeding.
The Mother-Baby Assessment (MBA; Mulford, 1992)	Used to assess both maternal and neonatal breastfeeding behaviors.
Neonatal Oral-Motor Assessment Scale (Palmer, Crawley, & Blanco, 1993)	Includes both oral-motor evaluation and checklist for scoring normal and disordered feeding movements.
Newborn Individualized Developmental Care and Assessment Program (NIDCAP; Als, 2009)	Provides procedures for observing and summarizing natural infant behavior before, during, and after caregiving, and provides guidelines for developing behavioral goals on the basis of the observation.
Oral Motor Assessment (Sleight & Niman, 1984)	Developed for use with Down syndrome babies, but may be used with infants who have a variety of handicaps.
Preschool Oral Motor Examination (Sheppard, 1987)	Involves clinical direct assessment of motor and feeding behaviors.
Pre-Speech Assessment Scale (Morris, 1982)	Assesses a range of behaviors in addition to feeding, including respiration and vocalization, and provides an extensive questionnaire to be used with parents; also contains a wealth of information on normal and atypical prespeech and feeding development.
Preterm Infant Breastfeeding Behavior Scale (Nyquist, Sjoden, & Ewald, 1999)	Used to assess breastfeeding behaviors in preterm infants.
Systematic Assessment of the Infant at the Breast (SAIB; Shrago & Bocar, 1990)	Used to evaluate the infant's contribution to breastfeeding.

How Can We Help?

Family Name: _____ Date: _____

    Children and families receiving early intervention services have their own strengths and needs. Please use this form to help us know how we can be most useful to your family. We know that your needs will change from time to time and that this will be just a beginning in helping us to plan together. Answer only those questions that you think will help us to know how we can be most helpful to you and your family.

What pleases you most about your child?

What worries you most about your child?

What kind of help or information about your child do you need?

Are there things that you feel are going well for your family and child right now?

In the next several months, I would like my child to be able to . . .

Besides my family, other people I would like to include in the assessment and planning meeting for my child and family are . . .

In the next several months, I would like my family to . . .

Continued

OUR FAMILY WOULD LIKE . . .

	We Have Enough	We Would Like More	Not Sure
Information about:			
Child development	_____	_____	_____
Child behavior	_____	_____	_____
Nutrition/feeding	_____	_____	_____
Our child's health problems	_____	_____	_____
Our child's developmental problem	_____	_____	_____
Toys or books for our child and how to get them	_____	_____	_____
Other:			
Help with child care:			
Finding daily child care	_____	_____	_____
Finding babysitters or respite care	_____	_____	_____
Finding a preschool for my child	_____	_____	_____
Teaching the care provider how to take care of my child	_____	_____	_____
Finding ways to pay for child care	_____	_____	_____
Evaluating child care settings or determining appropriate child care settings	_____	_____	_____
Other:			
To know about community services for my child and family:			
GED and other adult education	_____	_____	_____
Transportation to services	_____	_____	_____
Public transportation	_____	_____	_____
Who can help with transportation to doctor's appointments and other special services for my child	_____	_____	_____
Food, food stamps, WIC, or other nutritional programs	_____	_____	_____
Housing	_____	_____	_____
Fuel	_____	_____	_____
Clothing	_____	_____	_____
Finding a job or job training	_____	_____	_____
Financial assistance	_____	_____	_____
Individual or family counseling	_____	_____	_____
Other:			
To know about getting medical and dental care for my family:			
Finding a doctor or dentist	_____	_____	_____
Getting help paying for health care	_____	_____	_____
Getting and using special equipment and supplies for my child	_____	_____	_____
Training in how to give first aid/CPR for my family and others	_____	_____	_____
Family planning/birth control	_____	_____	_____
Other:			
Help talking about my child:			
To nieces, nephews, and to other children	_____	_____	_____
To friends and other relatives	_____	_____	_____
To doctors and nurses to get the information and help we want	_____	_____	_____
To other professionals (social workers, teachers, others) about my baby and ourselves to get the information and help we want	_____	_____	_____
To other people I meet	_____	_____	_____
Other:			
Help planning for the future/transition:			
Eligibility and the public school special education process	_____	_____	_____
Eligibility, legal rights, parent's role	_____	_____	_____
Visiting other service settings	_____	_____	_____
Determining the best setting for my child	_____	_____	_____
Other:			

Please tell us the other ways we might be able to help:

The early intervention program can provide services to help you help your baby grow and develop.
Families often need many services we cannot provide. When that happens, your case manager will help you find out how to get other community services.

Considerations in Feeding Older Prelinguistic Children

FOOD CHOICE
1. Sweet, sour, salty, or citrus foods tend to increase saliva; may be avoided for children with excessive drooling.
2. Milk tends to thicken saliva; broth tends to thin it.
3. Thin liquids are hard to manage orally; thicker liquids such as shakes or "smoothies" are easier to swallow.
4. Combinations of textures, such as soup with noodles, are hard to handle; they should be blended.
5. Slightly cooked vegetables are easier to chew than raw ones.
6. Avoid foods that could block the airway, such as hot dogs, foods with skin, unmashed grapes, and food in chunks.
7. Keep cold foods cold and hot foods hot so that the child can experience temperature differences; be careful not to overstimulate child with foods that are very hot or very cold.
8. A balanced diet is a must for any child's health. Vitamin supplements may be necessary and can be added to food.

EQUIPMENT FOR FEEDING
1. Towels and washcloths for cleaning child.
2. Teflon-coated spoon with a shallow bowl to prevent pain if child bites hard.
3. Cup with soft plastic rim; cup should be as big around as child's mouth is when open.
4. Equipment to maintain food temperature if feeding takes a long time.

POSITIONING
1. Hips and knees at 90-degree angles when seated.
2. Feet supported.
3. Shoulders slightly forward and arms supported.
4. Spine straight.
5. Head at midline and slightly forward.
6. Knees slightly apart.

DEVELOPING CUP-DRINKING SKILLS
1. Introduce cup outside of mealtime in playful situations.
2. Let child play with empty cup.
3. Rub a preferred taste on rim of cup and allow child to mouth it.
4. Introduce thickened liquid in cup, resting cup on lower lip in front of teeth; do not tip at more than a 20-degree angle. Be sure lips are closed before beginning.
5. Let child use upper lip to suck liquid from cup; be careful not to dump liquid in the child's mouth.
6. To increase stability and facilitate mouth closures and upper lip movement, place middle finger under chin and gently push up while placing index finger or thumb on bottom edge of lower lip and gently pushing up.

DEVELOPING SPOON-FEEDING SKILLS
1. Use adaptive positioning for comfort and stability.
2. Introduce spoon outside mealtime in playful situation, such as pretending to feed doll.
3. Let child play with empty spoon.
4. When child tolerates spoon, dip it in food with a preferred taste.
5. Present spoon to lips or front of mouth. Let child use upper lip movement to remove food from spoon. Do not dump food in child's mouth.
6. If tongue protrudes or child shows low facial tone, apply pressure down on middle of tongue with the spoon and withdraw it at a neutral angle, being careful not to scrape the spoon upward.
7. Use support to jaw or chin to increase stability, permit graduated jaw movement, and allow child to use upper lip movement to close on spoon.
8. When child accepts food from spoon, gradually increase textures presented.

DEVELOPING CHEWING SKILLS

1. Stimulate a munching pattern by presenting crunchy solid foods between molar surfaces. Look for up-and-down movement of the jaw.
2. Facilitate lateral tongue and jaw movements by stroking the side of the tongue with a solid food, then place the food between the molar surfaces.
3. Stimulate chewing during eating by rubbing the child's cheeks, one at a time, in a circular motion.
4. Provide jaw and chin support (as previously described) to reduce tongue protrusion and facilitate graduated jaw movement.
5. As child develops more control, place food closer to front of mouth.

CAUTIONS

1. The possibility of choking is always present. Practice feeding techniques, use care in choosing foods that will be easy for child to manage orally, and know first aid procedures in case choking occurs.
2. Seizures may occur during eating. If they do, stop feeding and wait until seizure is under control. Check to see whether any food is in mouth during and after seizure.
3. Look for abnormal feeding behaviors, such as those identified by Jaffe (1989) and listed in the following:
   a. **Tongue thrust:** abnormal protrusion of tongue.
   b. **Tongue retraction:** strong pulling back of tongue to pharyngeal space.
   c. **Jaw thrust:** abnormally forceful downward extension of mandible.
   d. **Lip retraction:** drawing the lips back so that they make a tight line over the mouth.
   e. **Lip pursing:** a tight protrusion of the lips.
   f. **Tonic bite reflex:** an abnormally strong closure of the teeth or gums when stimulated.
   g. **Jaw clenching:** an abnormally tight closure of the mouth.

If these occur, specialized physiological feeding assessments may be necessary.

Adapted from Hall, S., Circello, N. Reed, P., & Hylton, J. (1987). *Considerations for feeding children who have a neuromuscular disorder.* Portland, OR: CARC Publications; McGowan, J., & Kerwin, M. (1993). Oral motor and feeding problems. In K. Bleile (Ed.), *The care of children with long-term tracheostomies* (pp. 157-19d). San Diego, CA: Singular Publishing Group.

6-7 Training Resources for Parents of Preintentional Infants

Resource	Comments
Baby Signals (Lynch-Fraser & Tiegerman, 1987)	Helps parents learn to identify infant states and learning styles.
The Carolina Curriculum for Infants and Toddlers with Special Needs—Third Edition (Johnson-Martin, Hacker, & Attermeier, 2004)	Provides comprehensive information on facilitating feeding and communicative development for infants and toddlers with a variety of handicapping conditions.
Curriculum Guide: Hearing-Impaired Children— Birth to Three Years—and Their Parents (Northcott, 1977)	Comprehensive infant program that focuses on home-centered, parent-guided, natural language approach to learning that is based on child's daily activities.
Developmental Communication Curriculum (Hanna, Lippert, & Harris, 1982)	Curriculum intended to help extend prelinguistic communication skills on which language is based; uses play as natural context for learning; includes parent information.
Developmental Play Group Guide (Browne, Jarrett, Hvey-Lewis, & Freund, 1997)	Manual containing group-lesson plans to give parents the information they need to guide the development of their birth to 12-month-old infants; lessons cover communication, cognition, and developmental play intervention.
Ecological Communication (ECO): Becoming partners with children: From play to conversation (MacDonald, 1989)	Helps parents establish a balanced, responsive, and matched social relationship with preverbal children.
Exceptional Children Conference Papers: Parent Participation in Early Childhood Education (Exceptional Children, 1969)	One area covered is programs for training mothers to instruct their infants at home.
Family Administered Neonatal Activities (Cordone & Gilkerson, 1989)	Involves parents in observing and interpreting newborn's actions and reactions.
Hanen Early Language Parent Program (Girolametto, Greenberg, & Manolson, 1986)	Teaches families to develop dialogue skills by responding contingently to children and to increase opportunities for communication by planning play activities with communication goals in mind.
Illinois Early Learning Project Tip Sheets: Language Arts (Illinois Early Learning Project, 2003)	Easy-printing pages are available as Web pages and as PDF files. Tip sheets related to promoting pre-literacy skills and conversation.
Infant Learning: A Cognitive, Linguistic Intervention Strategy (Dunst, 1981)	Intended for use by teachers, therapists, and child-care workers; three phases are response-contingent behaviors, sensorimotor abilities, and early cognitive-linguistic abilities.
It Takes Two To Talk: A Practical Guide for Parents of Children with Language Delays, Third Edition (Pepper & Weitzman, 2004)	Helps parents of children with language delays to promote their child's communication and language development in everyday conversations, daily routines, play activities, music, book reading, and art activities.
Learning Language and Loving It, Second Edition (Weitzman & Greenbar, 2002)	Provides guidelines for developing language in everyday activities. French and Korean version available for 1st ed.
Making the Connections that Help Children Communicate (Girolametto, Greenberg, & Manolson, 1986)	Summarizes the Hanen approach in a workbook format. Teaching aid to support a 1-day workshop for parents awaiting speech-language pathology services.
More Than Words: Helping Parents Promote Communication and Social Skills in Children with Autism Spectrum Disorder (Sussman, 1999)	Guidebook for parents of children with autistic spectrum disorder. Contains descriptions of strategies drawn from current research, which are known to help children with autism develop more advanced communication skills. See accompanying videos listed in Appendix 6-8.
Parent Articles for Early Intervention (Dunn Klein, 1990)	102 articles that provide parents with practical information on therapeutic ways to interact with their special-needs child.
Parenting a Hearing-Impaired Child (Northcott, 1973)	Systems approach to parental participation, aids for parents.
Parent-Infant Communication, Fourth Edition (Scuyler & Sowers, 1998)	Curriculum for hearing-impaired with objectives in auditory development, presymbolic communication, and receptive and expressive language; helps parents become accurate reporters and coordinate services for their child.
Promoting Communication in Infants and Young Children (Quick & O'Neal, 1997)	500 activities and suggestions for promoting communication development in infants and young children.

Resource	Comments
Reach Out and Teach (Ferrell, 1985)	Two volumes: *Parent Handbook* and *Reach*; contains chapter on "Daily Living and Communicating" (eating skills are a topic in this chapter).
Since Owen: Parent-to-Parent Guide for Care of the Disabled Child (Callanan, 1990)	Discusses raising a disabled child from before birth through life in the adult world.
Speech and Language Handouts Resource Guide, Second Edition (Brooks & Hartung, 2000)	Tear-off sheets that clinicians, physicians, speech pathologists, pediatricians, and others can give to parents who are concerned about their child's speech and language development. Spanish edition also available.
Talk to Me: A Language Guide for Parents of Blind Children and Talk to Me II: Common Concerns (Kekelis, Chernus-Mansfield, & Hayashi, 1984)	Two pamphlets with some suggestions to encourage language development.
Talk! Talk! Talk! Tools to Facilitate Language (Muir et al., 2000)	Birth to 10 yr; strategies for listening and talking to teach to caregivers.
Take Home: Preschool Language Development (Drake, 1998)	Designed for parents of children from 1 to 6 yr of age who have communication disorders. Includes lesson plans and activities.
Teach Your Child to Talk—Revised (Pushaw, 1976)	Manual; slide; cassette tape; movie; parent handbook; and *Teach Me to Talk*, a booklet for parents of newborns.
The Exceptional Parent (magazine)	Practical information for parents of handicapped children. Also see www.eparent.com.
The New Portage Guide (Portage Project, 2003)	For mental ages birth to 5 yr; two parts: checklist of behaviors and card file; five developmental areas: cognitive, self-help, motor, language, socialization. Also available in Spanish.
"Tips for Parents" (Lawrence, 1991)	Tips for feeding disabled children who have a G-tube or who are developmentally delayed.
"Training Prerequisites to Verbal Behavior" in Systematic instruction of the moderately and severely handicapped (Bricker & Dennison, 1978)	Gives behaviors preliminary to formal language development; strategies included for on-task behavior, imitation, discriminate use of objects, and word recognition.
Transactional Intervention Program (Mahoney & Poweel, 1986)	A home-based program that helps parents to develop a responsive style of interaction with children with developmental delays from birth to 3 yr.
Understanding My Signals (Hussey-Gardner, 1999).	Pamphlets designed to help parents of premature infants.
You Make The Difference: In Helping Your Child Learn (Manolson, Ward, & Dodington, 1995)	Helps parents connect in encouraging a child's self-esteem and learning.
Your Child's Speech & Language (Brooks, 1978)	Provides information about speech and language development from infancy through 5 yr.
When Your Child Has a Disability: The Complete Sourcebook of Daily and Medical Care, Revised (Batshaw, 2007)	Offers expert advice on a range of issues, including doctors, care techniques, and fulfilling educational requirements.

Videos for Training Parents of Infants

Title	Source	Comments
Baby Speech: An Adult's Guide to Helping Your Little One Communicate (Castillo & Ramsay, 2001)	Chatterbox Communications Available through Speech Bin	40 minutes. Teaches parents simple techniques to promote speech.
Communicating Effectively with Young Children (Communication Therapy Skill Builders, n.d.)	Communication Therapy Skill Builders (A Division of the Psychological Corporation) 555 Academic Court San Antonio, TX 78204	Gives families effective communication strategies for use with children who have communicative, physical, social, or cognitive impairments. Teaches, illustrates, and models routines and communication strategies for parental interaction with the child.
Family-Guided Activity-Based Intervention for Infants and Toddlers (Cripe & Crabtree, 1995)	Brookes Publishing PO Box 10624 Baltimore, MD 21285	Helps parents with daily routines and activities to foster skill development in young children with special needs.
Feeding Skills: Your Baby's Early Years (Arens, 1985)	Churchill Films 662 North Robertson Blvd. Los Angeles, CA 90069	How and why babies feed as they do; breastfeeding, transition to spoon feeding, home preparation of food, finger feeding.
Growing Together (AGS Media, 1992)	American Guidance Service 4201 Woodland Rd. Circle Pines, MN 55014	Designed to provide teen parents with practical information on understanding and caring for infants.
Human Development: The First Two-and-One-Half Years: Program 7—Language (Concept Media, n.d.)	Concept Media PO Box 19542 Irvine, CA 92713	Stages in child language development are illustrated: cries of hunger, discomfort, fear; cooing, babbling, first words.
Human Development: A New Look at the Infant: Program 4—Infant Communication (Concept Media, n.d.)	Concept Media PO Box 19542 Irvine, CA 92713	Describes process of communication, three components that form basic structure of communication, and forerunners of full-fledged communication.
Human Development: The First Two-and-One-Half Years: Program 3—The Development of Understanding (Concept Media, n.d.)	Concept Media PO Box 19542 Irvine, CA 92713	Piaget's observations of infant development are discussed; infants actively seek information and absorb information gained.
Making the Most of Early Communication: Strategies for Supporting Communication with Infants, Toddlers, and Preschoolers Whose Multiple Disabilities Include Vision and Hearing Loss (Chen & Schachter, 1997)	Chen, Deborah, & Schachter, Pamela Haag AFB Press American Foundation for the Blind PO Box 1020 Sewickey, PA	This 37-minute video demonstrates selected interventions to assist infants and toddlers with multiple disabilities, including vision and hearing loss, in developing early communication and other skills.
More Than Words (introductory video and teaching tape) (Sussman, 1999)	Hanen Centre Suite 515, 1075 Bay Street Toronto, Ontario Canada M5S 2B1 www.hanen.org	Demonstrations of techniques described in the guidebook (see Appendix 6-7). Introductory video is 20 min; teaching video is 120 min.
Observing and Enhancing Communication Skills: For Individuals with Multisensory Impairments (Rowland, 2001)	Concept Media PO Box 19542 Irvine, CA 92713	Teaches parents how to observe, analyze, and enhance communication skills in children who have vision and hearing impairments or multiple disabilities.
On This Journey Together (4-video set) (Family First & Ohio Department of Mental Retardation, n.d.)	Family First and Ohio Department of Mental Retardation and Developmental Disabilities	Parents speak about their experiences in raising a child with developmental disabilities.

Title	Source	Comments
Premie Potential: Improving the NICU Environment of the Premature Infant (Communication Skill Builders, n.d.)	Communication Skill Builders 3830 E. Bellevue PO Box 42050-P93 Tucson, AZ 85733	Gives how-to's on approaching the infant, determining levels of stimulation, teaching parents interaction skills, making the infant's world as pleasant and nurturing as possible.
Sharing Books with Babies: Promoting Early Literacy in Early Care and Education (Kaplan-Sanoff, 2002)	Margot Kaplan-Sanoff Boston Medical Center One Boston Medical Center Place Maternity 5 Boston, MA 02118	The video demonstrates the following: (1) the developmental stages of early literacy growth in the first 5 yr of life, (2) examples of early literacy-promoting activities which can be used throughout the day, and (3) literacy rich home- and center-based environments for infants, toddlers, and preschoolers.
Successfully Parenting Your Baby with Special Needs: Early Intervention for Ages Birth to Three (Hanlon, 1999)	Produced by Grace Hanlon, M.S. 1999, 60 minutes Brookes Publishing PO Box 10624 Baltimore, MD 21285	60 min. Gives first-time parents of infants with special needs a full introduction to the early intervention process. Covers diagnoses and referral, evaluation criteria, IFSPs, community resources, and transitions.
Your Baby and You: Understanding Your Baby's Behavior (Communication Skill Builders, n.d.)	Communication Skill Builders 3830 E. Bellevue PO Box 42050-P93 Tucson, AZ 85733	Helps parents understand and respond to their infant in the NICU; shows parents what to expect as their baby develops and how they can provide a sensitive environment; available in English and Spanish.

Assessment and Intervention for Emerging Language

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. Discuss the principles of family-centered practice for toddlers.
2. Describe the communication skills of typical toddlers.
3. Discuss methods of screening, evaluation, and assessment for emerging language.
4. Describe strategies for using assessment information in treatment planning at the emerging language stage.
5. List appropriate goals, procedures, and contexts for treatment of children at the emerging language stage.
6. Discuss the issues relevant to communication programming for older, severely impaired clients with emerging language.
7. List assessment and treatment issues for toddlers with autism spectrum disorder (ASD).

Joey had been a difficult baby. He'd cry inconsolably for hours on end, and the only way his parents could calm him was to put him in his car seat and drive around. Even at 6 months, when most babies have outgrown their colicky stage, Joey continued to be extremely irritable and unable to find comfort in his parents' cuddling and attention. He sat up at only 4 months, walked at 11 months, and at that time began to take an interest in objects that bounced or sprang. He spent long periods playing with rubber bands. He was quiet, too, and didn't seem to babble as much as his parents' friends' babies. When he was 18 months old, he said a few phrases, usually echoes of what he'd heard before, such as "Go, dog, go," or "I'm lovin' it" He didn't seem to be learning a lot of new words, though, and he didn't seem to listen when people talked to him or even turn when they called his name. Still, he was very good at letting people know what he wanted. He would take adults' hands and lead them to things. It didn't seem to matter much who the adult was, though. Once he got what he wanted, he was content to play with it alone for long periods. Everyone told his parents there was nothing to worry about; Joey was just a "late bloomer." When he had his second birthday, Joey's mother took him to the pediatrician for a checkup. The doctor asked about Joey's speech, and his mother reported that he said a few things. She commented that Joey's brother Bobby had talked a blue streak when he was

2 and said she remembered taking him to an amusement park for his second birthday present. She recalled that he'd known the names of all the animals on the merry-go-round and had labeled each one as it went past. She knew that all children were different, but maybe Joey really was slow in his speech. She expressed her concern to the doctor. Her pediatrician recommended that Joey have his hearing tested. When the test came back within normal limits, the pediatrician reassured her that Joey would probably grow out of his slow start in speech.

Joey's story probably sounds familiar. Everyone knows a toddler who was late to begin talking, and everyone knows that most of them do eventually "catch up." We've all heard stories about how Einstein didn't start talking until he was 4. Popular wisdom, common sense, and most people's experience support Joey's pediatrician's claim that Joey will grow out of his early delay. However, for some toddlers, early lags in the development of speech foretell more long-lasting problems. Some of the other behaviors Joey has displayed throughout his development, such as his early inconsolability, his inordinate interest in particular kinds of objects, his lack of social awareness, and his use of echoed phrases, may suggest greater risk for long-term disability. How can we decide which toddlers with slow language development are at risk for long-term deficits? What should we do about them? These are some of the questions this chapter addresses.

This chapter also discusses assessment and management issues for youngsters identified as at-risk for communication disorders during infancy. These children will probably begin to evidence their delays during the 18- to 36-month period that comprises the toddler age range. This is the time during which children normally begin speaking, producing single words, and beginning to combine words into two-word utterances and simple sentences. If a child is going to have problems developing language, those problems will probably become evident in the toddler stage.

Finally, the approaches and principles discussed in this chapter will be appropriate for assessing and treating children of any age whose language is just emerging. Preschoolers with language disorders and older children and adolescents with severe deficits in language learning also can be seen to function in this stage. In summary, then, this chapter addresses methods of assessment and intervention for any client just beginning to use symbolic forms of expression.

Remember that when we discuss children at this beginning language level we mean children whose *developmental level* is 18 to 36 months. Some toddlers who do not talk, particularly those identified as at-risk during infancy, will not yet function at this

developmental level. Using the general developmental assessment tools outlined in this chapter, a toddler's developmental level can be described. When developmental assessment indicates that a child is functioning below a 12- to 18-month level, even if he or she is chronologically older, management should continue to follow the guidelines given in Chapter 6. Only when general developmental level reaches 18 months or so should the direct communication intervention that is discussed in this chapter be considered.

We'll refer to this period as the *emerging language* (EL) stage, to suggest that this is the period in which conventional words are just beginning to appear as viable forms of communication. Children may enter the emerging language stage at any age, of course, just as the child with prelinguistic communication can be of any age. For normally developing children, this stage corresponds to the "toddler" age range, or an 18- to 36-month developmental level. Let's look first at issues in assessment and intervention for children who are chronologically close to this age range. Then we'll discuss issues for older children functioning as emerging communicators.

ISSUES IN EARLY ASSESSMENT AND INTERVENTION

Screening and Eligibility for Services

The Individuals with Disabilities Education Act (IDEA) 2004 provides for the development of programs for infants and toddlers with disabilities, as we saw in Chapter 6. One of the intents of this law is to affect both primary and secondary prevention by allowing children with disabilities to be identified as early as possible and to receive prompt intervention. Evaluations of early intervention efforts, such as Camilli et al. (2010); Guralnick (1997); McLean and Cripe's (1997); the National Research Council (2001); and Reynolds, Want, and Wahlberg's (2003) comprehensive reviews, have concluded that early intervention is effective, often resulting in faster gains than those seen in normal development, so the justification for intervening in these cases is quite compelling. The law's impact on clinical practice for speech-language pathologists (SLPs), then, is that more and more children younger than 3 are being identified and referred for communication evaluation, assessment, and intervention. SLPs employed in a variety of settings—in hospitals, schools, nonprofit agencies, and private practice—will be seeing this birth-to-3 population.

Children we will serve include those born with known risk factors who were referred for speech and language services during infancy. These are children with identifiable syndromes of developmental disorder, such as Down syndrome or fetal alcohol syndrome; those with hearing impairments identified in infancy; and those with neurological involvement, such as cerebral palsy or prenatal drug exposure. For these children, no screening or evaluation for eligibility will be necessary.

Other children, though, may also present as toddlers with apparently specific language delays. These children may come to us through Child Find or other referral sources or simply because parents are concerned about their development. Some of these toddlers may turn out to have related disorders, such as hearing impairment, that were not previously detected, or less obvious forms of developmental disorder, such as fetal alcohol effects or fragile X syndrome. Some may have suffered from early acquired disorders secondary to diseases such as encephalitis or from trauma or abuse. Some, like Joey, will have disorders on the autism spectrum. Some will have no evident correlates of their slow language development, but present with circumscribed deficits in language skills that place them at risk for developmental language disorder or learning disabilities at school age. For these children, screening may be the first step in the evaluation process.

In recent years, several screening instruments have been developed and refined to help clinicians make a general determination about whether further evaluation for communication is needed. Two parent-report measures, which focus primarily on vocabulary size, have been prominent. The *MacArthur-Bates Communication Development Inventory* (CDI) (Fenson et al., 2007) has been shown in a variety of studies (e.g., Girolametto, Wiiigs, Smyth, Weitzman, & Pearce, 2001; Heilmann, Weismer, Evans, & Hollar, 2005; Lyytinen, Eklund, & Lyytinen, 2003; Weismer & Evans, 2002) to be effective in identifying toddlers with low language skills, and to be valid for both English- and Spanish-speaking toddlers (Marchman & Martinez-Sussman, 2002). *The Language Development Survey* (LDS; Rescorla, 1989) has also been shown to be valid, reliable, sensitive, and specific for this purpose (Klee, Pearce, & Carson, 2000; Rescorla & Achenbach, 2002; Rescorla & Alley, 2001). Rescorla et al. (2005) showed, too, that rankings on the LDS and CDI were highly correlated, suggesting they are equally valid screening tools. Klee et al. (2000) also reported that the number of false positive results decreased when questions about ear infections and whether parents were concerned about the child's language development were added to the LDS criterion of less than a 50-word expressive vocabulary or no word combinations for 24-month-olds. Although there are no current mandates for universal screening for toddlers for language delay, these instruments can be given to parents who have concerns about their children's language development, as a first step toward deciding whether further evaluation is needed. Clinicians can also distribute these instruments to local pediatricians. In fact, the American Academy of Pediatrics recommends screening for toddlers to detect autism spectrum disorder (ASD), although the brief checklists used for this purpose are likely to detect children with language disorders, as well. The SLP can work with pediatricians' offices to review these screeners to decide whether any referrals to birth-to-3 services should be made.

For toddlers who have delays in cognition, motor, social, and other areas besides language, evaluation is clearly warranted. But not all would agree that an otherwise typical child of 18 to 36 months who fails to begin talking or who talks very little is evidencing significant delay. Many professionals both in and outside the field of language pathology would hesitate to label a child with no other difficulties outside of speech development as "language disordered" before the third or even the fourth birthday (Rescorla & Lee, 2001), for just the reasons mentioned earlier—that many children who are slow to start talking eventually catch up. Providing intervention at the 18- to 36-month level for such children would not be cost-effective. Early intervention, although known to be effective when necessary, is expensive. It is wise to conserve such resources for children who really need them.

So who needs them? Ellis and Thal (2008), Whitehurst and Fischel (1994), and Paul (1996, 1997a) have argued that, for children in the 18- to 36-month age range, the decision to intervene should be based on an accumulation of risk factors. They suggested that children with cognitive deficits, hearing impairments or chronic middle ear disease, social or preverbal communicative problems, dysfunctional families, risks associated with their birth histories, or family history of language and reading problems

(Bishop, Price, Dale, & Plomin, 2003; Lyytinen, Poikkeus, Laakso, Eklund, & Lyytinen, 2001; Zubrick et al., 2007) should receive highest priority for intervention. Brady, Marquis, Fleming, and McLean (2004); Campbell et al., (2003); McCathren, Yoder, and Warren (1999); Olswang, Rodriguez, and Timler (1998); and Paul and Roth (2011) suggested that additional factors, listed in Box 7-1, also be considered. In light of these suggestions, a detailed case history and comprehensive direct assessment of all these areas are important for any toddler referred for failure to begin talking. When a toddler with slow language development shows significant risk factors, intervention is clearly warranted. The goal of that intervention is secondary prevention—minimizing the effects of the delay on the acquisition of language.

There are a variety of standardized instruments that can be used to evaluate toddlers for eligibility for birth to 3 services. Generally, regulations require that children show impairments in at least two areas in order to be eligible for services; whether expressive and receptive language constitute two separate areas varies from state to state. Clinicians will need to be familiar with the guidelines for their particular locality. However, informed clinician opinion is always part of the evaluation process, so test scores alone will not be adequate to establish eligibility. Because more than one area of deficit is typically required for eligibility, instruments that sample

several areas of development are often used for this purpose. Some procedures that can be part of this evaluation are listed in Box 7-2.

For toddlers without other known risk factors who are simply slow to start talking, deciding whether to intervene is more difficult. Intervention for this group may accomplish facilitation, hastening development that would eventually happen on its own, rather than induction. Children who have learning disabilities often have histories of delayed language development (Butler & Silliman, 2002; Catts, 1997; Catts & Kamhi, 1986; Maxwell & Wallach, 1984; Steele, 2004; Tallal, 2003; Weiner, 1985). Even late talkers who perform within the normal range in language and literacy measures by age 5 or 6 (Paul & Fountain, 1999) begin to show deficits in literacy skills later in development (Rescorla, 2002), and there is a risk that these will persist into adolescence (Rescorla, 2009; Snowling, Adams, Bishop, & Stothard, 2001; Snowling & Bishop, 2000). Early language intervention may serve a secondary preventive function, then, helping to minimize later effects on learning even when the more basic oral language problems resolve. In addition, Robertson and Weismer (1999), for example, showed that intervention for late talkers not only increased their language skills but resulted in improvements in social skills and reductions in parental stress, so there may be other important secondary effects of supplying early intervention to these children.

BOX 7-1   Predictors and Risk Factors for Language Growth in Toddlers

PREDICTORS OF NEED FOR INTERVENTION
Language
1. Language production
   Small vocabulary for age
     Few verbs
     Preponderance of general verbs (*make, go, get, do*)
       More transitive verbs (that take a direct object: *hit ball*)
       Few intransitive verbs (without direct object: *lie down*)
         and bitransitive verbs (that take both direct and
         indirect object: *give* the *ball* to *me*)
2. Language comprehension
   Presence of 6-month comprehension delay
   Comprehension deficit with large comprehension-
     production gap
3. Phonology
   Few prelinguistic vocalizations
   Limited number of consonants
   Limited variety in babbling
   Reduced rate of babbling
   Fewer than 50% consonants correct (substitution of glottal
     consonants and back sounds for front)
   Restricted syllable structure
   Vowel errors
4. Imitation
   Few spontaneous imitations
   Reliance on direct modeling and prompting in imitation
     tasks
Nonlanguage
1. Play
   Primarily manipulating and grouping
   Little combinatorial or symbolic play

2. Gestures
   Few communicative gestures, symbolic gestural sequences,
     or supplementary gestures (gestures that add meaning
     to words produced)
3. Social skills
   Reduced rate of communication
   Reduced range of expression of communication intentions
   Behavior problems
   Few conversational initiations
   Interacts with adults more than peers
   Difficulty gaining access to peer activities

RISK FACTORS FOR LANGUAGE DELAY
1. Males more vulnerable to delay than females
2. Otitis media
   Prolonged periods of untreated otitis media
3. Family history
   Family members with persistent language, reading, and
     learning problems
4. Parent characteristics:
   Low maternal education
   Low SES
   More directive than responsive interactive style
   Produces less talk contingent on child's productions
   High parental concern

Adapted from Brady, N., Marquis, J., Fleming, K., & McLean, L. (2004). Prelinguistic predictors of language growth in children with developmental disabilities. *Journal of Speech, Language, and Hearing Research, 47,* 663-677; Campbell, T., Dollaghan, C., Rockette, H., Paradise, J., Feldman, H., Shriberg, L., Sabo, D., & Kurs-Lasky, M. (2003). Risk factors for speech delay of unknown origin in 3-year-old children. *Child Development, 74,* 346-357; McCathren, R., Yoder, R., & Warren, S. (1999). The relationship between prelinguistic vocalization and later expressive vocabulary in young children with developmental delay. *Journal of Speech, Language, and Hearing Research, 42,* 915-924; and Olswang, L., Rodriguez, B., & Timler, G. (1998). Recommending intervention for toddlers with specific language learning difficulties. *American Journal of Speech-Language Pathology, 7,* 29.

BOX 7-2 Instruments for Evaluating Children Under 3 Years of Age

Ages and Stages Questionnaire—Third Edition (ASQ-3; Squires & Bricker, 2009)
Assessment, Evaluation, and Programming System (AEPS): For Infants and Children (Second Edition) (Bricker, 2002)
Battelle Developmental Inventory (Second Edition) (Newborg, Stock, Wnek, Guidubaldi, & Svinicki, 2004)
Bayley Scales of Infant and Toddler Development—III (Bayley, 2005)
Birth to Three Assessment and Intervention System (Second Edition) (Ammer & Bangs, 2000).
Cognitive, Linguistic, and Social-Communicative Scales (Second Edition) (CLASS; Tanner, Lamb, & Secord, 1997)
Developmental Assessment of Young Children (DAYC; Voress & Maddox, 1998)
Developmental Profile III (DP-III; Alpern, 2007)
Hawaii Early Learning Profile: 0–3 (HELP; Furuno et al., 1994)
Mullen Scales of Early Learning (Mullen, 1995)
Preschool Language Scale—Fifth Edition (PLS-5; Zimmerman, Steiner, & Pond, 2011)
The Vulpe Assessment Battery—Revised (VAB-R; Vulpe, 1997)
Vineland Adaptive Behavior Scales—II (Sparrow, Cicchetti, & Balla, 2005)

Paul (2000b) has argued that perhaps the best approach for late talkers without additional risk factors is to provide parent training in language facilitation techniques, rather than direct intervention. Girolametto, Pearce, and Weitzman (1996) and Peterson, Carta, and Greenwood (2005) showed that parents of late talkers could be trained to produce positive effects on the amount of child speech, the size of child vocabulary, and the number of multiword combinations.

Transition Planning

Hadden and Fowler (2000) discussed the importance of developing active coordination among agencies serving young children with disabilities in order to smooth their transition from early intervention to preschool programs. SLPs can play an important role in developing these interagency relationships. Prendeville and Ross-Allen (2002) outlined a variety of ways SLPs can be effective members of transition teams. These include the following:
• Providing families with information and support to participate in transition planning
• Setting aside time to work with team members from both early intervention and preschool service providers to prepare a timely transition plan
• Sharing information about adaptations, accommodations, resources, and developmentally appropriate activities with preschool staff
• Actively helping preschool staff prepare the necessary services and supports to promote successful preschool placement

Family-Centered Practice

Like children at the prelinguistic stage of development, children with emerging language still function primarily in the context of the family. Practice for this developmental level, too, must be

family-centered in order to succeed. Many of the same principles we discussed for infants apply to our work with toddlers. ASHA (2008) Guidelines for early intervention practice emphasize the need for family-centered practice in this area. Dempsey and Keen (2008); Dinnebeil and Hale (2003); Dunst, Boyd, Trivette, and Hamby (2002); and Polmanteer and Turbiville (2000) discuss some of the considerations that are primary in working with families in early intervention. These include the following:
• Spending time with the family to learn about their vision for the child and discussing what parents would like to see their child do as a result of intervention
• Finding out what families expect from the program at the outset and discussing expectations in order to come to a consensus about what is reasonable to expect
• Including the family's assessment of the child in the assessment report; writing the report in the words used by the family
• Including multiple ways for families to be involved in the child's program; providing choices and options
• Working together with families to choose natural environments as a source of learning opportunities
• Reviewing progress with families to make sure new skills are used consistently across natural environments
• Identifying important people with whom the child needs to practice communication skills
• Working with families to find ways to use children's interests to involve them in everyday learning opportunities
• Providing families with opportunities to be involved in both direct work with their child and acquiring new knowledge and skills for interacting with their child
• Enabling parents to decide on the correct balance for their family

Communicative Skills in Normally Speaking Toddlers

What do we mean by "normal language development" in toddlers? Considerable research in recent years has allowed us to flesh out the picture of what constitutes normal language skills in very young children, so that we can determine when development is falling behind. Paul and Shiffer (1991) and Wetherby, Cain, Yonclas, and Walker (1988) reported that children at about 18 months of age produced an average of two communicative acts per minute in interactive samples. The functions of these acts are usually to request objects or actions, to establish joint attention, or to engage in social interaction (Hulit & Howard, 2002; Wetherby et al., 2004). During the second year of life, many of these intentions are expressed not with words, but with gestures (Capone & McGregor, 2004) and vocalizations (Oller, 2000). By 24 months, children produce an average of five to seven communicative acts per minute (Chapman, 2000). The majority of these communicative acts consist of words or word combinations, although some nonverbal acts are still used. Between 18 and 24 months of age, then, children significantly increase their frequency of communication, both verbally and nonverbally, and move toward more frequent verbal expressions of intent.

Luinge et al. (2006) and Nelson (1973) showed that most middle-class toddlers were combining words into simple two-word sentences by 18 to 24 months; Roulstone, Loader, Northstone, and Beveridge (2002) reported that 78% of typically developing 25-month-olds were using multiword utterances. Luinge et al.

(2006) reported that 98% of 24- to 36-month-olds produced two-word sentences, 90% produced three-word sentences, and 84% produced four-word sentences at this age. Grove and Dockrell (2000) reviewed literature that demonstrates that there are predictable patterns in the ways words are first combined, with stable word orders that follow patterns in the adult language, and that the meanings expressed by children in their first "telegraphic" sentences conform to a small set of semantic relations.

Stoel-Gammon (1987, 2002) indicated that normally developing 24-month-olds produced at least 10 different consonants and were 70% correct in their consonant productions. Luinge et al. (2006) reported that over 75% of 24- to 36-month-olds are more than 50% intelligible. Speech samples of these toddlers included a variety of syllable shapes, including consonant-vowel (CV) and CVC, in virtually every child, and two-syllable words in the majority; the most frequent two-syllable form was the CVCV reduplicated syllable. McLeod, van Doorn, and Reed (2001) also showed that 2-year-olds are beginning to produce consonant clusters, although they may not always be correct relative to adult targets.

Detailing changes in expressive vocabulary size in the second and third years of life has been the focus of much recent research (e.g., Dale, 2005; Rescorla & Achenbach, 2002). Fenson et al. (2007) reported that average expressive vocabulary size at 18 months is about 110 words. Dale, Bates, Reznick, and Morisset (1989) have shown that, by 20 months, average productive lexicon size reaches 168 words. By 24 months, Fenson et al. found mean vocabulary size to be 312 words, and at 30 months, 546 words. Stoel-Gammon (1991) pointed out that there is a great deal of variability in lexicon size in young children, but that this variability decreases dramatically during the third year of life. At 18 months, the variability in vocabulary size is larger than the mean, so that more than 16% of children still have very few words at this age. However, by 24 months the average variation in vocabulary size is only half as large as the mean and 84% of children at this age have vocabularies larger than 150 words. At 30 months the standard deviation in vocabulary size is only 18% of the average lexicon size. This means that 84% of children at this age have vocabularies larger than 450 words. The degree to which a small expressive vocabulary represents a significant deficit increases drastically between 18 and 30 months of age.

Traditional wisdom has been that comprehension precedes production. Receptive vocabulary size is always larger than the size of the productive lexicon; this is true even for adults. For example, if you read the sentence, "Her proclivity for using long sentences in lectures drove her students to distraction," you would no doubt comprehend the word *proclivity*. But if you were asked to come up with a synonym for *tendency* you might not be so likely to produce *proclivity*. The child's comprehension of a first word is usually about 3 months ahead of the production of a first word, and comprehension of 50 different words usually occurs about 5 months before the productive lexicon reaches this size (Benedict, 1979).

In terms of sentences, though, comprehension is probably not so far ahead of production. Chapman (1978) argued that children in the 18- to 24-month age range probably understand only two to three words out of each sentence they hear (that is, about the same number of words per sentence that they are producing in their own speech). Luinge et al. (2006) found that over 90% of 12- to 24-month-olds understand two-word sentences and names for some body parts, but it is not until 24 to 36 months of age that the majority of children understand three-word sentences. The appearance of more sophisticated comprehension skills that they often achieve is related to their ability to use nonlinguistic information to supplement their knowledge of language. These comprehension strategies allow the child to combine cues from gestures, facial expressions, and the way they know things usually happen with their understanding of words. The result is that children can appear to comprehend a long sentence such as, "Why don't you go close that door for me?" by combining their knowledge of the meaning of *close* and *door* with their understanding that adults usually ask children to do things (Paul, 2000a; Shatz & Gelman, 1973; Thal & Flores, 2001).

The information presented here can help to guide us in determining whether a toddler is significantly behind in communicative skills. In some ways, this research may lead us to intervene more quickly than we might have earlier. The demonstration that children as young as 24 months communicate frequently, have large vocabularies, and are accurate in their phonological productions the great majority of the time may emphasize and make more obvious the deficits seen in children with slow communicative growth. In addition, Thal and Clancy (2001) show that the interaction between biological development and environmental input plays an important role in language acquisition, so that providing high-quality input can have significant effects on early development. Still, we want to use caution and remember the large variations seen in normal development. In this chapter we'll look at some procedures that can be used to assess the various areas of communicative development in children with emerging language: symbolic play and gestural behavior, intentional communication, comprehension, phonology, and expressive language. We'll then look at some guidelines for integrating these assessment data into the processes of deciding when and how to intervene with children at this developmental level.

Assessment of Communicative Skills in Children with Emerging Language

Multidisciplinary and Transdisciplinary Assessment

When children younger than 3 years are assessed by an evaluation team, the assessment may be multidisciplinary or transdisciplinary. In multidisciplinary assessment, each professional carries out a relatively independent assessment, exploring the issues relevant to his or her own discipline. The SLP assesses communication issues, the physical therapist assesses motor skills, and so on. The team comes together at the end of the assessment to report findings, talk with parents, and plan intervention. Many of the assessment procedures outlined in this chapter could be used in this model. They provide in-depth information that can be used not only to decide whether a client is significantly impaired but also to establish baseline function and identify intervention goals.

An alternative form of assessment used for children younger than 3 is the transdisciplinary approach (ASHA, 2008; Kritzinger, Louw, & Rossetti, 2001; Linder, 1993; Rossetti, 2001), sometimes called "arena assessment." Transdisciplinary or arena assessments involve the child's interacting with just one adult, a "facilitator," who performs some formal and informal assessments. The other members of the team, including the SLP, observe the facilitator's interaction with the client. They may ask the facilitator to present certain tasks to the child, and they take notes on their observations of the child's behavior in the situation, but they do not interact directly with the client. This approach is useful for looking at very young children who may have difficulty responding to a changing parade of unfamiliar adult faces. Many of the assessment

techniques we discuss in this section can be incorporated into transdisciplinary evaluation by having the SLP go over them with the facilitator before the client is seen and then by having the facilitator include them with his or her interactions with the child. For example, the SLP might ask the facilitator to do a play assessment or a communicative intention assessment (both of which are described in this chapter). The SLP could teach the procedures to the facilitator, gather the necessary materials, and explain the purpose of the assessment. During the interaction with the client, the SLP would observe and score the client's responses on a prepared worksheet and also would note any other relevant behaviors the client displays. Transdisciplinary assessment is generally used to decide whether a young child is eligible for early intervention services. Once eligibility for speech and language services has been established, the clinician can do more in-depth criterion-referenced assessments during the course of the intervention program if additional information is needed to establish baseline function and choose intervention goals.

Play and Gesture Assessment

Before deciding that a toddler has a communication problem, we want to be sure that the child has achieved a general developmental level consistent with the use of symbolic communication. This is a controversial area. Traditional Piagetian thinking on the relation between language and cognitive development held that children could not be expected to use symbolic language until they had achieved certain cognitive milestones, such as the understanding of object permanence, tool use, or symbolic play. A great deal of research on the relations between cognitive and language development (e.g., Tomasello, 2002; Witt, 1998) has suggested, though, that such simple prerequisite relations are not typically found in normal development. Thal (1991) explained that most researchers in this area do not believe that there is a general relationship between language and cognition. Instead there are what researchers call *local homologies*. Local homologies are specific relationships that occur at certain points in development. For example, Bates, Bretherton, Snyder, Shore, and Volterra (1980) have shown that in the single-word period, there is a strong relationship between the use of words as labels and the ability to demonstrate functional play, or to use objects in play for their conventional purposes, such as putting a toy telephone up to the ear. A little later, when children begin to combine words, this relationship decreases in strength. However, a relationship emerges between the ability to combine words and the ability to produce sequences of gestures in play, such as going through the series of motions to feed and bathe a doll. Later, this relationship, too, declines.

Current thinking about these findings (e.g., Casby, 2003a; Crais, Watson, & Baranek, 2009; Watt, Wetherby, & Shumway, 2006) suggests that although particular cognitive skills are not necessarily prerequisites for language development in general, certain behaviors that can be observed in a child's play and gestural behavior tend to go along with particular communicative developments. Brady et al. (2004) and McCathren et al. (1999) for example, showed that prelinguistic children with developmental disabilities who used symbolic play behaviors were likelier than those who did not to increase their rate of communication in an intervention program. If early symbolic behaviors are present, this would suggest that the language skill that normally appears along with them should be within the child's zone of proximal development and that it should be teachable. If the play and gestural skills are absent, as well as the language, then we might attempt to elicit both the play and language

skills in tandem, since their development seems to be parallel and they may reinforce or complement each other.

Assessing Play

Play assessment provides a specifically nonlinguistic comparison against which to gauge a child's language performance. Play can be used as a context for examining cognitive skills often assessed in more traditional intellectual assessments (Dykeman, 2008; Linder, 1993). It can also be observed to gain insight into particular aspects of the child's conceptual and imaginative abilities. The point of play assessment, and more generally of cognitive assessment at the 18- to 36-month level, is not to decide whether the child has the "prerequisite" cognitive skills for learning language. Language learning is more complicated than that. The main thing we have learned about the connection between language and cognition is that we cannot specify what their relationship is, except perhaps for very small segments of time, and even then there is no clear chicken or egg. The point of these assessments is to sketch a fuller picture of the equipment the child is bringing to the task of learning to talk. Knowing what play abilities the child has helps to decide, not so much the language skills the child is ready to learn, but the activities, materials, and contexts that will be most appropriate to encourage that learning and the conceptual referents on which it might focus. Play also is the most natural context for language learning. Knowing the level of play behavior that the child is able to use can help the clinician structure play sessions that will maximize the child's participation and opportunities for learning.

A variety of methods are available for assessing level of play skills in children at the 18- to 36-month developmental level. Several of these were outlined in Chapter 2. Any of these assessments can serve to identify the child's play skills to determine how they can be put in the service of language acquisition. An additional assessment tool specifically designed for the toddler developmental level is the *Communication and Symbolic Behavior Scales-Developmental Profile* (Wetherby & Prizant, 2003). This procedure analyzes samples of interactive play behavior and allows the clinician to score both symbolic and combinatory play, in order to provide a general level of symbolic development that is relatively independent of language. It has been shown to be reliable and valid for identifying children with developmental delays in the emerging language period (Wetherby, Allen, Cleary, Kublin, & Goldstein, 2002).

Another method is Carpenter's (1987) *Play Scale.* This scale was designed to assess symbolic behavior in nonverbal children who don't "talk out" their play, so that symbolic skills must be inferred from their interactions with objects. As such, the scale is useful both for nonspeaking toddlers and for older children at the emerging-language stage. To use this scale, a parent is asked to play with the child by engaging in four play scenes with appropriate props: a tea party, a farm, and scenes involving transportation and nurturing. Parents are asked to follow the child's lead in interacting with each set of toys for just 8 minutes. Parents are advised to respond to the child in a natural way, but to let the child play without continually talking or giving directions. Parents are asked not to touch the toys unless invited to by the child and not to give suggestions for play. They are given specific prompts to provide only when the child will not touch or play spontaneously with a set of toys. A detailed description of this assessment can be found in Carpenter (1987). A sample of behaviors examined by this assessment and the ages at which they are mastered by more than 90% of children with normal development appear in Table 7-1.

McCune (1995) also provided a detailed method of analyzing play behavior. Using her system, the child is given a standard set

TABLE 7-1 Play Scale Items

Play Behavior*	Definition	Example	Age
Semi-appropriate toy use	Uses object in appropriate but fleeting way; object need not be correctly oriented.	Touches comb to hair with tines facing up; puts blanket on doll in crib but only covers doll's face.	12 mo
Nesting	Object(s) placed or stuffed into a container; need not be correctly oriented or topic-related.	Crams all toys into crib; tosses all cars into cowboy hat.	15 mo
Multiple play episodes with different actions	Two or more appropriate or semi-appropriate toy uses that are thematically related and involve different actions; object may or may not be the same.	Pushes truck, loads blocks in truck; feeds doll with spoon, gives cup to parent to drink.	18 mo
Multiple play episode with same action	Two or more appropriate or semi-appropriate toy uses that are thematically related; the actions are the same but the objects differ.	Feeds doll with spoon, feeds self with spoon; pushes truck, Jeep.	21 mo
Extended multiple play episode	Three or more appropriate or semi-appropriate toy uses that are thematically related. There must be three different actions; objects may or may not be the same.	Dials telephone, puts telephone to ear and talks, hangs up; takes doll out of truck, puts truck in garage, puts doll on motorcycle and "drives" away.	24 mo

*Play behaviors for which three examples were produced by more than 90% of children at given age in a play session in which children interacted with parent during four play scenes for 8 min each. Play scenes: tea party (dolls, table, chairs, eating and cooking utensils); farm animals; nurture (dolls, crib, toy comb, brush, bottle, telephone, hat); transportation (garage, cars, trucks, boats).

Adapted from Carpenter, R. (1987). Play scale. In L. Olswang, C. Stoel-Gammon, T. Coggins, & R. Carpenter (Eds.), *Assessing prelinguistic and early linguistic behaviors in developmentally young children* (pp. 44-77). Seattle: University of Washington Press.

of toys including a toy telephone, dolls, a toy bed and covers, a toy tub, a tea set, combs and brushes, a toy iron and ironing board, toy cars, toy foods, and similar items. The child is then invited to play with the objects along with a familiar adult. Criteria for analyzing the behaviors observed are ordered hierarchically; they are summarized in Table 7-2. The highest level of play the child exhibits spontaneously can be taken as the child's current level of symbolic behavior. Once this has been established, an emerging level of symbolic play also can be identified by having the clinician model the next level of symbolic play. If the child imitates this model, emergence into the next level of symbolic behavior can be inferred. The types of symbolic behavior that the child can attain in assessments such as these can be used as contexts in which language intervention takes place. In addition, higher levels of play behavior can be modeled by the clinician and parents in informal interactions with the child. These models can help the client evolve toward more advanced modes of symbolic thinking that will, in time, provide even richer contexts for language acquisition.

Casby (2003b) provided guidance for conducting these assessments. He suggests presenting the child with a set of toys that lend themselves to pretend. These include blocks, balls, rattles, and paper and crayons, dolls or stuffed toys, feeding utensils (cup, spoon, etc.), hygiene utensils (brush, washcloth, etc.), nurturing toys (blanket, bottle), and a toy telephone. The clinician can then begin playing out a theme, such as feeding the doll, in parallel play with the child, modeling a range of play behaviors. The highest level of behavior the child demonstrates in response to these models can be scored. Casby also suggests that the child should also be allowed to play alone with the materials for part of the time, in order to look for differences in play when a model is absent.

Assessing Gesture

Use of gestures is an additional aspect of symbolic behavior. Several studies have shown that gestures are highly related to language in early development (Bates & Dick, 2002; Crais,

Watson, & Baranek, 2009; Goldin-Meadow & Butcher, 2003). Goldin-Meadow and Butcher (2003) discuss the fact that young children often rely on gestures to express meanings when they are still very limited in their verbal abilities, and that word-gesture combinations often lead the way to multiword speech. Evans, Alibali, and McNeil (2001) showed that children with language disorders, too, use gestures to express meaning that is beyond their linguistic capacity. Moreover, Goodwyn, Acredolo, and Brown (2000) showed that children whose parents used word-gesture combinations in interactions when they were infants outperformed control groups on language measures when they were toddlers. Both Capone and McGregor (2004) and Crais et al. (2009) showed that, for children with a variety of communication disorders, early use of gestures tends to predict language development. Gesture use, then, may be an important prognostic indicator for children with delayed language. Capone and McGregor (2004) discussed the types of gestures that can be assessed and the general sequence of gestural development (Table 7-3). Crais et al. (2009) showed that typically developing children as young as 9 to 12 months already express a range of communicative intentions through gesture, including protesting, making requests, seeking attention, initiating social games and initiating joint attention.

Two assessment instruments provide information on gesture production. The *MacArthur-Bates Communicative Development Inventory* (Fenson et al., 2007) includes questions for parents on child gesture production. The *Communication and Symbolic Behavior Scales* (Wetherby and Prizant, 2003) also has a scale for observing gestures during a play interaction. Assessment of gestural use also can take place in the context of play assessment (Crais et al., 2009). Notations can be made when gestures appear, using a form like the one in Figure 7-1. Crais et al. (2009) provide guidance on interpreting the assessment of gesture. These are summarized in Table 7-4.

TABLE 7-2 Guidelines for Play Assessment

Approximate Developmental Level	Symbolic Play Level	McCune (1995) and Nicolich (1977) Criteria	Examples
<18 mo	1	Presymbolic scheme: the child shows understanding of conventional object use or meaning by brief recognitory gestures. There is no pretending. Properties of present object are the stimulus. Child appears serious rather than playful.	Picks up a brush, touches it to hair, drops it. Picks up the toy telephone, puts it to ear, sets it aside. Swishes broom on floor briefly.
18–24 mo	2	Autosymbolic scheme: the child pretends at self-related activities. Pretending is present. Symbolism is directly involved with the child's body. Child appears playful, seems aware of pretending.	Pretends to drink from toy teacup. Eats from an empty spoon. Closes eyes, puts hands by cheek, pretending to sleep.
24–36 mo	3	Single-scheme symbolic games: the child extends symbolism beyond own actions by including other agents or objects of actions. Pretending at activities of other people or objects such as dogs, vehicles, etc.	Feeds doll. Brushes doll's hair. Pretends to read a book. Pretends to sweep floor. Moves a block or toy car with appropriate sounds of vehicle.
24–36 mo	4	Combinatorial symbolic games: **4a.** Single-scheme combinations: one pretend scheme is related to several actors or pretend receivers of action. **4b.** Multischeme combinations: several schemes are related to one another in sequence.	Combs own, then mother's hair. Drinks from toy bottle, then feeds doll from bottle. Puts empty spoon to mother's mouth, then experimenter and self. Holds telephone to ear, dials. Kisses doll, puts it to bed, puts blanket on. Stirs in the pot, feeds doll, washes dish.
24–36 mo	5	Hierarchical pretend: **5a.** Planned single-act symbolic games: the child indicates verbally or nonverbally that pretend acts are planned before being executed. **5b.** Planned multischeme symbolic acts.	Finds the iron, sets it down, searches for the cloth, tossing aside several objects. When cloth is found, irons it.

Adapted from McCune, L. (1995). A normative study of representational play at the transition to language. *Developmental Psychology, 31* (2), 206; Nicolich, L. (1977). Beyond sensorimotor intelligence: Assessment of symbolic maturity through analysis of pretend play. *Merrill-Palmer Quarterly, 23,* 89-99.

TABLE 7-3 Gestures and Gestural Development in the Prelinguistic and Emerging Language Stages

Gesture Type	10–12 Mo	12–13 Mo	15–16 Mo	18–20 Mo
Deictic (showing, giving, pointing, ritualized requests such as reaching)	Deictic gestures emerge; use of pointing predicts first word use		Gestures complement spoken forms; children show preference for either gestural or vocal expression	Increased pointing in combination with spoken words
Symbolic (play schemes, including recognitory gestures: actions carried out on an object to depict the object and its function; e.g., holding a toy telephone to the ear)		Play schemes emerge, recognitory gestures first, then self-directed symbolic play; e.g., "feeding" self from empty spoon	Other-directed play schemes emerge; e.g., pretending to "feed" doll	Transition to play schemes w/out object; e.g., holding hand to ear instead of toy telephone to pretend "talking" Multischeme symbolic play emerges; e.g., "stir-ring" then "feeding"
Representational (do not manipulate objects; a form is used to stand for a referent; e.g., flapping arms to represent a bird)		Representational gestures emerge; e.g., puts hand to mouth to indicate wants bite of Mom's cookie	Gestures complement spoken forms; children show preference for either gestural or vocal expression	Gesture-plus-spoken word combinations emerge; increase in word use; preference for words over gestures

Adapted from Capone, N., & McGregor, K. (2004). Gesture development: A review for clinical and research practices. *Journal of Speech, Language, and Hearing Research, 47,* 173-187.

FIGURE 7-1 Sample form for recording play and gestural behavior.

	10-15 mo. level	15-18 mo. level	18-21 mo. level	21-24 mo. level
Deitic	Show———— Give———— Point———— Ritualized request————		Deictic gesture accompanies word————	
Symbolic	Recognitory gesture————	Self-directed play————	Other-directed play———— Play scheme w/o object———— Sequence of play schemes————	Planned multischeme play————
Representational	Representational gestures————		Representational gestures accompany speech————	Gesture-plus-word combinations used to express two-word meaning————

TABLE 7-4   Gestural Behaviors Important in the Identification of Developmental Disorders

Gestural Factor	Consequence
Frequency	Toddlers with a variety of disabilities use fewer gestures than typical peers.
Type	Onset of pointing predicts language development; children with ASD and Down syndrome are frequently late to acquire pointing.
Communicative function	Limited variety of gestures (particularly for the purpose of joint attention and social interaction functions) in toddlers 18–24 months is associated with later diagnosis of autism and other developmental disabilities.
Coordination of gesture with gaze and vocalization	By 15 months, typically developing toddlers combine gestures with gaze and/or vocalization. Lack of this coordination is associated with language delay and/or ASD.
Transition from contact to distal gestures	Failure to acquire gestures to indicate objects at a distance is associated with developmental disorders; it is frequently seen in ASD.
Transition to words	By 16 months, typical toddlers use words and gestures to name objects, by 20 months words predominate as names for objects. Children who persist in using gestures to label objects after 20 months may evidence language delay.

Adapted from Crais, E., Watson, L., & Baranek, G. (2009). Use of gesture development in profiling children's prelinguistic communication skills. *American Journal of Speech-Language Pathology, 18,* 95-108.

Communication Assessment

A variety of scales are commercially available for assessing a range of communicative skills in children younger than 3. These measures can be used to provide a broad picture of communicative functioning and to decide whether, in general, it is commensurate with the child's current functioning in other areas. Many of the general developmental assessments outlined in Box 7-2 provide a scale or subtest of language ability or contain some items that tap language skills. The *Transdisciplinary Play-Based Assessment* (Linder, 1993), for example, provides opportunities for observing social-emotional, cognitive, communicative, and sensorimotor skills in a play context. It is particularly useful for clinicians working within transdisciplinary assessment settings. However, it is often useful to look at language and communication skills more specifically in a child in the emerging language stage who is suspected of a delay in language development. In this way we can avoid confounding the child's nonverbal abilities with any deficits in communication that might exist. This is particularly useful for toddlers suspected of having specific communication deficits rather than more general developmental delays.

Here's one strategy for assessing a child with emerging language:

1. Obtain general developmental level from assessment by a psychologist or developmentalist, using one of the general scales outlined in Box 7-2, or by a transdisciplinary team using *Transdisciplinary Play-Based Assessment (TPBA).*
2. If developmental level is near to or greater than 18 months, use the developmental level to guide a more in-depth comparison of language and nonlinguistic skills. First administer a play assessment (or use data from the TPBA to evaluate play behavior) as a nonverbal index of cognitive development. This index can be used to decide whether the child with emerging language appears to be at or near the level of symbolic development that would ordinarily accompany symbolic communication.
3. Assess language and communication and compare them to nonverbal abilities. If nonverbal symbolic and communicative abilities are both very low, then intervention may focus on providing play contexts that can elicit early symbolic behaviors while providing simple language input around the emerging levels of play. If, on the other hand, symbolic play is more advanced but communication and language are found to be at

lower levels, more focused language elicitation techniques in appropriate play contexts may be used.

We will talk more about decision-making strategies for planning communicative intervention for this developmental level shortly. For now the important point to be made is that we want to have a relatively independent assessment of nonverbal cognitive or symbolic ability and language or communication. One effective way to meet this goal is to assess play and gesture behavior and to use some additional means of assessing communication level, as well.

There are two approaches to accomplishing the communication portion of this assessment. One is to use a formal assessment instrument. Appendix 7-1 lists instruments available either commercially or in the research literature. Some, such as the *Language Development Survey* (Rescorla, 1989) and the *MacArthur-Bates Communicative Development Inventories* (Fenson et al., 2007), use a parent-report format. Others use direct assessment or a combination of direct observation and parent report. The *Communication and Symbolic Behavior Scales—Developmental Profile* (Wetherby & Prizant, 2003) provides an example of one form of direct assessment, and also has parent-report components. The instrument can be used with children who function at the emerging language stage but are as old as 6 years in chronological age. It also has been demonstrated to be valid with children from mainstream (Eadie et al., 2010) as well as culturally different backgrounds (Roberts, Medley, Swartzfager, & Neebe, 1997). Some additional assessment procedures appropriate for this developmental level can be found in *Preschool Functional Communication Inventory* (Olswang, 1996*), Interdisciplinary Clinical Assessment of Young Children With Developmental Disabilities* (Guralnick, 2000), *Alternative Approaches to Assessing Young Children* (Losardo & Notari-Syverson, 2001), and the *Assessment, Evaluation, and Programming System for Infants and Children* (Bricker, Capt, & Pretti-Frontczak, 2002). All these sources include dynamic, criterion-referenced procedures that use developmentally appropriate approaches for evaluating young children.

A second method of assessing communication involves using informal methods to examine communicative functioning in several domains independently. This strategy, advocated by Crais et al. (2009) and Paul (1991b), has the advantage of integrating assessment and intervention activities and allowing more detailed intervention planning. This is possible because, instead of a general level of communication, the procedure allows several areas of communicative behavior to be examined separately and a level of development established in each. In this way, a profile of communication and related abilities can be derived, and specific intervention targets in nonverbal communication, expressive language, receptive language, and phonology can be readily identified.

Paul (1991b) outlined informal procedures for profiling early communicative skills. Many areas assessed in this procedure are very similar to those examined in the *Communication and Symbolic Behavior Scales* (Wetherby & Prizant, 2003). This procedure is described in some detail here, not as an endorsement, but to give the student clinician a detailed idea of what is involved in informal assessment of the various areas of communication at this developmental level.

ASSESSING COMMUNICATIVE INTENTION

Even before they begin to talk, children with emerging language attempt to communicate with those around them. This communication can take several forms. It can be verbal, through the use of single words or combinations of words, or it can be nonverbal, through the use of a variety of gestures and sounds. Children can get their messages across by pointing, reaching, whining, babbling, or vocalizing a variety of protowords that don't sound like adult targets but do have speech-like components. Many of these nonverbal forms can be recognized by adults as attempts to communicate. Very often an adult familiar with the child with emerging language can discern the child's intention in these nonverbal forms.

There are several ways in which communication typically changes over the course of the second and third years of life. One way is that it becomes more verbal, with nonverbal means of communication gradually giving way to more conventional verbal forms. Another way is that attempts increase in frequency, with rates of communication more than doubling over the 18- to 24-month period. A third way is that the range of intentions the child is trying to express broadens. The result of all these changes is that by the third birthday, the normally developing toddler is more like an adult speaker than like his or her 1-year-old counterpart. Paul and Shiffer (1991), Pharr, Ratner, and Rescorla (2000), and Rescorla and Mirren (1998) showed that late-talking toddlers generally show lower rates of communication, vocalization, initiation, and joint attention, even nonverbally, than their typical peers.

When toddlers are referred for evaluation, it is usually because they have failed to begin talking or are talking very little. One of the things we need to learn about such toddlers, or about an older child with emerging language, is whether this failure to speak is accompanied by a more pervasive deficit in the ability to communicate generally or whether it is restricted to the oral symbolic modality of speech. That is, we need to know whether and how the child is sending messages nonverbally. Children with little speech who attempt to communicate with those around them by other means have a potentially strong foundation that can support the growth of functional language. On the other hand, children with both sparse speech and little or no nonverbal communication have less motivation to acquire symbolic forms, since they are not so actively engaged in attempting to send messages to others. These children may need to learn the purpose of communication in order to lay the communicative grounding on which language can be built.

To assess communicative function in this age range, we need to observe the child playing with some interesting toys and a familiar adult. Casby (2003b) and Westby (1998b) emphasize the importance of providing low-structure interactions in which toys are accessible and the adult follows the child's lead. This encourages the child to call the adult's attention to himself and his actions and prevents an over-representation of request acts. The same toys used in the play assessment can be used here. In fact, if the play assessment is videorecorded, it can be viewed again as a sample of communicative behavior. Because the rate of communication is generally quite low at this developmental level, though, it also is possible to observe communicative behavior without recording but by simply watching a client interact with a parent. After some practice, most clinicians can learn to score communicative behavior in real time (Coggins & Carpenter, 1981), so long as this is the only behavior they are trying to observe. If play assessment also is to be done from a real-time observation, it will have to be done in a separate session, even if the same materials and participants are involved.

Three aspects of communication can be examined as part of this assessment: the range of communicative functions expressed, the frequency of communication, and the means by which the child

attempts to convey his or her messages. Let's look a little more closely at each of these areas.

Range of Communicative Functions

There are a variety of schemes for summarizing the communicative functions typically seen in normally developing toddlers (see Chapman, 1981; Paul & Shiffer, 1991; and Wetherby et al., 1988, for review). Perhaps the most accessible system, though, is the one outlined by Bates (1976) and elaborated by Coggins and Carpenter (1981). Bates divided early communication into two basic functions: *proto-imperatives* and *proto-declaratives.* Proto-imperatives are used to get an adult to do or not do something. They include the following:

Requests for objects: Solicitation of an item, usually out of reach, in which the child persists with the request until he or she gets a satisfactory response.

Requests for action: Solicitation of the initiation of routine games or attempts to get a movable object to begin movement or reinitiate movement that has stopped.

Rejections or protests: The expression of disapproval of a speaker's utterance or action.

Proto-declaratives are preverbal attempts to get an adult to focus on an object or event by such acts as showing off or showing or pointing out objects, pictures, and so on, for the purpose of establishing social interaction or joint attention. By far the most frequent proto-declarative function seen in normally developing toddlers (Paul & Shiffer, 1991) is the *comment,* which is used to point out objects or actions for the purpose of establishing joint attention. Comments are very important in the development of mature language because they establish the framework for the topic-comment structure of adult conversation. Social-interactive intentions, such as showing off or calling attention to self, can also be included in this category. Both proto-imperative and proto-declarative intentions appear in normally developing toddlers between 8 and 18 months of age.

Beyond these earliest appearing intentions, several new communicative functions appear for the first time at about 18 to 24 months in normally developing children. These new intentions are evidence of more advanced levels of communicative behavior. They have what Chapman (1981, 2000) called *discourse functions;* that is, they refer to previous speech acts rather than objects or events in the world. They indicate that the child has now incorporated some of the basic rules of conversation into a communicative repertoire, such as the conversational obligation to respond to speech. These discourse functions include the following:

Requests for information: Using language to learn about the world. At the earliest stages, the requesting information function can take the form of requests for the names of things ("*Whazzat?*"). Later, they may include a *wh-* word, a rising intonation contour, or both.

Acknowledgments: Providing notice that the previous utterance was received. In young children this is often accomplished verbally by imitating part of the previous utterance or nonverbally by mimicking the interlocutor's intonation pattern. Head nods also can communicate this intention.

Answers: Responding to a request for information with a semantically appropriate remark.

These more advanced intentions, then, are evidence of a higher level of communicative function than the use of the earlier set alone. All seven of the communicative functions we've discussed are listed on the Communication Intention Worksheet in Figure 7-2.

When looking at the range of intentions expressed, we try to determine, first, whether the full range of the early developing intentions is being used. This is because various kinds of disabilities show different profiles of expression of communicative intentions. Mundy and Burnette (2005) and Mundy and Crawson (1997) report, for example, that children with autism are likely to produce proto-imperative functions but less likely to produce proto-declaratives. Children with Down syndrome, on the other hand, show more proto-declarative intentions but have deficits in proto-imperatives. Similarly, Paul and Shiffer (1991) reported that toddlers with slow language development produced significantly fewer proto-declarative comments, even nonverbally, than their normally speaking peers. So failure to produce the full range of early intentions, particularly comments, may be an important indicator of diagnostic category and prognosis in children with delayed language development.

If the full range of early intentions is observed, we then want to determine whether any of the higher level intentions are being expressed. If so, the client would clearly be ready to learn words for mapping these intentions. If not, conventional words for the

I. Early intentions			
Form: ⟶	Gesture (8-12 mo.)	Vocalization (12-18 mo.)	Word (18-24 mo.)
Function Expressed: ↓			
Request action _____			
Request object _____			
Protest _____			
Comment _____			

II. Later intentions (18-24 months)			
Form: ⟶	Gesture	Vocalization	Word
Function Expressed: ↓			
Request information _____			
Answer _____			
Acknowledge _____			

FIGURE 7-2   Communication intention worksheet.

early intentions expressed could be targeted. In addition, the clinician could provide simple one-word models of the more advanced intentions. The SLP might, for example, acknowledge client utterances consistently, saying "Yes!" before going on to comment on the child's remark. Clinicians also can model seeking information by stating simple questions for the client, then answering them (that is, when looking at the client's shirt, the SLP can say, "What color? Green!").

Frequency of Expression of Intentions

We've talked about how the frequency of communication changes over the age range in which language normally emerges. We expect 18-month-olds to produce about two instances of intentional communication per minute, whereas we generally see more than five per minute in 24-month-olds (Chapman, 2000). If a prelinguistic client over 18 months of age produces fewer than 10 total communicative acts within a 15-minute observation (and if the parent affirms that the behavior during the observation was more or less typical of the child), this rate would be considered significantly low. In addition, Yoder, Warren, and McCathren (1998) reported that children with mild to moderate intellectual disability in the prelinguistic period were unlikely to develop functional speech if they produced fewer than one proto-declarative communication act every five minutes. This suggests that if a nonspeaking client produces fewer than three proto-declarative acts within a 15-minute observation period, there is a risk for development of functional speech. In both these cases, intervention would focus not only on eliciting single-word productions, but also on increasing the frequency of nonverbal communication, particularly proto-declaratives. Communication temptations, such as those outlined by Prizant and Wetherby (1989), may be useful for this purpose.

Forms of Communication

As children progress through the emerging language period, they increase the sophistication of the forms of communication they use. Chapman (1981, 2000) summarized the progression this way:
1. Gestural means of communication are predominant at approximately 8 to 12 months of age.
2. Gestures are combined with word-like vocalizations containing consonants at 12 to 18 months.
3. Conventional words or word combinations are used with increasing frequency to express a range of intentions at 18 to 24 months.

So another aspect of the child's communication that we would note is the form used. Purely gestural forms would be considered less advanced than vocalizations, which are in turn less mature than conventional words. These stages of communicative form are included in Figure 7-2.

Yoder, Warren, and McCathren (1998) demonstrated that prelinguistic children who produced fewer than one vocal communication act every four minutes were significantly less likely to develop functional speech 1 year later. If fewer than four vocal communications are produced in a 15-minute communication interaction, then an attempt ought to be made to elicit vocalizations for functions the child is already expressing with gaze and gestures. We may need to help children understand that we must do something relatively specific with our mouths to communicate effectively, and this effort may need to precede elicitation of particular words. If, on the other hand, four or more functions are

expressed with vocalizations in a 15-minute sample, words should be taught first in the context of those functions. Later the same words can be taught to express other functions currently expressed with gestures alone.

Using a Communication Intention Worksheet

A worksheet such as the one in Figure 7-2 can be used to summarize the child's performance during an assessment of intentional communication. Column heads list the form of the communicative act: gesture, vocalization, or conventional word. For the earliest-appearing intentions or functions (proto-imperatives and proto-declaratives), the form of the communication determines its level. For any of these early appearing functions, a gestural form is taken as evidence of performance comparable to that of a normal 8- to 12-month-old. A gesture plus a speech-like vocalization ("dada") or nonconventional word-like vocalization alone is considered evidence of 12- to 18-month-level performance. An intelligible word or word approximation is assigned to an 18- to 24-month level. For the later-developing intentions—such as requesting information, acknowledging, and answering—the form, whether gesture, vocalization, or word, is noted in much the same way as it is for the earlier set. However, here the form does not determine communicative level. Form is merely noted for intervention planning. All the later-developing intentions are considered evidence of 18- to 24-month communication performance.

Clinicians who devote time to learning the coding system for communicative intents can score a 15-minute interaction involving a nonverbal or minimally verbal child, using Figure 7-2, during short interactions without resorting to recording. The most common mistakes made in using this coding system involve being too generous in attributing communicative intent to the child (that is, beginning clinicians are likely to score any action of the child's as some form of communication). To qualify as communicative act, though, a child's behavior must satisfy the following criteria:
1. It must be directed, primarily by means of gaze, to the adult. The child must look at, refer to, or address the adult directly in some way as part of the act.
2. It must have the effect, or at least the obviously intended effect, of influencing the adult's behavior, focus of attention, or state of knowledge. The child must be obviously trying to get a message across to someone.
3. The child must be persistent in the attempt to convey a message if the adult fails to respond or responds in a way the child had not intended.

A clinician can become skillful in this kind of observation by coding interactions with another clinician, learning to recognize the communicative acts as a team, then coding independently until their reliability reaches a 90% level.

This form of communication assessment is not based on standardized, quantitative procedures. So it is not crucial to score every single communicative act within an observation period. Instead, a clinician should attempt to note and score the general—not the precise—frequency and function of communication by recording as many acts as can be coded with a reasonable degree of certainty. Note can be taken of the diversity both of functions expressed and of the forms used to express them. Such assessment data have the potential to yield an index of the three dimensions of communicative behavior we have been discussing: (1) *frequency of communication,* (2) *diversity of functions* expressed, and (3) *diversity of*

forms used to express the functions. This index can serve as a guide to planning an intervention program that helps the child to expand the frequency and range of intentions expressed and increase the maturity of the means of expression.

In addition to assessing the child's communication, there also are instruments for assessing parent communication, which we looked at in Chapter 6. Another example is *The Infant-Toddler Family Assessment Instrument* (Apfel & Provence, 2001). As we discussed before, though, it is very important to avoid any appearance of blaming the parent for the child's communication problem. Research on language-disordered children in general (Leonard, 1989) and on toddlers with slow expressive language development in particular (Paul & Elwood, 1991) indicates that parental input is generally well-matched to the child's language level, although there are some subtle differences in the input to late talkers (Vigil, Hodges, & Klee, 2005). This is not to say that there won't be some parents who are poor communicators. But in general, the great majority of parents are doing the best they can to get through to an often hard-to-reach child. They don't need to be made to feel that they are at fault if their child is not developing normally. Rather than subjecting parents to an intimidating assessment of their own communication skills, we would be better off just to ask them what makes communicating with their child hard for them. We can then offer suggestions to address the concerns they raise. These suggestions will probably be the same ones we would offer in any case: following the child's lead, modeling talking about ongoing experiences with self-talk, expanding on what the child says or indicates interest in, limiting initiating new topics, giving the child time to respond, and using other indirect language stimulation techniques and communication temptations (Girolametto, Weitzman, Wiigs, & Pearce, 1999; Ingersoll & Dvortczak, 2010; Vigil et al., 2005). Isn't it better to offer these suggestions in a spirit of helping the parent with needs he or she identifies than as a correction of the parents' mistaken attempts?

We also need to be sensitive to cultural differences in communication styles. Parents from all cultures do not talk to toddlers the way middle-class contemporary American parents do (Garrett, 2002; Richman, Miller, & LeVine, 2010; Rodriques & Olswang, 2003; Westby, 1998b). We in mainstream America tend to use a very contingent form of interaction, making our remarks depend on what the child contributes. However, many other cultures use a more routine style: providing, in a variety of settings, repetitive, predictable language that is initiated by the parent rather than the child. Some cultures use child-rearing patterns that involve encouraging children to listen and observe interactions, rather than speaking themselves. And in many cultures young children spend most of their time with multiple caregivers, including older siblings, rather than with their own mothers. Toddlers in all these cultures learn to talk at about the same rate as toddlers in our own. Our way is one way that works to teach language to children, but there are other ways. If we see parents using these more routine styles, we need to be aware that these styles are not "wrong." They may, in fact, be more "right" for a child who will eventually function within that cultural group than the styles we prefer.

There are some clues, though, that parent interactional style has an effect on how children respond to intervention. Brady et al. (2004) and Yoder and Warren (1998) showed that prelinguistic children with more responsive mothers were more likely to increase the frequency and maturity of their communication in structured intervention. Children with less responsive mothers did better with a small group intervention program that incorporated a

Assessing expression of communication intentions.

more child-centered, facilitative play method. These data suggest that rather than judging parental style as "good" or "bad," we may want to understand it in order to help decide what intervention approach will be most effective for a particular child from a particular family.

To summarize the communicative intention assessment, then, we want to evaluate communicative behavior independent of conventional language use. Looking at the frequency of communicative behavior and the diversity of forms and functions the child has available helps us decide what the client is most ready to learn. If little communicative behavior is present, we need to get clients to see what communication is for and to find ways of getting messages across to others. We can then help them find more conventional means for expressing the intentions they are developing. Parents must see us as allies in this enterprise, since they will be doing much of the communication with the child. It is crucial that we respect their concerns and individual styles of interacting, then try to choose an intervention that complements their style.

ASSESSING COMPREHENSION

Understanding of words in the second year of life is predictive of both expressive and receptive language development as much as 2.5 years later (Bernhardt, Kemp, & Werker, 2007). But as Chapman (1978) long ago pointed out, parents often claim that children as young as 12 months "understand everything" said to them. Still, researchers have found receptive language skills to be quite limited at this age. Normally developing children accomplish this "deception" by the use of a series of strategies for comprehending linguistic input. These strategies change with development to incorporate new linguistic knowledge as it is acquired and to integrate it with knowledge of the way things usually happen. The use of comprehension strategies not only enables the child to "look good" in receptive language activities, but also provides children with stepping-stones to the next level of development by allowing them to participate successfully in interactions and get feedback on their performance. For example, a mother playing with a 10-month-old girl might point to a ball on the floor while saying to her, "Get the ball!" The child would not have to comprehend a single word to comply with the instruction. All she would have to do is to

follow the point gesture and then act in the most customary way on the object noticed. A strategy like "Look at what mother looks at; then do something about it," would allow her to appear to interact successfully without really knowing the meaning of the words. The child would at the same time, though, be learning to make a connection between the word *ball* and the round thing. Table 7-5 summarizes the strategies identified by Chapman (1978), Edmonston and Thane (1992), and Paul (2000a) that are used in the 1- to 3-year age range.

When evaluating very young children with delayed language, then, we need to be careful about relying totally on parental impressions of children's receptive skills. Like normally developing children, children with delayed linguistic development may use strategies that make them appear to understand language when in fact their comprehension is based on attention paid to nonlinguistic behaviors and cues, such as gaze, gestures, and situations, or event probabilities (Coggins, 1998; Miller & Paul, 1995; Paul, 2000a). It is important, then, to assess the status of receptive language skills in any child at risk for delayed language development.

Very few standardized tests of receptive language for children younger than 3 years are available. Many of those that are, such as the *Peabody Picture Vocabulary Test—Revised (PPVT-IV)* (Dunn & Dunn, 2006) or *Communication and Social Behavioral Scales-DP* (Wetherby & Prizant, 2003), assess only single-word vocabulary. Parent checklists designed to assess receptive vocabulary have been shown to be less reliable than those assessing expressive skills at the emerging language level (Dale, 1991; Thal, O'Hanlon, Clemmons, & Fralin, 1999). General scales, such as the *Receptive-Expressive Emergent Language Scale, 3rd Edition* (Bzoch, League, & Brown, 2003), the *Sequenced Inventory of Communicative Development* (Hedrick, Prather, & Tobin, 1995), and the others listed in Appendix 7-1, look at a range of responses to both verbal and nonverbal auditory stimuli. While these general measures can be quite useful for assessing listening skills, more specific information about how children process word combinations and sentences is helpful for deciding what a child is able to discern from the language in the environment. Miller and Paul (1995) provided a broad range of comprehension assessment activities for this developmental level. We'll outline a sampling of them here.

The major questions to be answered about the comprehension skills of children in the emerging language stage first involve whether words are understood at all without the support of nonlinguistic cues. If so, we will want to know whether words within a sentence can be processed and semantic relations understood. These questions can best be answered observationally, not only because there are few standardized tests for children at this level, but also because, as Coggins (1998) and Paul (2000a) pointed out, comprehension in very young children is highly context-dependent. As a result, the ability to manipulate context, disallowed in standardized tests, is an important aspect of the assessment. Also, the vocabularies of these children may be somewhat idiosyncratic. The words they understand may not be those routinely tested on standardized instruments. They may, instead, be words for the family pet, for a particular toy, for a favorite game, and so on. It is often useful, when planning an assessment session, to interview parents briefly on the telephone about their child's comprehension skills. They can then be asked to bring to the evaluation several items whose names the child might know.

In the first phase of comprehension assessment, the clinician determines whether the child understands any single words without the support of nonlinguistic cues. A collection of six to eight objects (the names of which the parents indicated the child may know) is placed before the child. Single words are then presented in a simple sentence frame ("Give me . . . "). The clinician must be careful not to look at the item being named, point toward it, or name an item the child already is handling or reaching toward. Since only the word for the object is being tested in this procedure, a gesture, such as holding out the hand, can be used to indicate "Give me . . . " Several other words, such as person names (e.g., Mommy, child's name) and nouns for body parts and locations (e.g., table, chair, floor, door), can be tested using a "Where's (object)?" sentence frame. These instructions can be modeled by first asking the parent, "Where's the table?" and having the parent demonstrate answering the question by touching or pointing to the named object.

If the child can identify several nouns in this way, verbs can be tested next. Words for actions that the parent indicated the child is likely to know, such as *kiss, hug, bite, push, pat, throw,* and *hit,* can be tested by offering the child an object (since only the verb is being tested here) and saying "Hit it. Throw it. Pat it." and so on. It is necessary in both the noun and verb assessments to have the child demonstrate comprehension of each word two to three times

TABLE 7-5	Summary of Comprehension Abilities in Children Up to 3 Years Old	

Age	Comprehension Ability	Comprehension Strategy
8–12 mo	Understands a few single words in routine contexts	1. Look at same objects as mother 2. Act on objects noticed 3. Imitate ongoing action
12–18 mo	Understands single words outside of routine, but still requires some contextual support	1. Attend to object mentioned 2. Give evidence of notice 3. Do what you usually do
18–24 mo	Understands words for absent objects, some two-term combinations	1. Locate objects mentioned, give evidence of notice 2. Put objects in containers, on surfaces 3. Act on objects in the way mentioned (child as agent)
24–36 mo	Comprehends three-term sentences, but context or past experience determines meaning; little understanding of word order	1. Probable location, probable event 2. Supply missing information

Adapted from Chapman, R. (1978). Comprehension strategies in children. In J.F. Kavanaugh & W. Strange (Eds.), *Speech and language in the laboratory, school, and clinic* (pp. 308-327). Cambridge, MA: MIT Press; Edmonston, N., & Thane, N. (1992). Children's use of comprehension strategies in response to relational words: Implications for assessment. *American Journal of Speech-Language Pathology, 1*, 30-35.

at random intervals during the initial phase of the comprehension assessment. Comprehension of single words without the support of nonlinguistic cues is taken to indicate performance expected at the 12- to 18-month level in normally developing children (Chapman, 1978).

If the child fails to show reliable signs of any lexical comprehension, an attempt can be made to step back and see whether the child makes use of 8- to 12-month-level comprehension strategies outlined in Table 7-5. After the initial phase of the assessment is completed, the same words can be tested again, but this time paired with gestural cues. If performance is better with the addition of these nonverbal cues, the child can be said to be using 8- to 12-month strategies. The worksheet seen in Figure 7-3 can be used to record these data.

If the child demonstrates linguistic comprehension of three to five nouns and three to five verbs at the 12- to 18-month level, testing for 18- to 24-month-level comprehension performance can proceed, as indicated in Figure 7-3. Here the primary goal is to assess understanding of two-word instructions. One such instruction is the *action-object* semantic relation. Because children functioning at 12- to 18-month levels of comprehension use a "Do what you usually do" strategy to respond to such instructions, it is necessary to present *unusual* two-term combinations to assess whether an individual child is responding to the word combinations themselves. Combinations should be generated from the words on which the child succeeded in the first part of the assessment. Using a worksheet like Figure 7-3, we can list words comprehended during the first phase of the assessment in the 12- to 18-month section. In the 18- to 24-month section, the *action (verb)-object (noun)* combinations of these words that we use to test understanding of word combinations can be recorded. Unexpected combinations would include instructions such as "Kiss the apple," "Hug the shoe," and "Push the baby." Each action-object combination should be tested several times, as in the individual noun and verb assessments.

If a child fails to respond correctly to a majority of the two-term combinations presented, then probable combinations can be presented to assess whether the more basic 12- to 18-month level strategy "Do what you usually do" is operative. Clients can be asked to "Bite the apple" or "Push the car." If they respond correctly to these instructions but not to the unusual ones, a "Do what you usually do" strategy can account for this performance. (Some children may demonstrate a reliance on this strategy when responding to the unusual combinations in the assessment [that is, when told to "Kiss the apple," they may bite it, or when told to "Hug the car," they may push it]).

If the child succeeds on a majority of the 18- to 24-month items, demonstrating linguistically-based comprehension of two-term relations, we can move on to the next phase of the comprehension assessment, in which we try to determine the presence of appropriate behaviors at the 24- to 36-month level. Typical children at this level are able to process *agent-action-object* instructions, but they still rely on a "probable event strategy" for deciding which noun represents the agent and object of action. When presented with a sentence such as "The mommy feeds the baby," children in the 24- to 36-month period typically perform successfully on object manipulation tasks. But if asked to act out the sentence, "The baby feeds the mommy," they are likely to interpret it in the more probable direction (mommy feeds baby). To test for basic 2- to 3-year-level comprehension skills, then, a series of probable agent-action-object sentences should be presented, first using the same vocabulary items that were used in the earlier phases of the assessment. Children who get this far in the assessment process generally have larger vocabularies. More nouns (such as *girl, boy, baby, dog*) and verbs (such as *lick, pull, chase*) can be pretested in the same manner as the earlier single words. These words can then be used in constructing probable three-term combinations to be acted out with toys. If children use a "child-as-agent" strategy by performing the requested actions on the named object themselves, we can interpret this behavior as evidence of an 18- to 24-month-level comprehension strategy.

Because these procedures are not standardized, there are no hard and fast criteria for deciding when a child "passes" or "fails" a particular level. If a child is performing correctly on a majority of items at one level, credit for that developmental level of comprehension can be given, at least provisionally, even if the child

Age	Comprehension activity	Linguistic stimuli	No. of trials	Strategy observed from previous level
8-12 mos	Routine games without gestural cues	_____	_____	
12-18 mos	Single words	_____	_____	Look at what examiner looks at; act on objects noticed; imitate ongoing action
		_____	_____	
		_____	_____	
		_____	_____	
		_____	_____	
18-24 mos	Two-term instructions	_____	_____	Attend to object mentioned; give evidence of notice; do what you usually do
		_____	_____	
		_____	_____	
		_____	_____	
24-36 mos	Three-term instructions: probable	_____	_____	Locate objects mentioned and give evidence of notice; child-as-agent
		_____	_____	
		_____	_____	
		_____	_____	
		_____	_____	

FIGURE 7-3   Informal comprehension assessment worksheet.

uses some lower-level strategies. If a client is getting the majority of items wrong, we must then ask whether the child is using a comprehension strategy appropriate to the previous developmental level, which is listed in the last column of the worksheet in Figure 7-3. If this is the case, then the previous level of strategy used ought to be attributed to the child. For example, a client may be able to act out unusual two-word combinations, such as "Bite the fish." When asked to act out three-term combinations such as "Make the horse bite the cow" (24- to 36-month level), though, the child may bite the cow himself or herself. If this happens, failure on the 24- to 36-month-level items is noted on the worksheet. In addition, the "child-as-agent" strategy is circled in the last column of the worksheet at the 24- to 36-month level. This indicates that, although the child is not functioning at a 24- to 36-month stage of comprehension, he or she is using appropriate strategies that would be expected to lead to this level in time. If the child fails the majority of items and does not use strategies from the previous level, comprehension is then ascribed to the highest level at which items were passed.

Children who succeed at the 24- to 36-month level of nonstandardized comprehension assessment can next be tested using formal comprehension measures such as the *PPVT-IV* (Dunn & Dunn, 2006), the *Test of Auditory Comprehension of Language—3* (Carrow-Woolfolk, 1999a), the *Miller-Yoder Test of Grammatical Comprehension* (Miller & Yoder, 1983), *Receptive One-Word Picture Vocabulary Test* (Brownell, 2000), or the *Token Test for Children* (DiSimoni, 1978) to name a few.

If comprehension level is on par with communicative intention level, as assessed by the methods in the previous section, a nonspeaking child can be said to have a relatively isolated language production deficit. If, on the other hand, comprehension skills lag behind communicative intentions, a more pervasive language disorder is present. Longitudinal studies of children with language disorders (Paul, Cohen, & Caparulo, 1983) and toddlers with slow language development (Desmarais, Sylvestre, Meyer, Bairati, & Rouleau, 2010; Olswang, Rodriguez, & Timler, 1998; Yoder & Warren, 1998) suggest that those with poorer comprehension skills have poorer outcomes. Comprehension skills in children with little or no speech, then, may be indicators of prognosis. Analysis of these skills can contribute to the decision as to whether to initiate intervention or continue to monitor language development. Children who have poor comprehension skills but make use of developmentally appropriate strategies may have a better outlook for acquiring receptive skills than children who not only do not comprehend, but also do not make systematic attempts to respond to language. Thal and Flores (2001), for example, showed that the use of comprehension strategies in late talkers, who generally go on to show more or less normal oral language development, was similar to that of younger typical children. Again, information about strategy use in children with receptive problems will help in planning an intervention program.

For children with little or no speech who also have receptive deficits, it is important to build a strong input component into the intervention plan. Focused language stimulation, verbal script activities, and child-centered approaches such as indirect language stimulation, are especially important adjuncts to eliciting expressive language for these clients. Those with limited use of strategies and limited comprehension need additional practice in observing how language maps onto objects and events. Facilitative play and modeling of play behaviors—using both conventional and symbolic uses of objects—along with simple descriptive language should be added to these clients' programs.

ASSESSING PRODUCTIVE LANGUAGE

Assessing Speech-Motor Development

One piece of information we would like to have about a client who is not talking concerns speech-motor development. It would be very useful to know whether slow speech development is related to deficits or delays in motor speech abilities. This information is particularly hard to get from children at the 18- to 36-month developmental level, because so much of the speech-motor assessment requires imitation, which children at this developmental level may be unwilling to do. We talked in Chapter 2 about some hints for doing the speech-motor assessment for very young children, such as pretending to make clown or fish faces together, letting the child examine your intraoral cavity with a flashlight first then letting you take a turn, pretending to look for strange creatures in the mouth, and so on. Even the most creative clinician may fail to get the cooperation of a 2-year-old in this phase of the assessment, though. When the child is completely unwilling to imitate oral gestures or let the clinician examine intraoral structures, all we can do is get to know the child better in the course of the intervention program and try again later.

In this case, it is especially important to refrain from jumping to conclusions about relations between speech-motor behavior and speech development. Although Nip, Green, & Marx (2010) showed that there are relationships between language and speech-motor development in the early years, Dodd & McIntosh (2010) reported that motor development was not the strongest predictor of phonological skills in 2-year-olds. In a 2-year-old who is not talking, there is just not enough information available to determine whether speech-motor deficits or childhood apraxia of speech (CAS) contribute to the speech delay. Diagnostic criteria for CAS, as we saw in Chapter 4, include inconsistent speech errors, reversing sounds in words, more errors as utterances become more complex, and errors in stress production (Betz & Stoel-Gammon, 2005; Forrest, 2003; Shriberg et al., 2003). Toddlers who do not talk simply do not produce enough speech to judge whether these symptoms are present, and their imitation skills are too immature to accurately assess oral motor imitation. The best approach to use for a child who is suspected of CAS at this level is to provide the kinds of focused, developmentally appropriate speech and language intervention that we would use for any nonspeaking toddler (e.g., Davis & Velleman, 2000; DeThorne, Johnson, Walder, & Mahurin-Smith, 2009), and monitor progress. Children who show substantial growth in speech production by age 3 probably did not have true CAS. If the kinds of symptoms outlined above begin to appear as the child begins to produce more speech, more focused CAS assessment and intervention methods can be considered.

One aspect of speech-motor development we can accomplish in children in this age range, though, is the feeding assessment. All the instruments and procedures suggested for feeding assessment of infants in Chapter 6 are relevant for children with emerging language, too. The feeding assessment can be used to look for muscular weakness, paralysis, or dysarthric-like conditions that might interfere with speech development. Feeding assessment, though, does not rule out other types of neuromotor disorders that affect only voluntary functions. For these, a more specific speech-motor assessment is needed. Again, we may not be able to be as

thorough as we would like in accomplishing a speech-motor assessment of a child at this level. When we cannot, the best approach is to gather as much information about present and early feeding skills and early babbling behavior as we can. The vocal development assessment in Figure 6-1, or that presented by Nathani, Ertner, and Stark (2006) can be very helpful in the evaluation of prespeech vocal behavior. If feeding and babbling history appear normal, then neuromotor involvement is probably not the primary cause of the slow speech development. If feeding and babbling skills do appear to be problematic, some motor involvement may be implicated. In this case, we would want to try especially hard to do a more thorough speech-motor assessment as we get to know clients better and win their trust and cooperation. But again, we really cannot assess the degree of speech-motor involvement until the child produces enough speech to manifest the characteristic symptoms of CAS. For many late-talking children, this may not be until 3 or 4 years of age, and, in our opinion, no diagnosis of CAS should be made before this point. Nothing is lost in simply providing traditional speech and language intervention to the toddler with limited speech. These techniques will help to develop the conceptual and symbolic foundation for language that will then be in place when the child is developmentally ready for more focused speech therapy to begin.

Collecting a Speech Sample

Children with emerging language being assessed for communication disorder probably don't talk much, so collecting a speech sample may seem an unimportant part of the evaluation. Trying to collect a free speech sample in the clinic setting may, in fact, not be very successful. However, we would like to get some idea of what words and sounds the child is producing. There are two ways we can gather these data: from a sample audiorecorded in the home and from a parent diary.

Perhaps the simplest way to collect a vocalization sample is to send a good audio recording device home with a family and ask them to turn it on during several periods in which the child usually produces a lot of sounds. Playtime with a sibling or during dressing, feeding, or bath time (remind parents to be sure to keep the recorder away from the water!) are often such times. This method allows us to hear the child's vocalization in natural settings and will probably paint a more valid picture of productive skills than trying to elicit words in an unfamiliar environment. Problems can arise, though, if there is too much background noise or if parents forget to make the recording or return the recorder. Providing a self-addressed stamped mailer or, if possible, going to the home to make the recording may increase the chances of getting it back. As smart phone video capability increases, parents may be able to record several minutes of their children's vocalizations on these several times to send on to the clinician.

Another way to collect information about the child's spontaneous vocalization is to ask parents to keep a diary of the child's productions, again during times when the child normally vocalizes. Miller (1981) provided guidelines for collecting a parent diary. He suggested asking parents to record everything their child produces during several 10- to 15-minute intervals over the course of 1 week. A form such as the one in Figure 7-4 is provided to the parent. Miller suggested that the parents keep a form and pencil with them during several activities when the child usually produces a lot of sounds. Then they simply record as much as they can of both what the child means and how it actually sounds. Miller's method asks parents to note whether the vocalization was an imitation, if it was directed to a particular person, and what was going on when the child said it. This kind of record also can be very helpful in determining the words, sounds, and communicative skills the child is showing. However, it does require a fairly dedicated parent. Clinicians will have to use judgment to decide which families can keep an accurate record. When this task seems to be too much to ask of a family, sending home an audio recording device or getting cell phone video may be a better alternative.

Once a speech or vocalization sample has been collected, we want to examine several aspects of the child's production. These include phonological skills—the sounds and syllable types the child produces—as well as the frequency and types of conventional words the child uses and how the child combines words. Let's look at each of these areas.

Assessing Phonological Skills

Stoel-Gammon (1998, 2002) and Williams and Elbert (2003) talked about the close relationship between the development of words and sounds in very young children. Although it is conceivable that a child could have a rich phonological repertoire in babbling but to fail to use it in meaningful words, this scenario is not usually what we see. Typically, children with small expressive vocabularies also show small phonetic inventories of consonants and a restricted number of syllable shapes in both meaningful speech and in nonverbal vocalizations (Mirak & Rescorla, 1998;

Child's name   _____

Age _____

Date _____

Activity observed _____

Word(s) child meant	How it sounded	Imitated?	Spoken to?	What was happening?
baby	baba	no	Mom	reached for doll
blanket	baki	no	Mom	Mom took blanket from dryer
cookie	googi	no	Mom	reached for cookie jar
cookie	googi	yes	Dad	He asked if she wanted a cookie
no night-night	no ni	no	Mom	bedtime

FIGURE 7-4   Sample parent diary form.   (Adapted from Miller, J. [1981]. *Assessing language production in children: Experimental procedures.* Needham Heights, MA: Allyn and Bacon.)

Paul & Jennings, 1992; Rescorla & Ratner, 1996; Williams & Elbert, 2003). Children with autism spectrum disorders may be one exception to this rule (Paul et al., 2006). Generally, the development of words and sounds seems to be very closely linked in both normal and delayed language development (Fletcher et al. 2004). Furthermore, the development of consonants specifically is closely related to the development of words. Whitehurst et al. (1991) have shown that there is a strong correlation between the amount of vocalization containing consonants and language outcome in late talkers. What's more, the amount of vocalization that contained only vowels was negatively related to expressive language growth. Williams and Elbert (2003) presented a list of phonological behaviors that predict long-term speech delays in late talkers. These appear in Table 7-6.

Assessing phonological production in children with emerging language is very useful, then, both as a prognostic indicator and as an aid in choosing words to be included in the child's first lexicon, since Schwartz and Leonard (1982) have shown children are more likely to add words to their productive lexicons if the words contain consonants already in their phonetic repertoire. One option for phonological assessment at this age is the compilation of a consonant inventory (Shriberg & Kwiatkowski, 1980). This can be done by listening to a live or recorded vocalization sample and simply writing down each consonant that is used at least once in the sample, regardless of whether it appears in a conventional word, word approximation, or nonconventional vocalization. If a diary has been provided by the parents, a consonant inventory can be gathered from the "what it sounded like" column of the diary form. The consonant inventory can be used in two different ways:

1. Consonants already in the inventory can be used to select words to be included in the first lexicon to be taught to the child. Although there are other considerations, too—such as concepts the child has available for mapping onto words and the familiarity and communicative value of the words to be taught—choosing words that have sounds already in the child's repertoire greatly enhances the chances that the child will add the word to the productive lexicon (Schwartz & Leonard, 1982). The consonant inventory should be used primarily to select *words* to be taught, rather than as a way to identify *sounds* we should try to get the client to say. Children of this age have little phonological awareness, and there is not much evidence that children can learn sounds in isolation at this developmental level. Rather than trying to increase the consonant inventory at this stage, we would suggest using the consonant inventory to help choose words that will be easy for the child to learn. Later, after the child reaches a developmental

level of 3 or so and has more cognitive awareness, focused work on the acquisition of additional consonant sounds can be undertaken.

2. The number of consonants present in the inventory can be used as an index of severity of phonological delay. Paul and Jennings (1992) and Williams and Elbert (2003) reported that normal 18- to 24-month-olds produced an average of about 14 different consonants in a 10-minute communication sample, whereas 24- to 36-month-olds produced an average of 18. Children with small expressive vocabularies, however, produced significantly fewer consonant types: an average of six at 18 to 24 months and 10 at 24 to 36 months. Comparing a client's consonant inventory size with these data can help a clinician decide whether the child more closely resembles a normally speaking peer or a child with a significant language delay. This information can be useful in deciding whether to recommend early intervention.

Morris (2009) warns, however, that consonant inventories change from sample to sample, and advocates collecting samples at least 30 minutes in length to increase stability of the sample.

Another measure that may be helpful in phonological assessment is the syllable structure level (SSL), which was developed by Paul and Jennings (1992), based on Olswang, Stoel-Gammon, Coggins, and Carpenter's (1987) mean babbling level. This measure examines both intelligible words and nonconventional vocalizations. It is derived by rating 20 to 50 child vocalizations, each at one of the following three levels, in terms of canonical (syllable) structure:

Level 1: The vocalization is composed of a voiced vowel ([a]), voiced syllabic consonant ([lll]), or CV syllable in which the consonant is a glottal stop or glide ([ha], [wi]).

Level 2: The vocalization is composed of a VC ([up]) or CVC with a single consonant type ([kek]), or a CV syllable that does not fit the criteria for level 1. Voicing differences in CVCs are disregarded (*toad* would be considered a level 2 vocalization).

Level 3: The vocalization is composed of syllables with two or more different consonant types, disregarding voicing differences ([pati] would be considered a level 3 vocalization; [dati] would be considered level 2).

The SSL is then computed by averaging the levels assigned, adding up all the ratings given to each vocalization, and dividing by the number of vocalizations rated.

Paul and Jennings (1992) found that SSLs for normally developing 24-month-olds were about 2.2, indicating that most utterances were at level 2 and some were at level 3. SSLs for toddlers

TABLE 7-6 Predictors of Long-Term Speech Delay in Late-Talkers at 30 to 35 Months

Phonological Characteristic	Description/Examples
Limited phonetic inventory	Order of acquisition of phonemes is delayed, not deviant; at 30–35 mo, late-talkers have only 6–9 different consonants
Simple syllable structures	Fewer syllables with more than one consonant or consonant clusters (Pharr et al., 2000)
More sound errors	Percent consonants correct <0.45
Greater inconsistency in substitution errors	Individual phonemes are produced in a variety of ways
Atypical errors	Unusual substitutions (/d/ / /h/); vowel errors
Slow rate of resolution	Little change over the 24- to 36-mo time period

Adapted from Williams, A., & Elbert, M. (2003). A prospective longitudinal study of phonological development in late talkers. *Language, Speech and Hearing Services in Schools, 34,* 138-154.

with small expressive vocabularies, on the other hand, were about 1.7, showing that many of their utterances were at levels 1 and 2, but very few at level 3. Pharr et al. (2000) found that, at 24 months, most syllables produced by late talkers were at level 1 and fewer syllables had a final consonant, more than one consonant, or a consonant cluster.

Morris (2009) reported that SSL was a reliable measure within short (20 minutes) samples. Moreover, because they place less emphasis on accurate phonetic transcription, they are a good option for speech that is difficult to transcribe. Morris (2010) reviewed a range of studies that used SSL and concluded that it is a valid and reliable measure of speech development in 2-year-olds. The ability to include more than one consonant within an utterance, particularly in closed syllables, then, seems to be an important phonological milestone that 2-year-olds with slow language development are missing.

Computing an SSL from a communication sample or diary may be useful for determining whether a client is seriously limited in phonological skill. This can be done by simply rating each of the client's vocalizations according to the three levels described and averaging these ratings. If the average is less than 2, we can conclude that the child with emerging language is showing limited syllable structures. Alternatively, we might simply want to inspect the communication sample or diary form for any evidence of level 3 structures, those containing more than one consonant type. If more than 25% of syllables are at level 3 structures, we would be less likely to conclude that the child has a limitation in the development of canonical form. If fewer than 25% of the syllables are at level 3, however, and if we believe the sample we are inspecting is a valid reflection of the child's phonological performance, a deficit in syllable structures might be inferred. Some additional approaches to examining phonological complexity in early speech include Stoel-Gammon's (2010) *Word Complexity Measure* (WCM), Preston et al.'s (2011) *Weighted Speech Sound Accuracy* (WSSA) score, and the *Index of Phonetic Complexity* (IPC; Jakielski, Maytasse, & Doyle, 2006; Morris, 2009).

Whether we compute an SSL, look for the presence of level 3 syllable structures or use the WCM or IPC, a deficit in complexity of phonological production would lead us to try to elicit more advanced forms, first in imitative babbling and only later in conventional words. Data from Paul and Jennings (1992) indicated that the most common level 3 syllable types produced by normally speaking toddlers are C_1VC_2 ([pat]) and $C_1VC_2V(C)$ ([baki], [patIt], or [pati]). These kinds of productions can be elicited in back-and-forth babbling games. First the clinician can simply imitate the child's vocalization. Next, the clinician can expand the child's vocalization to include one of these more advanced syllable forms. If the child says [baba], the clinician can respond with [bata]. If the child imitates this expansion, the clinician can imitate it again, encouraging the child to repeat the more advanced syllable form. If not, the clinician can continue to produce the more advanced structure in response to the child's simpler one, giving additional opportunities for the child to take advantage of the model. Goldstein and Schwade (2008) showed that these kinds of interactions were effective in increasing vocal complexity in typically developing infants. It is important to remember that the goal of these activities is *not* to elicit particular sounds, but only to get the child to try to produce two different sounds within an utterance. If the child produces *any* two different sounds, lavish praise ought to be the consequence, regardless of whether the two sounds are the ones the clinician produced.

The two methods of phonological assessment we have been discussing are both examples of what Stoel-Gammon (1991) called *independent analyses.* That is, they look only at the child's productions themselves, not in relation to adult targets. *Relational analyses,* on the other hand, compare what the child produces with an adult form and identify whether it is right or wrong. Stoel-Gammon (1987, 1998), for example, showed that normally developing 24-month-olds are close to 70% accurate in their production of consonants, relative to adult target words, whereas late talkers have been found to be less than 50% accurate (Paul & Jennings, 1992; Williams & Elbert, 2003). Stoel-Gammon (1991) also reported limited vowel repertoires in children with language delays. Roberts, Rescorla, Giroux, and Stevens (1998) and Stoel-Gammon (1991) have shown, though, that many of these errors resolve spontaneously between 2 and 3 years of age. For this reason, Stoel-Gammon recommends using only independent analysis to evaluate phonology in children with developmental levels younger than 3 years. Relational analyses, such as examination of phonological process use (Preisser, Hodson, & Paden, 1988) or analysis of percent consonants correct (Shriberg & Kwiatkowski, 1982b), are best reserved for children who function above 3 years of age. One promising procedure in this area is McIntosh and Dodd's (2008) *Toddler Phonology Test*, a formal assessment involving production of 32 words, either spontaneously or in imitation. Although quantitative scores are not reliable in identifying toddlers with delayed speech, the types of errors seen at age 2 were predictive, so that children who used atypical error patterns (i.e., patterns *other than* cluster reduction, final consonant deletion, stopping, fronting, unstressed syllable deletion, gliding, and deaffrication) were likely to qualify as speech delayed at age 3.

Still, many children with 18- to 36-month developmental levels produce few words. Our goals are generally to increase their vocal production and to expand their vocabularies, without regard to phonological accuracy. Precise articulation and the relational assessments needed to assess it can wait. The two independent analyses we've talked about—collecting a consonant inventory and looking at the sophistication of syllable structures produced by the client—will be sufficient for most clients at the emerging language level. Both these measures are relatively easy to compute from live, recorded, or diary samples, and each contributes information that is useful for assessing prognosis, designing a program to increase the sophistication of the child's vocalizations, monitoring progress, and for choosing words that the child will be likely to incorporate into a first lexicon.

Assessing Lexical Production

Children at the 18- to 36-month developmental level who are referred for communication evaluation will probably be producing few intelligible words. There are, though, several ways to get an idea of the size and range of vocabulary these clients do produce. One is through language sampling, using the methods we have already discussed, such as observation of a play session, recorded communication samples, or parent diary recordings. These methods give us some notion of the words the child produces but are unlikely, because they are samples, to show us all the words the child says. Some of the screening measures we discussed earlier, including Rescorla's (1989) *Language Development Survey* and the *MacArthur-Bates Communicative Development Inventory* (Fenson et al., 2007) are well-constructed parent-report measures that can be used for this purpose (Eadie et al., 2010; Klee et al.,

1998; Rescorla, Mirak, & Singh, 2000; Rescorla, Ratner, Jusczyk, & Jusczyk, 2005; Thal, O'Hanlon, Clemmons, & Fralin, 1999). Parent report of expressive vocabulary size is, then, an easy-to-collect and useful index of the number of different words that a child with emerging language can produce. Both these instruments also divide words into semantic classes. This semantic class information can be used to decide what concepts and meanings the child is currently talking about and to aid in determining the concepts and categories for words that are available to be added to the child's lexicon.

A variety of general expressive communication measures also are given in Appendix 7-1. Direct assessments of expressive language in this age range have, like the language sample procedures we discussed, the problem of representativeness. When a child fails to produce a form, we don't know whether that failure is a reflection of the fact that the form is really absent from the repertoire or whether the child just didn't feel like producing it. This problem is especially acute for children with emerging language for two reasons. First, their rate of communicative behavior is relatively low, so the samples we get from them are fairly sparse. Second, children in the emerging language stage often just don't comply with requests from adults, particularly with requests to talk or name things. For these reasons, parent-report instruments or those that allow parent report as one source of data are especially useful for this age group. The *Vineland Adaptive Behavior Scales II—Communication Domain* (Sparrow, Cicchetti, & Balla, 2005) is, like the vocabulary checklists we have been discussing, a parent-report instrument. It displays high correlation with direct measures of language use (Paul, Spangle-Looney, & Dahm, 1991; Rescorla & Paul, 1990) and is another measure that can be considered in examining expressive language in this age group.

Assessing Semantic-Syntactic Production

Most clients with emerging language have little to show in the way of productive syntax. If they are verbalizing at all, it is likely to be in the form of single words. In normal development, children do not begin to combine words until vocabulary size reaches about 50 words. Therefore, if a client is producing fewer than 50 words, we would be wiser to work on increasing expressive vocabulary size before trying to get the child to produce word combinations. When the productive lexicon reaches about 50 words, syntactic intervention becomes appropriate, if word combinations have not appeared spontaneously. Detailed productive syntactic assessment, then, is not likely to be an important part of our evaluation in the emerging language stage. Computing a mean length of utterance (MLU) is fairly easy for this age group; it will generally be either 0 or 1. But there may be some children with emerging language who have productive lexicons larger than 50 words or who are beginning to combine words into sentences. When this is the case, we want to look at two aspects of these combinations: the relative frequency of word combinations within a communication sample and the range of meanings or semantic relations expressed. Let's see how we might examine each of these parameters.

Relative Frequency of Word Combinations

To look at the relative frequency of single-word versus two-word utterances, we need to collect a fairly large sample of verbal production from the client. This may not be so easy. If a communication sample is being collected to look at expression of intents, a separate portion of the session needs to be reserved for recording the interpretable one- and two-word combinations. The recording collected from a home sample by the family or from a clinic play or communication sample can also be transcribed and inspected for two-word combinations. If we use the diary method, we can note the relative proportions of one- and two-word utterances recorded by the parents from the several sessions during which they took data. We might ask the parents to be especially careful to record word combinations.

If the rate of word combinations is too great to be recorded easily from either a sample or by parents keeping a diary, it may be that the child is moving out of the emerging language stage into the next phase of language development. If this is the case, we need to do a more detailed assessment of syntactic skills, using methods such as those we'll discuss in Chapter 9 for children with developing language. Toddlers with a history of risk factors at birth who are being followed for communication development may present this happy picture. Rescorla, Dahlsgaard, and Roberts (2000) found that 30% to 40% of late-talking toddlers had moved into the normal range of syntactic production by age 3. If an at-risk toddler's MLU exceeds 1.5 at about 24 months, or if half the utterances contain word combinations, we are justified in feeling that a major hurdle toward normal development has been overcome. Further monitoring may be necessary, but the client is well on the way toward normal language acquisition.

For most clients with emerging language, though, frequency of word combinations is much lower. We can compute a proportion of word combinations by simply dividing the number of utterances containing more than one word by the total number of interpretable verbal utterances in any speech sample we can collect. This proportion gives us an idea of how frequently the child combines words. If the proportion is close to or exceeds 50%, we can conclude that the client is functioning at least at a 24-month level in terms of syntactic production. If the proportion of word combinations is much less than 50%, we can conclude that the client is functioning below this level. It would be surprising if a child with a very small expressive vocabulary (fewer than 50 words) used a lot of word combinations. Like the connection between lexical and phonological acquisition, the link between the acquisition of syntax and vocabulary size is usually quite close, too. Typically, all these aspects of early language acquisition proceed in tandem. However, there may be the unusual client for whom some separation of developmental strands has taken place. For this reason, we want to look at each of the areas of language individually.

Semantic Relations Expressed

When children begin combining two words in sentences, these combinations result in new meanings that are not present in the meaning of either of the words alone. For example, there is nothing about the word *doggy* or the word *bed* that means possession. But when the two words are combined into the utterance *doggy bed,* this utterance can convey a meaning of possession (it's the doggy's bed) if spoken in the right context. Further, children do not combine their words randomly but use consistent word order to denote the relations. This ability to combine words syntactically to produce new *semantic relations* that are not part of the meaning of either of the component words in the utterance is one of the accomplishments of normally developing children in the 18- to 36-month age range.

When children are producing some word combinations, it makes sense to examine the meanings expressed in these combinations. Generally, normally developing toddlers express a relatively

small range of semantic relations in their speech. Eight to 11 major ones (depending on which researcher's coding system you use) can usually account for the great majority of relations used by children in this age range. Table 7-7 gives the semantic relational categories used by Brown (1973) that are typically found in the speech of normally developing toddlers who are learning a variety of languages and dialects (Stockman & Vaughn-Cooke, 1986). Haynes and Shulman (1998b) reported that children with language disorders have been shown to produce these same relations when they begin to combine words.

One assessment method appropriate for this developmental level is Lahey's (1988) content/form assessment. This approach uses both semantic and syntactic information, gathered from the analysis of a spontaneous speech sample, to target goals in emerging content-form-use interactions. This method can provide a rich source of data for planning intervention targets and charting the progress of children in the emerging language stage. Detailed instructions for this method can be found in Lahey's (1988) text. Lee's (1974) Developmental Sentence Types (DST) procedure is another method of speech sample analysis appropriate for this stage.

Alternatively, we can look more narrowly at the expression of semantic relations in children with emerging language. Using this approach, we would first attempt to code each multiword utterance in our language sample (derived from an observation, recording, or parent diary) into one of the categories in Table 7-7. Utterances that did not fit any of these would be placed into an "other" classification. One way to start the analysis would be to look at the proportion of utterances we had to call "other." Normative research indicates that this should be about 30%. If it is more than 50%, we would want to inspect the "other" utterances to see whether they are encoding higher-level semantic relations having to do with concepts such as time (go now), manner (go fast), sequence (eat [then] drink), or causality (cry [because] hurt). If these higher-level relations are being conveyed frequently, they would suggest to us that the child is exhibiting some advanced cognitive development

in the presence of delayed expressive language. We would want to foster this advanced development with appropriate play contexts and attempt to provide the child with more conventional means for expressing these sophisticated notions.

If the proportion of "other" utterances is less than 40% or 50%, we then look at the distribution of relations expressed within the set of utterances coded according to Brown's (1973) categories. If a client is encoding a range of these relations, we conclude that the child is moving toward normal semantic and syntactic development. Intervention, if needed, would focus on increasing the vocabulary available for combining into multiword utterances. Even if the range of relations expressed is somewhat restricted, we would not necessarily conclude that the child is showing a deficit. Lahey (1988) discussed the fact that children sometimes show preferences for encoding certain semantic relations in early language development. Until developmental level exceeds 36 months, we should not discourage the client from these preferences. Rather, we should teach more words that the child can use to express them and provide increased opportunities in play contexts for the client to encode these relations with the new words. In addition, we can supply models in appropriate play contexts for the child to hear other relations expressed and give opportunities, through indirect language stimulation, for the child to imitate these models.

Box 7-3 provides a sample transcript from a 28-month-old child in the emerging language stage. You might like to try some of the semantic and syntactic analyses we've been discussing on this transcript. You can compute the relative frequency of word combinations. Then assign each word combination to one of the categories in Table 7-7 or to the "other" category. Compute the proportion of utterances rated "other" and examine the range of semantic relations expressed. Our analysis is given in Appendix 7-2.

In summary, assessing production in a child with emerging language involves looking at phonological skills, vocabulary size and content, and semantic-syntactic combinations. Typically, all these areas are closely related. Some children may show disconnections, though. Children with hearing impairment, for example, may have semantic relations and pragmatic intents that are more advanced than their syntax and phonology. Children like Joey may show just the opposite pattern, with relatively strong skills in language form and less development of semantic and pragmatic skills. For clients like these, clearly, it is important to have a complete picture of language skills in each area. Even when clients show the normal interrelatedness of these areas, though, we need to know something about each in order to plan the most effective program for improving expressive skills. Because lexical development is closely tied to phonology, we need to know what sounds and syllables the child can produce so that we can choose words appropriately. Because syntax usually does not begin until vocabulary size reaches 50 words, we need to look at the productive lexicon before making decisions about teaching word combinations, and so on. Even when there is little productive language to assess, it is our responsibility to find out as much as we can about what expression there is.

TABLE 7-7	Semantic Relational Categories Used by Brown (1973) to Account for the Majority of Word Combinations in Toddlers' Spontaneous Speech

Semantic Relation	Example
Attribute-entity	Big shoe
Possessor-possession	Mommy nose
Agent-action	Daddy hit
Action-object	Hit ball
Agent-object	Daddy ball
Demonstrative-entity	This ball
Entity-locative	Daddy chair [Daddy's in the chair.]
Action-locative	Throw chair [Throw it onto the chair.]
Recurrence	More milk
Nonexistence, denial, rejection	No cookie
Disappearance	Allgone cookie

Adapted from Brown, R. (1973). *A first language, the early stages*. Cambridge, MA: Harvard University Press.

DECISION MAKING BASED ON ASSESSMENT INFORMATION

The essence of the model of assessment of emerging language involves comparing a child's functioning in various areas of communicative development and using this information in developing

BOX 7-3   Sample Transcript from a 28-Month-Old Child (C) Collected during Free Play with Parent (P) Using Dollhouse Toys

P: Do you see the kitchen?
    C1: Yeah.
P: What's this doll's name?
    C2: Name, Mom
    C3: Name Cinderella.
P: Oh, that looks like a changing table.
    C4: Yeah.
P: For the baby.
    C5: No, Mom, no.
P: Can you find a bed for the baby?
    C6: Yeah.
    C7: No, here is.
P: Where's the living room?
    C8: What?
P: Where is it, the living room?
    C9: Here is.
P: Can I sit in the living room?
    C10: Yeah.
    C11: Here Daddy.
P: What is this?
    C12: What that?
P: I think it's a stove.
    C13: Yeah.
P: There's the kitchen.
    C14: Mommy cook.

P: Are you making spaghetti for dinner?
    C15: Yeah.
P: Maybe lasagna?
    C16: Yeah. [Holds up small, white plastic box.]
P: Is it a cake?
    C17: No, that bed.
P: Oh, should you put it in the bedroom?
    C18: Yeah.
P: Where's the bedroom?
    C19: Right here.
    C20: Oh, don't fit.
P: Too big.
    C21: Mom.
P: What is it?
    C22: Baby.
P: Oh, what's the baby's name?
    C23: Name.
P: We know some new babies, don't we?
    C24: Yeah.
P: Auntie Barbie's gonna have a baby?
    C25: Yeah.
    C26: Baby go in bed.

P: Where's Daddy's clothes?
    C27: Mine upstairs.
P: Oh, in the closet?
    C28: Yeah.
P: OK.
    C29: Daddy cowboy! [Holds up doll in cowboy suit]
P: What's this?
    C30: (um) window.
P: How many windows are in your room?
    C31: What?
P: How many windows are in your room?
    C32: No.
    C33: Hey, baby.
P: Is Baby crying?
    C34: No.
P: Is Baby hungry?
    C35: Yeah.
    C36: Baby me hold.

a prognosis that will help us decide whether a child would benefit most from direct intervention or continued monitoring, as well as to help in devising a treatment plan. The model is schematized as a decision tree represented in Figure 7-5. Crais and Roberts (1991) and Whitehurst and Fischel (1994) also provided decision trees for planning intervention for children with emerging language. Olswang, Rodriquez, and Timler (1998) provided an alternative means of evaluating the need for intervention. In the model we've proposed, the decision process begins with the question of whether the child demonstrates functional or symbolic play behavior that would normally accompany the use of conventional language. If a nonspeaking client is not using these play behaviors, then intervention should focus not only on developing communication but also on modeling the use of objects for conventional and pretend play schemes. If these kinds of symbolic play are present, we then look at nonverbal communicative behavior. If the frequency and/or range of communicative behavior is found to be limited, we would use modeling and communication temptations to try to increase the frequency of intentional behavior in addition to heightening the rate of vocal production. These activities could either precede or accompany the development of early vocabulary. If the child appears to be a good nonverbal communicator but to lack the conventional verbal forms of communication, the issue of level of language comprehension is raised next. If comprehension skills are found to be below those expected for the level of communication demonstrated, then activities to foster receptive language skills, such as focused stimulation activities and indirect language stimulation, should be an important component of the management program.

If receptive language is adequate for developmental level, then we need to take the child's level of accumulated risk factors into account. Children without any other risk factors who are slow to start talking have a good chance of "catching up" with their normally speaking peers by school age if their deficits are limited to expressive language; they begin to use some speech by 30 months; and their cognitive, symbolic, receptive, and communication skills are developing normally (Capone & McGregor, 2004; Ellis & Thal, 2008; Girolametto et al., 2001; Paul, 1996a; Thal, 1991; Whitehurst & Fischel, 1994). These children with circumscribed expressive language delays should be monitored closely throughout their third and fourth years of life. If expressive deficits persist through the preschool period, intervention options can be carefully discussed with parents (see Paul, 2000b; Whitehurst & Fischel, 1994, for suggestions). For children who have known developmental disorders or other risk factors such as those listed in Figure 7-5 or Box 7-1, though, early intervention seems appropriate even if only expressive language is delayed. The consequences of language delay for a child's social and cognitive development can be pervasive and language is one of the most vulnerable functions in young children's development. Providing help to children who are slow to learn to talk serves an important secondary prevention function and ought to be considered if the child is known to be at risk (Paul & Roth, 2011). For children with severe language deficits who are older than 3 years but still in the phase of emerging language, intervention or tertiary prevention is always appropriate, of course.

FROM ASSESSMENT TO INTERVENTION

The decision tree in Figure 7-5 can be used to help us decide when to recommend intervention for a child with emerging language. Once we have decided to provide intervention, of what should the intervention consist and how should it be delivered? We have
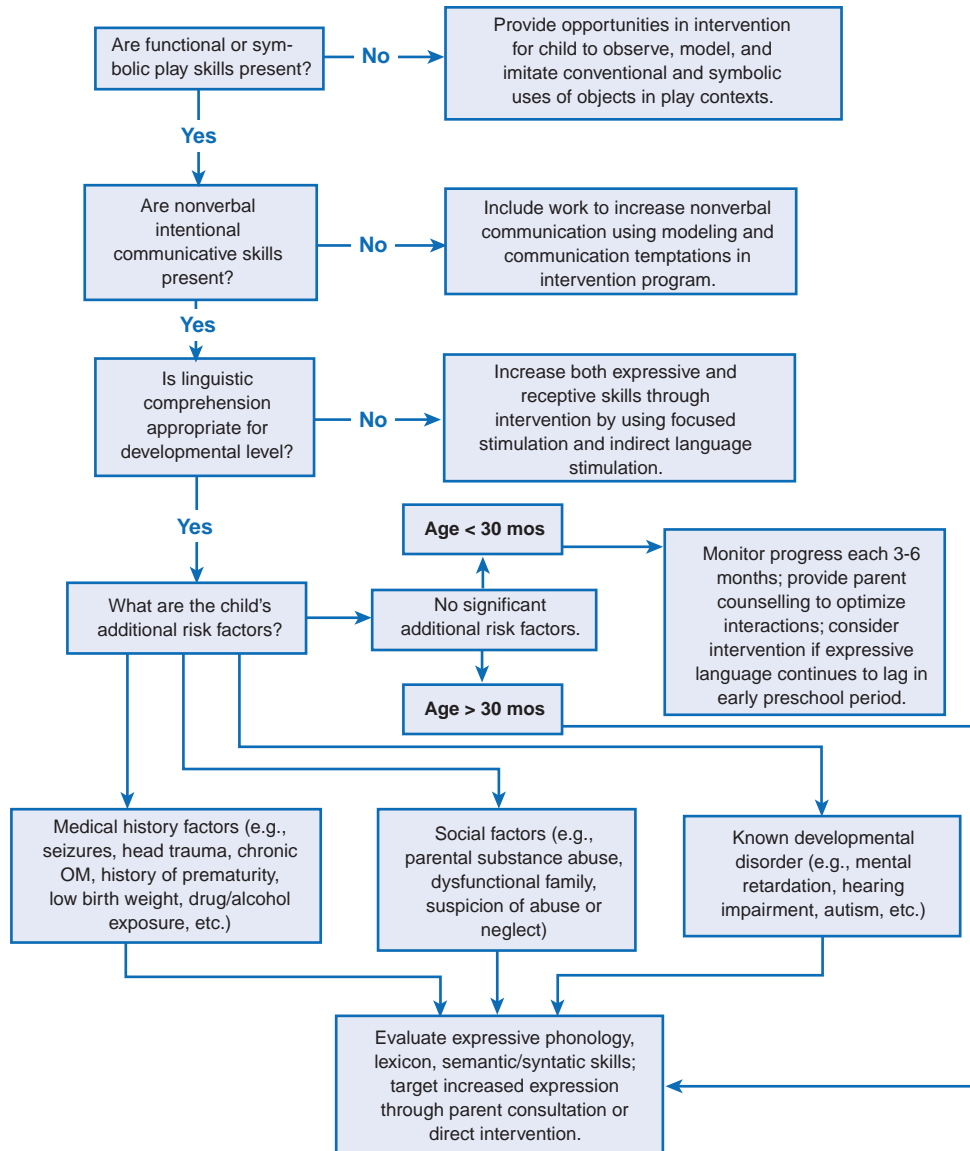
FIGURE 7-5   Decision tree for intervention planning in the emerging language stage.

already discussed some suggestions about appropriate targets and methods of intervention for this developmental level, but let's address these issues more directly now.

Family-Centered Practice

Most clients in the emerging language stage will, like their prelinguistic counterparts, be served through an Individual Family Service Plan (IFSP) designed by a team of professionals, as mandated by IDEA. Unless the SLP is designated as the case manager, we provide just one part of that plan: the data on language assessment and the family-based services in communication development. The form of the IFSP for a child with emerging language is very similar to the one designed for a prelinguistic child (see Chapter 6 for examples), except that the section on planning for transition to preschool services is more detailed. The issues discussed in developing an IFSP for a child with emerging language are very similar to those discussed in Chapter 6.

Parental involvement increases the effectiveness of intervention for children with emerging language.

One issue we'll need to consider in the development of the intervention plan is the parent's role. When fostering communication at the prelinguistic stage for developmentally young children, we definitely want to involve the parent as the primary agent of the intervention. The communicative routines that the young prelinguistic child needs are not hard to learn; in fact, they come naturally to most parents. The management program for children at the emerging language stage is somewhat more focused and specific, though. Are parents still the ideal primary agents of intervention at this stage?

Many programs have been developed for addressing communication disorders in children with emerging language that use parents as the primary agents of intervention. Some of these programs involve teaching parents clinician-directed or behaviorist approaches to eliciting language (Kemper, 1980; MacDonald, Blott, Gordon, Spiegel, & Hartmann, 1974; MacDonald, 1978; Whitehurst et al., 1991). Others teach parents to use hybrid (Cheseldine & McConkey, 1979; Clezy, 1979; Girolametto, Pearce, & Weitzman, 1996; Ingersoll & Dvortczak, 2010; Lederer, 2001; Peterson, Carta, & Greenwood, 2005; Wulz, Hall, & Klein, 1983; Yoder & Warren, 1998, 2002) or child-centered methods (Chandler, Christie, Newson, & Prevezer, 2002; Fey, Newhoff, & Cole, 1978; Hubbell, 1981; Kaiser & Hemmeter, 1996; MacDonald, 1989; Manolson, 1992; Norris & Hoffman, 1990b; Seitz & Marcus, 1976; Yoder & Warren, 1998). The rationale for parent involvement includes the notion that parent-implemented intervention will promote more generalization and may improve other aspects of functioning, such as social skills, in addition to improving communication (Kaiser, 1993; Paul, 2000b). It also grows out of the concept of family-centered practice, which encourages family involvement in all aspects of service delivery (Crais & Calculator, 1998; Rini & Hindenlang, 2006). Unfortunately, the rationale sometimes includes the notion that part of the child's communication problem resides in the parent's communication style. Many people, even SLPs, believe that children fail to start talking because people in their environment anticipate their needs and the child has no incentive to learn language. From this point of view, the way to improve the child's communication is to improve the parent's.

But remember: *normally* speaking children don't *need* to talk either, in the sense that their needs, too, are anticipated and their nonverbal communications are consistently responded to and rewarded. They learn to talk because it is part of their biologically programmed development (Locke, 2005; Pinker, 1994). Data on mother-child interactions (Desmarais, Sylvestre, Meyer, Bairati, & Rouleau, 2008; Paul & Elwood, 1991; Vigil et al., 2005) showed very few differences in linguistic input to normally speaking toddlers and their late-talking peers. Still, it is possible, as Girolametto et al. (1996, 1999) and Whitehurst et al. (1991) have shown, to maximize the quality of parental input to a child in the emerging language period. Maximizing their input does not mean that they were doing anything wrong in the first place, nor does it mean that the entire burden of intervening in their child's communication disorder should fall on the parents' shoulders. There may be times when parents should *not* be teachers but should instead make their child feel understood and accepted, even if his or her speech is not working well. However, helping parents provide the most beneficial input to their child is certainly an attainable goal. Much of the intervention we will provide to children in the emerging language period can be done successfully by parents with some training and monitoring from the SLP. Family-centered practice dictates that we encourage parents to do as much of the intervention as they feel is appropriate for them and their child. In cases in which they do not feel comfortable doing so, it is appropriate for the SLP or another intervention agent to be provided. However, as Robertson and Weismer (1999) showed, clinician-delivered intervention can also have important secondary effects, such as improving overall social skills and reducing parental stress. We need to keep both the costs and benefits of parent-delivered intervention in mind when we plan programs for these children.

Appendix 7-3 lists printed materials that clinicians can use to help parents maximize the communicative and cognitive value of their interactions with their children. Appendix 7-4 lists videotaped presentations that have been developed to help parents understand their toddlers' development and to communicate more effectively. *Exceptional Parent* magazine also contains a wealth of helpful information for parents of children with disabilities. These resources can be used by the clinician to involve parents in fostering their child's growth, in understanding the complexity and wonder of development, and in providing the most appropriate forms of play and interaction of which their child can take advantage.

The family can and should be actively involved in setting goals for their child's intervention program, and the clinician should consult the parents as to what they most want their child to learn and how much of the intervention they would like to deliver themselves. Parent training that incorporates materials such as those in Appendices 7-3 and 7-4 can be used by the clinician in a consultative role to maximize the impact of parent-child communication on the child's development. In addition, teaching or encouraging parents to use indirect language stimulation techniques, using either video or printed materials that address this area (some can be found in Appendices 7-3 and 7-4), will be particularly useful for optimizing the linguistic input the child with emerging language receives. However, we believe that there also is a role for more focused, direct intervention for a child with emerging language who meets the criteria we've discussed for entrance into early communication intervention. Let's look at some of the specific goals and methods that might be used in this intervention.

PRODUCTS, PROCEDURES, AND CONTEXTS OF INTERVENTION FOR CHILDREN WITH EMERGING LANGUAGE

Intervention Products: Goals for Emerging Language

We want to address several areas of communicative development in children with emerging language. We select these areas based on the results of our assessment, following our decision tree structure. Depending on these results, we will decide to address one or more of the following areas in the intervention plan: the development of functional and symbolic play and gesture; the use of intentional communicative behavior; language comprehension; and production of sounds, words, and word combinations. As we discuss each of these areas, suggestions for procedures and contexts for the intervention program also will be presented.

Developing Play and Gesture

If the child is not demonstrating any appropriate or semi-appropriate use of objects or symbolic play and gestures listed in Tables 7-2 and 7-3, a foundation for symbolic function in reciprocity and anticipatory sets may need to be established. Using techniques outlined in Chapter 6 can help to establish this basis. What if observation of play and gesture indicates that the child is already showing reciprocal behavior, such as turn-taking in back-and-forth babbling

games, and anticipates actions in baby games, such as peek-a-boo, but is not yet using the functional and symbolic behaviors? This child is probably ready to be encouraged to use the next levels of symbolic behavior, such as early conventional and symbolic play and deictic gestures. Barton and Wolery (2008) identified studies that taught play behaviors to children with disabilities, and found studies that successfully employed physical prompts, live and video modeling, as well as verbal prompting to teach play behaviors in a hierarchy given in Table 7-8. They reported significant increases in pretend behaviors related to adult modeling and/or prompting using materials typically found in early childhood classrooms. These findings suggest play behaviors can be effectively taught to very young children. Deictic and representational gestures can be modeled in a similar way. For example, if the child bangs a cup, the clinician can imitate the banging, then hold the cup up to the child's face to show it, saying "Cup!" If developing conventional and symbolic play and gesture is one goal of the intervention, this is an ideal context for parent involvement. Parents can easily be shown how to model these play and gesture behaviors, and engaging in them provides an ideal setting for positive, facilitative parent-child interactions. Encouraging parents to use gestures as they talk with their toddlers, both to indicate referents for words (by pointing to what they are naming) and to serve as accompaniments to words (such as holding up two fingers in a "V" when they are talking about a rabbit) can enhance children's word learning (McGregor, 2008).

Eliciting intentional behavior is often a communication goal in the emerging language stage.

Using Intentional Communicative Behaviors

You'll remember that we evaluated the frequency, form, and functional range of expression of communication intentions in the child with emerging language. Intervention aimed at increasing the frequency of intentional communication bumps us up against what Hubbell (1981) called the "*be spontaneous* paradox" (p. 250). We want children to *initiate* communication, but we have to somehow *get* them to do it. Here we can use communication temptations, such as those of Wetherby and Prizant (1989) listed in Box 6-5. In providing communication temptations, we are using a hybrid method of intervention. We do not require a specific response (although there is one

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TABLE 7-8   Taxonomy of Play Behaviors to be Taught in Intervention for Toddlers

Play Type	Definition	Example
Functional play with pretense	Use of actual or miniature objects in the manner in which they were intended without the reality-based outcome.	Pretending to eat from empty spoon.
SUBSTITUTION		
Object substitution	Use of one object as if it were a different object.	Holding a block to the ear and pretending to talk on the phone.
Imagining absent objects	Performing an action as if an object were present in the object's absence.	Holding an empty hand to the ear and pretending to talk on the phone.
Assigning absent attributes	Assigning dramatic roles or emotions to the self, others, or inanimate objects.	Hugging and comforting doll that is "crying."
SEQUENCES		
Functional play sequence	A series of at least two functional play with pretend actions related to same theme or routine.	Putting a doll on a bed then covering it with a blanket.
Substitution sequence	A series of at least two substitution actions related to same theme or routine.	Putting a doll on a piece of paper ("bed") and covering it with a washcloth ("blanket").
TALK AND PLAY		
Confirmatory vocalizations	Identifying specific roles children are acting out; assigning attributes to themselves; or planning, mapping, or confirming pretend play behaviors.	"You be the doctor and I'll be the mommy."
Scripts	Verbalizations taught *via* a script (targeted behaviors).	"Tell the storekeeper, 'I need some milk.'"

Based on Barton, E. E., & Wolery, M. (2008). Teaching pretend play to children with disabilities. *Topics in Early Childhood Special Education, 28(2),* 109-125.

we are hoping for), but we do structure the situation and provide multiple opportunities and models for the child. An excellent way to involve parents in this aspect of the intervention is to demonstrate the communication temptation to the parent and ask the parent to respond as we want the client to respond. If we hand the parent the clear, closed container, for example, we can let the parent know that we want her to hand it back and use a direct gaze, questioning expression, or simple single-word request ("Help"). After modeling this several times, we can hand the container to the client.

Another hybrid approach to increasing the rate of communication is to use the milieu teaching techniques discussed in Chapter 3. Warren and Yoder (1998) and Yoder and Warren (2002) trained parents to use what they called prelinguistic milieu teaching (PMT) to increase intentional communication in children with developmental delays. The method follows the basic principles of milieu teaching. It involves arranging the environment to elicit child communication, focusing on and following the child's attentional lead, embedding instruction in ongoing interaction, focusing on specific target behaviors, and using prompts and reinforcement to elicit and maintain communicative behaviors. An important component of this approach is to provide a long time for the client to emit a response (Olswang & Bain [1991] suggested 15 seconds). Warren and Yoder found the method to be highly effective, particularly for children with mothers who were already quite responsive to the children's communicative attempts. Fey et al. (2006) also found significant increases in the number of intentional communication acts for children who experienced PMT with parent training, relative to a "treatment as usual group." PMT, then, appears to be a very promising practice for improving communication for very young children with a range of developmental delays. Some specific methods used in this approach appear in Box 7-4.

BOX 7-4   Prelinguistic Milieu Teaching Methods

ARRANGING THE ENVIRONMENT
- Place desired materials in view but out of reach.
- Place materials where adult assistance is necessary to obtain them (such as in a tightly closed, clear plastic jar).
- Violate the expected order of events (e.g., give the child a shoe to put on before giving a sock).

FOLLOWING THE CHILD'S ATTENTIONAL LEAD
- Attend to and talk about toys selected by the child from an array.
- Reduce adult behavior to child's rate of initiation, even if this means long periods of silence.
- Use contingent motor imitation—an exact, reduced, or slightly expanded imitation of a child's motor act immediately after the child's production to establish early turn-taking.
- Use contingent vocal imitation—following a child's vocalization with a partial, exact, or modified adult vocal production (e.g., if the child says "aaah," the adult can say, "aah" or "baa").

BUILDING SOCIAL ROUTINES
- Engage the child in repetitive, predictable games, such as "patty-cake" or "peek-a-boo"; encourage parents to play the game at least once a day with the child.
- Vary the game slightly (e.g., if the child has learned "patty-cake," change it to "Bake me a cake as S-L-O-W as you can," with a corresponding change in the pace of the song).

USE SPECIFIC CONSEQUENCES
- Provide the following specific consequences in teaching episodes that are brief, positive, and embedded within the ongoing interaction:

Prompts
- *Time delay prompts:* Nonverbal prompts that interrupt an ongoing turn-taking routine (e.g., if the child and adult are rolling a ball back and forth, the adult can hold onto the ball instead of returning it and wait with an expectant look for the child to initiate a request to continue).
- *Gaze intersection:* To establish eye contact, the adult moves his or her head into the gaze of the child. This is faded out as the child begins to engage in eye contact more regularly.
- *Verbal prompts:* Attempts to elicit communication, such as an open-ended question ("What?") or directive statement ("Look at me.").

Models
- *Vocal models:* Delayed imitations of sounds that the adult has heard the child use. If the child is heard saying "ba," for example, the adult can use "ba" at another time to try to elicit a vocalization from the child.
- *Gestural models:* Encourage the child to use presymbolic gestures by modeling them at appropriate times (e.g., if a plane passes overhead, the adult can point up to it, as a model of nonverbal commenting).

Natural Consequences
- Be sure the child achieves any intent expressed. If the child expresses a protest, honor it by ceasing the protested action.
- Provide any object the child requests and attend to anything on which the child is seeking joint attention.
- Provide acknowledgment of communication. Smile, look at, or comment on any intentional behavior of the child. Make sure the child knows the message was received.
- Provide linguistic mapping. Use simple language to "translate" a child's nonverbal intention to words. If the child holds up a cup, respond, "It's a cup! I'm glad you showed me!"

Adapted from Warren, S., & Yoder, D. (1998). Facilitating the transition from preintentional to intentional communication. In A. Wetherny, S. Warren, & J. Reichle (Eds.), *Transitions in prelinguistic communication* (pp. 365-384). Baltimore, MD: Paul H. Brookes.

Routine or script therapy also can be used. Here we would establish routines in games or day-to-day activities and then playfully violate the routine in the hope of eliciting a protest or correction from the client. Social games such as "peek-a-boo" and "Gonna getcha" work well. Sussman's (1999) book and accompanying video provide a variety of ideas for these activities that can easily be taught to parents. Other resources available from the Hanen Center (www.hanen.org) can also be useful in parent education. Parents can observe the clinician engage in these kinds of activities and be encouraged to try them during routines in the home.

If the child is showing low rates of communication overall and our goal is simply to increase the frequency of any kind of intentionality, we must be prepared to accept any form of behavior as conveying an intention. In fact, if the child does not give us any clear sign of communication, Prizant (1991) suggested that we impute intent to some behavior we do observe, treat it as communicative, and respond accordingly. In this way we can begin to shape the child's behavior into communication.

Another aspect of expression of communicative intent that we addressed in assessment involved the range of intentions expressed. If assessment indicates that a child is expressing a restricted range of intentional functions, it is important to remember to work toward eliciting both proto-imperative and proto-declarative functions in an intervention program. Proto-imperatives are often addressed first because they are easier to elicit. We can use many of the techniques in Box 7-4 for arranging the environment to encourage their production. Warren and Yoder (1998) also suggest establishing social routines, then having the adult withhold a turn and look expectantly at the child or provide a verbal prompt, such as "What do you want?" to encourage the child's production. If this fails, the adult might use gaze intersection or a gestural model (see Box 7-4) to assist the child.

While the proto-imperatives are often targeted first, it is the proto-declaratives that more closely resemble the great majority of conversational speech acts. These acts also are less frequent in the communication of children with a variety of disabilities (Adamson & Chance, 1998; Rescorla & Mirren, 1998; Wetherby et al., 2004; Wetherby, Yonclas, & Bryan, 1989), although they are much more frequent than requests in typical children (Paul & Shiffer, 1991). For these reasons, it is especially important that we encourage the production of proto-declarative acts when attempting to broaden the range of expression of intentions. Warren and Yoder suggest that, because proto-declaratives involve sharing states of feeling and attention, it is important to develop a strong positive relationship with the child. Once this relationship is established, they advocate introducing novel events or objects to the child to encourage comments. New toys can be placed within established routines (rolling a car instead of a ball). Routines also can be sabotaged with silly or unusual events, such as pouring juice into a bowl, instead of a cup, at snack time. Adults also can pay less than the normal amount of attention to the client by backing away or facing away from the child during an interaction. This forces the child to do something to regain the adult's attention (Note that this technique will generally not work so well with children with ASD, who may be relatively indifferent to adult attention). Adults also can pretend not to notice something the child has directed our attention to or can begin to comply with a request and fail to finish. Then the child needs to get our attention back to complete the task or game. These kinds of activities can help children learn how to direct other people's attention to topics on which they are focused. Warren and Yoder suggest continuing these kinds of activities until the child produces more than one communicative act per minute. When this milestone is reached, we can begin to focus on initial symbolic communication.

For children who show relatively frequent expressions of a range of proto-imperative and proto-declarative functions but use only gestures as the form of their expression, we want to increase the maturity of the mode of communication. With children for whom speech seems a reasonable goal, we will attempt to elicit vocalizations, and eventually conventional words. Here our approach must be somewhat different than the one we used to encourage intentional communication. In this case, instead of responding to all the child's actions as if they were communicative, we want to "up the ante" and withhold responding until the child produces some vocal behavior. Capone and McGregor (2004) suggest that we first identify concepts and intentions the child is already expressing with gestures. Since these are early symbolic behaviors, they should be within the child's zone of proximal development for expression with a more mature form. They suggest we present higher level forms along with an imitation of the child's gesture, to help make the connection between the child's current symbolic representation and the new word we would like to become a symbol for the same idea. We don't want to ignore gestures, though, as they may be the only way the child has at present to express wants and needs. Rather than trying to "extinguish" gesture use, we would be wiser to help children augment their gestural communication with increasingly mature vocalization. Using manual signs may be a bridge from gestures to symbolic communication. DiCarlo, Stricklin, Banajee, and Reid (2001) and Toth (2009) showed that teachers' using manual signs along with speech led to increases in communicative interactions by toddlers with disabilities.

Whitehurst et al. (1991) suggested, further, that vocal forms of communication containing only vowels actually compete with the development of linguistic forms of communication. In other words, one type of vocalization is not as good as another. Only those vocalizations that contain consonants help to move the child in the direction of speech. This would suggest that vowel-only forms of vocalization, such as grunts, whines, and "uh-uh"s, ought to be treated no differently from gestures. When the child produces these forms of communication, we should first acknowledge that we perceive the child's intention by saying something such as, "You want it. Tell me." As a first step, any vocal behavior will be acceptable as long as it contains a consonant. As soon as clients produce a vocalization including a consonant, we can give them what they want or engage in joint attention. If they continue only to gesture or produce a vowel-only vocalization, these attempts can be ignored and further prompts for speech-like productions can be given. Once some consonant productions have been elicited, we can "up the ante" again and require a closer approximation to a conventional word.

There is one exception to this general series of procedures. That involves clients who use maladaptive means of expressing their intentions. Some clients, for example, use self-abusive behavior to get attention or to express boredom with a task. Others may use aggressive behavior to request objects. These forms of behavior are certainly communicative and ought to be understood as such. But because of the inherent danger of such behaviors, we will not be able to simply accept or ignore the maladaptive form of expression. Functional communication training has been shown to reduce these behaviors in toddlers, as it does in older children (Dunlap, Ester, Langhans, & Fox, 2006), and the advantage of managing these behaviors early is that they are less likely to escalate. Again, we always want to acknowledge to the client that the message was received; however, in the case of maladaptive forms of communication, we need to provide an alternative means quickly and to make clear that the form the client used was not acceptable. If a client, for example, requests a snack by grabbing food from another client, we

can say, "I see. You want it. Point to it, and I'll give you one. Like this. Now you show me." If the child uses self-injurious behavior to request the end of an intervention session, the clinician might say, "No. Don't scratch. You're tired. Show me (demonstrate a gesture, like putting face on hands as if sleepy). Then I'll know you're tired. We can stop then. You show me." It is important, of course, once these more acceptable forms of expression have been acquired, that we honor them. If the child uses the new signal we've taught to request an end to an activity, then we need to end it. Otherwise, the signal will not have been an effective means of communication and the old maladaptive means will reappear.

All the approaches we have been discussing for increasing the frequency, range, and maturity of communicative behavior involve, to some extent, a refusal on the adult's part to anticipate the child's needs and a delaying of the adult's provision of goods and services to the child. Should parents be providing this kind of intervention? Family-centered practice dictates that parents be involved in the decision about who should deliver this and any other form of intervention. We should discuss this issue with parents and ask whether they are comfortable behaving this way with their child. These discussions also should emphasize that it was not the parents' willingness to respond to the child's immature forms of communication that caused the problem. We would suggest, too, that regardless of who provides the intervention, parents should be encouraged to continue to anticipate and respond to the child's needs, at least some of the time, and to feel that they do not have to provide this aspect of the intervention if that is their preference. Again, we want the child to feel that the parent can be relied on to understand and accept the child's attempts to get messages across. Occasional playful violations of routines and communication temptation games are appropriate activities for parents, but children also should be able to feel that their parents will respond when they communicate with them, even if the attempts are immature. This is one area in which direct service by a clinician may be appropriate, until the child establishes a repertoire of consonant-containing vocalizations that are used for communication. Once this repertoire is established, parents may be able take over and up the ante to requiring these more speech-like forms in their own communication with the child.

Not all practitioners accept this view. Whitehurst et al. (1991), for example, argued that parents should be taught to ignore all gestures and vowel-only communication in these children. They advocated giving parents structured activities to do with the child to elicit speech. As in many areas of language pathology, this is an issue about which experienced clinicians disagree. Whitehurst et al.'s suggestions for parent activities are detailed in Table 7-9.

Developing Receptive Language

In Chapter 3, we said that intervention should focus primarily on productive skills, but that an input component ought to be included in the intervention program when comprehension deficits are identified. Indirect language stimulation (ILS) is one form of this structured input. ILS is especially appropriate for clients in the 18- to 36-month developmental range and can be used to provide multiple opportunities for the child to observe how language works to map the nonlinguistic context onto words. It allows the client to try out comprehension strategies and to develop expectations about conversational structure. It also can be combined with efforts to develop play skills by providing ILS in the context of facilitative play interactions. This aspect of the intervention is, in our view, particularly well suited to using parents as intervention agents. ILS is an ideal vehicle for giving the child a clear set of examples for

TABLE 7-9	Suggestions for a Parent-Administered Program of Early Language Intervention: First Words

Biweekly Assignment	Activity
1	Forced choice: Ask the child to choose between a liked and disliked object. Give the desired object only if the child tries to label it or imitates parent labeling it.
2	Develop vocabulary: Clinician chooses 20 words to begin vocabulary; parent asks *wh-* questions when child is attending to the referent for one of these words. Parent gives item or complies with child request only if child tries to label item or imitates parent's label.
3	Incidental teaching: Parent asks child to label or imitate parent's labeling any object or activity child is attending to or requests, and over which parent has control.

Adapted from Whitehurst, G., Fischel, J., Lonigan, C., Valdez-Menchaca, M., Arnold, D., & Smith, M. (1991). Treatment of early expressive language delay: If, when, and how. *Topics in Language Disorders, 11,* 55-68.

how language can be used to describe experience. It allows, but does not require, clients to try out this new understanding in their own production.

Reese, Sparks, & Leyva (2010) reviewed a range of studies that demonstrate parent training has the capacity to improve children's language and literacy. Parents can be trained to use ILS techniques by taking advantage of some of the materials in Appendices 7-3 and 7-4. The Hanen Program (Girolametto & Weitzman, 2006) has been particularly successful in providing this kind of training and publishes books for parents (Manolson, 1992, 1995) in English, Spanish, and French. Prizant (1991) suggested that training for parents in ILS should focus on helping the parent learn to follow the child's lead by imitating actions, sounds, and words the child produces and providing words to match the child's actions and activities. Parents need to be made aware of the importance of letting the child choose the topic, activity, or material and of being sure to comment on something the child is already doing.

The standard ILS techniques outlined in Chapter 3—such as expansion, extension, recasts, and open-ended and verbal reflective questions—can be taught to parents through modeling. Although parents normally supply these kinds of input to their toddlers, we want to encourage parents of clients with emerging language to provide *super-normal* levels of these facilitative stimuli. Explaining to the parents that we are trying to provide very high levels of facilitative input can help to allay any lingering suspicion parents may have that we feel they have failed to give adequate stimulation to the child. Our research on maternal linguistic input to toddlers (Paul & Elwood, 1991) suggested that one of the few ways that parents' interactions with normally developing toddlers differ from those with children who have slow language development is that the mothers of normally developing toddlers get more speech from their children. This in turn gives them more opportunities to expand and extend the child's remarks. You may remember that we said in Chapter 3 that these expansions and extensions are some of the

most efficient types of input for encouraging language acquisition. So one important way we can influence the child's linguistic environment is to ask the parents to expand or extend just about anything the child says. Furthermore, we can instruct parents to provide simple one-word labels for whatever the child is focusing on or referring to with preverbal communication. They can then expand or extend their own one-word label, modeling how simple language can be built upon and used. For example, if the child is looking at a doll, the parent can say, "Doll. Pretty doll! It's a pretty doll." Fey (1986) provided guidelines for training parents to understand the goals and methods of ILS. These are summarized in Box 7-5. The relations between receptive and expressive language also are important to emphasize to parents. Although lexical production in clients with emerging language may be quite limited, we want to provide a broad range of models in play and other facilitative contexts to build receptive vocabulary. Getting a child to say words is not the only goal of ILS.

Developing Sounds, Words, and Word Combinations

Increasing Phonological Skills

The primary goal of phonological intervention in the earliest stages of language development is the enlargement of the consonant inventory and the range of syllable shapes the child can produce. Goldstein and Schwade (2008), as well as a review by Dunst, Gorman, and Hamby (2010), showed that imitating an infant's vocalizations had large effects on increasing infants' vocalizations. For the child with fewer than 50 words in expressive vocabulary, this enlargement can take place in the context of back-and-forth babbling games. These games involve, first, having the clinician simply imitate the child's vocalization. Once a back-and-forth imitation pattern is established, the clinician can introduce a new consonant into the babble and produce it for the child to imitate. New consonants that are added would be selected on the basis of the order of acquisition of consonants by normally developing children. Fasolo, Majorano, and D'Odorico, (2008), as well as Paul and Jennings (1992), found that late-talking toddlers acquire

consonants and syllable shapes in the same order as normally developing children do, but at a slower rate. By 18 to 24 months the late talkers produce most stop, nasal, and glide consonants, but few fricatives or liquids. So a clinician working to increase the phonetic inventory of a child with emerging language would first attempt to fill out the stop and nasal inventory, providing models for the child of any stops or nasals that were currently absent. If, for example, the client were producing only front stops in babble, the clinician would respond to the child's /bababa/ with /gagaga/. Once the full range of stop and nasal consonants is present in the child's babbling repertoire, the clinician can begin introducing some fricatives. It's important to remember that even though we are modeling sounds in developmental order, the goal of these activities is *not* to get the child to produce particular sounds, but only to increase the consonant inventory. Any new consonant produced, even if it is not the one modeled by the clinician, should be rewarded. Work on expanding the range of syllable shapes would proceed in an analogous way.

When speech is a goal for children at the 18- to 36-month developmental level, phonological work should focus primarily on expanding the repertoire of sounds and syllable shapes, rather than on correcting errors relative to adult target words. Normally developing children at this developmental level still use a variety of processes to simplify their speech (Bernthal & Bankson, 2004; McLeod et al., 2001; Roulstone et al., 2002). Any conventional word approximations that children with developmental delays are producing ought to be rewarded, not corrected. When expressive vocabulary and sentence length increase, there will be ample opportunity to work toward correct articulation. At the emerging language stage of development, the goal is to get the child talking and to increase the range of phonological structures available to support this talk.

Developing a First Lexicon

In Chapter 3 we discussed some of the considerations in selecting the first words to teach to children with small expressive vocabularies. These considerations include choosing words that are similar to those used first by normally developing children. Nelson (1973) found that close to one half of normally developing children's first words are nouns. These nouns include the child's own name and names of pets and family members, names for objects the child acts on directly *(shoe, spoon),* names for body parts *(nose, belly button)* and preferred foods *(cookie, juice),* labels for objects that move and change *(ball, light),* and for social games and routines (*hi, bye-bye,* and *patty-cake*) (Owens, 2009).

Nelson's data, though, suggested that the other half of children's first words are *not* nouns. Lahey and Bloom (1977) also emphasized the importance of teaching first words not just as labels for objects but also for other kinds of communication. They stressed the need to teach words that can be used to talk about the relations among objects. In fact, Banajee, DiCarlo, and Stricklin (2003) found that none of the most commonly used words in toddlers vocabularies were nouns; instead they consisted of pronouns, (*I, you*), function words (*that, the*), verbs (*help, is*) and relational words (*more, alldone*). Teaching these kinds of words gives the child the opportunity to express more communicative functions than simply naming. It also provides a set of words that can be readily combined with others into two-word utterances when the child is ready to make that step, so that a whole new set of vocabulary items would not have to be taught when the time arrives to make the transition to syntax. Table 7-10 presents the words found to be most common in children's early lexicons. These would be good words to include when teaching first words to children with emerging language.

BOX 7-5   Guidelines for Parent Training

1. Be sure parents understand specific goals before beginning training.
2. Involve as many family members and caregivers as are willing to participate in the intervention.
3. Delineate parent and clinician responsibilities clearly.
4. Explain the purpose of all procedures.
5. Collect baseline data.
6. Model procedures for the parent; observe parent using procedures.
7. Provide feedback to parent, using videotape or group-training procedures.
8. Monitor the parent's use of the procedures, using direct observation or audio recorded by the parent during intervention sessions in the home.
9. Encourage parents to make incidental use of the procedures in natural day-to-day activities.
10. Maintain regular contact with families.
11. Monitor the effectiveness of the intervention.

Adapted from Fey, M. (1986). *Language intervention with young children*. San Diego, CA: College-Hill Press.

TABLE 7-10 Words for a First Lexicon

Communicative Function to be Served	Relational Word	Substantive Word
Rejection, nonexistence, or disappearance	*No, allgone, away*	
Cessation or prohibition	*No, stop, alldone*	
Recurrence	*More, again*	
Existence	*This, that, there, what*	
Action on objects	*Get, do, make, throw, eat, find, draw, fix, wash, kiss, bump, help*	
Locative action	*Put, take, up, down, out, fit, sit, fall, go, dump, turn, in, on, here, out, off*	
Attribution	*Big, hot, pretty, dirty, some*	
Naming	*I, it, you*	Objects child acts on (*shoe, cup*) Objects that move (*dog, car*) Familiar people (*mom, dad,* sibling names)
Possession, commenting	*My, mine, want*	
Social interaction		*Hi, bye-bye, night-night, yes*

Adapted from Lahey, M., & Bloom, L. (1977). Planning a first lexicon: Which words to teach first. *Journal of Speech and Hearing Disorders, 42,* 340-350; Lahey, M. (1988). *Language disorders and language development.* New York: Macmillan; Banajee, M., DiCarlo, C., & Stricklin, S. (2003). Core vocabulary determination for toddlers. *Augmentative and Alternative Communication, 19,* 67-73.

An important consideration in choosing words for a first lexicon is that first words are functional and fulfill a broad range of communicative purposes (Owens, 2009). We want to teach children words that they can make use of often to accomplish their social goals. We don't want word training to consist of the clinician asking the child, "What is this?" since this kind of format is unlikely to teach the child how to use the word in the real communicative world.

MacDonald (1989) suggested further that words be chosen that encode ideas and interests children already have. These ideas and interests can be identified through analysis of play behavior. If, for example, a child demonstrates driving cars during the play assessment, *drive* would be an accessible word, although simplified pronunciation (/dai/) should be expected.

One further consideration in choosing a first lexicon has already been mentioned: the phonological shape and composition of the words to be taught. You'll notice that most of the words in Table 7-10 have simple, one-syllable CV or CVC shapes. These restrictions are appropriate for an early lexicon. In addition, when planning a lexicon for a particular client, it is important to match the words taught to the child's consonant inventory. If only stops /b/, /p/, and /g/ and the glides /h/ and /w/ are present in the inventory, then first words ought to contain those sounds primarily, at least in initial position. *Hi* and *bye-bye* would be good choices. So would *go, get, put, allgone,* and *bump.* Later, as new sounds enter the inventory by means of phonological work in back-and-forth babbling activities, new words containing those sounds can be added.

What are the best procedures for increasing early vocabulary? As with any language goal, we have clinician-directed, child-centered, and hybrid methods available to us. Many clinicians (Lahey, 1988; Owens, 2009) favor a child-centered (CC) approach involving natural play contexts. This involves introducing activities and objects to which the targeted words can refer and having the clinician provide numerous models of the use of the target words to refer to these objects, activities, and their relations. Choice of target words, again, would be influenced by play assessment. Words chosen on the basis of the child's current knowledge and interests would be included.

Play contexts that give opportunities for incorporating these words into the interaction would allow the client to learn words for ideas already being expressed through play. As in all our CC approaches, clients would not be required to imitate the adult's model in these activities, but would be generously praised if they do.

Hybrid approaches, such as milieu teaching, using either the mand-model or incidental teaching format (see Chapter 3 for details), also can be used to elicit words from the child, and have a strong base in evidence (Hancock & Kaiser, 2006). Milieu teaching, you'll remember, involves organizing the environment so that desired objects and activities must be requested or commented on by clients for them to get the goods and services that they want. Weismer (2000) advocated another hybrid approach, script therapy. In this approach the clinician and child engage in a verbal routine or a ritualized pattern of actions that involves the use of words targeted for the child's early lexicon. At first the clinician does all the talking. If a verbal routine is used, it can be accompanied by a mime or finger play that the child performs. Alternatively, action routines can be used. For example, the clinician can go through a series of steps to place the child's nametag on a board to indicate that he or she is present each day at the intervention session. The clinician can accompany each action in the sequence with a simple utterance (for example, "You're here! Your coat. Take it off. Put the tag on. You put your tag on!"). When the routine is over-learned, the clinician can violate an aspect involving one of the target words. Or the SLP can use a cloze technique, providing the routine language but leaving a blank for the child to fill in the target word ("You put your tag. . . ?"). Whitehurst et al. (1991) have devised a hybrid program for stimulating the early stages of language development that was intended to be used by parents of children with specific language disorders. The methods they suggested for eliciting first words are described in Table 7-9. Lederer (2001) showed that a focused stimulation approach delivered by parents was also effective in increasing overall and target vocabulary acquisition.

It is, of course, also possible to use clinician-directed (CD) approaches, such as drill, drill-play, or CD modeling, with required

imitation to elicit early words. For some clients, this may be an appropriate tack to take. Friedman and Friedman (1980) reported that elicited imitation techniques such as these were more effective with minimally verbal children with low IQs than were more naturalistic approaches, whereas the more naturalistic approaches worked better for children with higher IQs. Connell and Stone (1992) showed that children with specific language impairment were more likely to learn to produce new grammatical morphemes if they were required to imitate during instruction than if modeling alone were used. Kouri (2005) reported that approaches using both CD elicited imitation ("Say, shoe") and hybrid focused stimulation, in which children listened to multiple models of target forms during play interactions without being required to imitate, were equally effective in producing increased use of target words in natural, home settings for toddlers with developmental delays. This suggests that, like older children, toddlers with language delays can benefit from a range of approaches, so long as focused attention on language is present in the activities; whereas CD approaches to early lexical development may be better-suited to the older, developmentally delayed child at an emerging language developmental level. Like all choices about processes of intervention, though, hard and fast rules rarely apply. We need to determine which approach, or mix of approaches, works best for the particular client. Whatever approach is used, the same considerations we have discussed for choosing lexical items should apply. Even in a CD approach, words taught ought to have potential communicative value and appropriate phonological shapes.

Issues concerning receptive language also should be kept in mind when developing a first lexicon. Receptive vocabulary is typically in advance of expression in the emerging language period (Owens, 2009). Children with language impairments in this stage should not be deprived of hearing a rich mix of words, even though we may concentrate on eliciting only a few of them in production. Beyond the specific language elicitation procedures we use with these children, we should encourage parents *not* to limit their word use to the lexical items the child can say (Hart, 2004). Instead we should urge parents to provide a range of labels for objects, events, and relations in clear, here-and-now contexts. If they see that the child is looking at a truck, for example, we should encourage them to label it for him not only as *truck,* but with more specific terms, as well, such as *flatbed, cherry-picker,* or *pick-up.* In this way, receptive vocabulary can continue to move ahead even when production is limited.

Developing Word Combinations

Children's first word combinations are used to talk about the semantic relations they already have been encoding with single words (Bloom & Lahey, 1978). As we've seen, most early two-word sentences convey a small range of semantic relations that are common across children and related to their current knowledge and interests, regardless of the language they are learning (Brown, 1973; Grove & Dockrell, 2000). When we try to elicit first two-word utterances, we want to encourage children to talk about these typical early semantic relations. The semantic relations listed in Table 7-7 can serve as a framework.

As with all our language goals, CD, hybrid, and CC approaches can be developed to elicit two-word utterances. CC approaches involve the use of indirect language stimulation. Here the adult engages the child in a play situation. Whenever the child produces a one-word utterance, the clinician expands it to encode the same relation the child intended, using a two-word phrase. For example, if the child were playing with a spoon to feed a doll and said,

"Eat," the clinician might reply, "Yes, the doll eats!" If the child were playing with a car and bumped it into another one, saying, "Bump!" the clinician could remark, "Yes, the cars bump!" or "You bump the cars!" As with all types of ILS, no imitation would be required. The child would be praised for imitating a two-word combination and the clinician could imitate the child's two-word production once again. Our goal would be to provide models of two-word utterances that map ideas the child is already expressing in play. Frome-Loeb and Armstrong (2001) showed that indirect language stimulation techniques aimed at increasing word combinations were effective in eliciting longer utterances from toddlers with language delays.

Hybrid approaches also can be used at this stage. Schwartz, Chapman, Terrell, Prelock, and Rowan's (1985) vertical structuring technique is one example. Here, the clinician responds to a child's incomplete utterance ("doggy") with a contingent question ("Where is the doggy?"). If the child then responds to the question with another fragmentary remark ("bed"), the clinician takes the two pieces produced by the child and expands them into a more complete utterance ("Yes, the doggy is in the bed."). Since this is a hybrid approach, the child is *not* required by the clinician to imitate this expansion. If the client does spontaneously imitate, lavish praise is given. If not, the clinician simply goes on to elicit another set of related utterances from the child and offers the vertically structured expansion again. Enhanced milieu teaching, using incidental teaching techniques to elicit early multiword utterances, has been shown to be effective in eliciting multiword speech (Hancock & Kaiser, 2006), as has conversational recasting (see Chapter 3; Camarata & Nelson, 2006).

Whitehurst et al. (1991) also have developed a hybrid program intended to be used by parents to elicit two-word utterances. This program is an extension of the activities described in Table 7-9 for eliciting single words. The steps in this program are outlined in Table 7-11.

In a script therapy approach (Weismer, 2000), the clinician might teach a finger play, such as "Where is Thumbkin?" After the child has done the finger play with the clinician singing the song numerous times, the clinician might violate it by singing, *"What* is Thumbkin?" or by holding up one of the fingers ("pinky" is probably easiest to pronounce) and delaying the production of the line in the song. If the child corrects the clinician ("No! *Where* pinky?") or produces an appropriate two-word utterance when the clinician delays ("Where pinky?"), lavish praise can be used as a reward, and additional violations or delays can be used later. If the child does not correct or fill in, the clinician can continue to provide the language routines and try again another time. Focused stimulation is another hybrid technique that has demonstrated efficacy in eliciting both early words and word combinations (Bunce, 1995; Kouri, 2005; Weismer & Robinson, 2006; Wilcox & Shannon, 1998).

CD approaches also have been used to elicit early two-word utterances. Leonard's (1975a) modeling procedure has been used successfully. As you'll recall from Chapter 3, Leonard's (1975a) method involves a confederate of the clinician's, such as a parent or puppet, who is used as a model. The clinician, after pretesting the client on the target structure, gives the model a set of pictures not used in the pretest and asks the confederate to "Tell what's happening here." The confederate provides a two-word utterance that describes each picture presented by the clinician (e.g., "boy drink," "girl eat," "cat walk"). After 10 or 20 of these descriptions, the client is asked to "talk like" the model and to

TABLE 7-11	Suggestions for a Parent-Administered Program of Early Language Intervention: Word Combinations

Biweekly Assignment	Activity
1	Introduce word combinations: Begin to require child to produce two-word versions of requests used in earlier activities. Reward with verbal praise ("Good talking!").
2	Shift reward from verbal to social: Have the child label objects and activities in which the reward is attention and praise, rather than receipt of the object or activity.
3	Storybook reading: Parent asks the child to label pictures during book reading. Parent responds to child's label with a *wh*-question ("What does the cow say?").
4	Open-ended questions: Parent uses open-ended prompts during storybook reading ("Tell me about this page."). Parent is taught to expand on child's remarks.

Adapted from Whitehurst, G., Fishel, J., Lonigan, C., Valdez-Menchaca, M., Arnold, D., & Smith, M. (1991). Treatment of early expressive language delay: If, when, and how. *Topics in Language Disorders, 11,* 55-68.

describe a similar but not identical set of pictures. The model and client alternate their productions until the child produces three consecutive correct versions. Then the child is asked to continue until a criterion (say, of 10 consecutive correct responses) is reached. At this point the pretest stimuli would be post-tested without models.

MacDonald et al. (1974) developed the Environmental Language Intervention Strategy (ELI), which is summarized in Box 7-6. This is a CD approach that has some naturalistic modification in that it involves some extensions into semi-controlled versions of conversation and play. Parents are taught to work on the same language goal, usually a particular semantic relation, for 15 minutes in each of the three conditions—imitation, conversation, and play. Sessions take place three times a week in the child's home. The SLP visits the family monthly in a consultant capacity to review progress and make any changes necessary in the child's program. As semantic relations are added to the child's repertoire, new ones are introduced into the intervention program.

One issue that commonly comes up when we attempt to elicit early two-word utterances is whether the linguistic input should be well-formed or contain the deletions that children are likely to make in these utterances, resulting in telegraphic productions. In other words, we need to decide whether we will say, "Pat bunny," or "Pat the bunny." We discussed this issue in Chapter 3, but let us reiterate our position here. Although Van Kleeck et al. (2010) were not able to find definitive evidence that telegraphic or grammatical input made a difference to children with emerging language, Fey, Long, and Finestack (2003) and Leonard (1995) have argued that the sentences children hear should contain all the required grammatical elements, even if we expect that the child will delete them in his or her own production. And Kouri (2005) showed that reduced models were not more effective than grammatical models in eliciting longer utterances from toddlers with delayed language. It may be that hearing a full sentence can help the child to build up an accurate auditory image of what well-formed sentences are supposed to sound like. Leonard (1995) suggests that it helps to focus on the weak-strong syllable pattern that is prevalent in English and appears to facilitate children's identification of important units in the speech stream. The rhythmic frame of the utterance that is created by the inclusion of grammatical morphemes may eventually help the child to fill in the slots created by the rhythm. If the child does not comprehend the morphemes and inflections, Chapman

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BOX 7-6	Three Phases of the Environmental Learning Intervention Strategy

PHASE ONE: IMITATION

A linguistic and nonlinguistic stimulus are paired. The child is told to imitate the adult; e.g., the adult pets a stuffed animal and says, "Pet the bunny. You say it: 'Pet the bunny.'"

If the child responds correctly, the adult repeats the child's utterance, gives praise and a token reinforcement (e.g., "Pet the bunny. Good talking!" and presents a plastic chip).

If the child fails to respond or responds incorrectly, the adult looks away for 3 seconds, then repeats the stimuli.

PHASE TWO: CONVERSATION

The nonlinguistic stimuli are the same as in the imitation phase.

The linguistic stimulus is a question, rather than a request for imitation (e.g., "What am I doing?").

Response to correct productions is the same as in the imitation phase.

If the child fails to respond or responds incorrectly, an imitative prompt is given, followed by a repetition of the linguistic stimulus (e.g., "Say 'Pet the bunny.' What am I doing?"). This may be repeated.

PHASE THREE: PLAY

While the child is playing with the materials used as nonlinguistic stimuli in the imitation and conversation phases, the adult asks for the conversational response in an appropriate context (e.g., if the child pets the toy bunny, the adult can ask, "What are you doing?" Or the adult can pick up one of the toys and ask, "What shall I do?").

If the child gives a correct response containing a two-word expression of the target semantic relation, a confirming response is given (e.g., "Yeah, you pet the bunny!").

If the child does not respond or responds incorrectly, the adult does not confirm the response or comply with the request. Instead, a 3-second pause is followed by a request for an imitation of the target utterance.

Adapted from MacDonald, J., Blott, J., Gordon, K., Spiegel, B., & Hartmann, M. (1974). An experimental parent-assisted treatment program for preschool language-delayed children. *Journal of Speech and Hearing Disorders, 39,* 395-415.

(1981) argued that they will simply be filtered out by the child's comprehension strategies and so will not get in the way of understanding the message. Well-formed, grammatical input cannot do any harm, and it may do the young child some good. It also is a more naturalistic form of input, and parents who are involved in delivering intervention will probably feel more comfortable speaking to their child "correctly." As always, the decision as to the method of intervention, whether it is CD, CC, hybrid, or some combination of the three, will be based on the needs of the individual client. But whatever approach we use, we would argue that the linguistic input ought to be complete and well-formed.

Preliteracy Development

It may seem early to be thinking about literacy, but the emerging language period is a time in which typically developing toddlers are acquiring important experiences with books and print (Dodici, Draper, & Peterson, 2003). Bernadowski (2008), Machado (2010), Rosenquest (2002) and Scheffell and Ingrisano (2000) described ways to use storybooks in working with toddlers and their families in order to build early language and literacy skills:

- Working collaboratively to select books that are developmentally appropriate and attractive to toddlers and being sure families have access to these books
- Teaching parents routine interactive reading strategies, such as pointing out connections between pictures and text, stopping to let children "fill in" elements after they have heard the story a few times, etc.
- Encouraging parents to use exaggerated intonation and stress during reading to highlight important elements in the text
- Encouraging parents to develop play activities around the themes from storybooks read; e.g., after reading *One Fish, Two Fish*, children can be encouraged to find red and blue things in their house
- Exposing children to decontextualized talk relating the stories they have heard to their own day-to-day activities; e.g., talking about times the child has seen fish

Zeece and Churchill (2001) discussed additional strategies for choosing and using books with toddlers. For SLPs, preliteracy development at the emerging language stage will consist primarily of encouraging families to expose their children to interactive storybook reading, and helping parents develop book sharing strategies that fit

Preliteracy development for children with emerging language means encouraging families to help their toddlers learn to enjoy books and reading.

in with their parenting style and schedule. Trivette, Dunst and Gorman (2010) reviewed literature that showed having parents read to children increases receptive and expressive language. They found the most effective characteristics to be those that encouraged children's engagement and active participation in shared reading experiences. We know that children with disabilities tend to have less exposure to books during their early years than typically developing children do (Goin, Nordquist, & Twardosz, 2004), so anything we can do to enhance toddlers' opportunities to get experiences with literate language and literacy artifacts will be helpful.

TODDLERS WITH ASD

Until recently children with ASD were rarely diagnosed before the age of 3 (Fombonne, 2005), but current research suggests that the clinical diagnosis of autism can be reliably assigned in the second year of life, and is stable when conferred by a multidisciplinary team of experienced clinicians (Chawarska et al., 2009). Since impairment in communication is one of the core symptoms of this syndrome, SLPs who work in early intervention will have toddlers who have received a diagnosis of ASD on our caseloads, and we will be expected to develop and implement programs to improve their communication and language. Although many of the assessment and intervention topics we have discussed for children in the emerging language phase will apply to toddlers with ASD, as well, there are a few special considerations we will want to apply for this population. Let's take a look at what these are.

Assessment Considerations for Toddlers with ASD

Screening

Several screening measures have been developed specifically to identify toddlers with ASD. In fact, the American Academy of Pediatrics recommends that pediatricians routinely screen for ASD with instruments like these during the second year of life. SLPs who work in early intervention settings may advocate for these early screening efforts. Box 7-7 contains some examples of instruments designed to screen for ASD in toddlers. Children who fail these screeners will need to be evaluated to determine whether ASD is present.

Evaluating Communication

In addition to using screeners like these, SLPs also need to be aware of the symptoms of ASD that tend to predominate in toddlers. Box 7-8 summarizes the communication deficits most often seen in 18- to 36-month-olds with ASD. Paul (2008b) suggested that assessment focus most sharply on these areas where problems are likely to be seen. Standard measures of expressive and receptive language, like those listed in Appendix 7-1 can be used to document delay in language, but additional measures will be needed to describe the areas of difficulty seen in Box 7-8. Intentional communication is likely to be impaired; assessments we discussed for this area, including the *Communication and Symbolic Behavior Scales—Developmental Profile* (CSBS; Wetherby & Prizant, 2003), the *Prelinguistic Communication Assessment* (Stone et al., 1997), and Communicative Intention Inventory (see Figure 7-2) can be used to document restrictions in frequency, form, and functions of communication. Play and gesture are also likely to be impaired. The CSBS has Play and Gesture scales, and the instruments

BOX 7-7 Screening Instruments for ASD in Toddlers

Modified Checklist for Autism in Toddlers (Kleinman et al., 2008) http://www2.gsu.edu/~psydlr/Diana_L._Robins,_Ph.D..html

Early Screening for Autism Traits (Swinkels et al., 2006)

Communication and Symbolic Behavior Scales-Caregiver Questionnaire (Wetherby & Prizant, 2003) http://www.brookespublishing.com/store/books/wetherby-csbs/index.htm

Pervasive Developmental Disorders Screening Test—II (Siegel, 2004) http://www.pearsonassessments.com/haiweb/cultures/en-us/productdetail.htm?pid=076-1635-106&mode=summary

Screening Test for Autism in Two-Year-Olds Stone (Stone, Coonrod & Ousley, 2000) http://stat.vueinnovations.com/

BOX 7-8 Communication Deficits in Toddlers with ASD

Delayed acquisition of spoken language.

Depressed rate of preverbal communicative acts.

Delayed development of pointing gestures, both in terms of use and responsiveness.

Use of nonconventional means of communicating, such as pulling a person by the hand, instead of pointing or looking.

Reduced responsiveness to speech and to hearing their names called, resulting in lower scores on comprehension than production.

Restricted range of communicative behaviors, limited primarily to regulatory functions (getting people to do or not do things), with very limited use of communication for social interaction or to comment or establish joint attention.

Atypical preverbal vocalizations.

Deficits in pretend and imaginative play.

Limited ability to imitate.

Adapted from Chawarska, K., & Volkmar, F. (2005). Autism in infancy and early childhood. In F. Volkmar, R. Paul, A. Klin, & D. Cohen (Eds.), *Handbook of Autism and Pervasive Developmental Disorders* (3rd ed., Vol. 1, pp. 223-246). New York: Wiley; Paul, R. (2008). Communication development and assessment. In K. Chawarska, A. Klin, & F. Volkmar (Eds.), (pp. 77-103) *Autism Spectrum Disorders in infants and toddlers.* New York: Guilford Press.

we have already discussed for assessing play and gesture can also be used.

Diagnostic Assessment

Bishop, Luyster, Richler, and Lord (2008) advocate the need for a multidimensional, multidisciplinary assessment to diagnose ASD in toddlers. Figure 7-6 provides an outline of their recommendations. Several instruments have been designed specifically to assist in diagnostic assessment for this population. Standardized parent interviews have been developed to probe for information regarding autism-specific behaviors. The most widely used is the *Autism Diagnostic Interview-Revised* (ADI-R; Lord, Rutter, & LeCouteur, 1994); however its validity for children under 3 is not yet fully established. The *Diagnostic Interview for Social Communication Disorders* (DISCO; Leekam, Libby, Wing, Gould, & Taylor, 2002) has similar shortcomings.

Bishop et al. (2008) also recommend direct observation of behaviors characteristic of ASD. Measures designed to provide "presses," or temptations for the display of these behaviors, such

as difficulty in imitation, play, joint attention, and gaze include The *Autism Diagnostic Observation Scale*-Module 1 (ADOS; Lord et al., 2000). This measure assesses communication, social and repetitive behaviors in children with prelinguistic and emerging language function. The *Autism Observation Scale for Infants* (AOSI; Bryson et al., 2008) is designed to elicit a similar set of behaviors. The administration and interpretation of these measures requires specialized training, but this training is very valuable for identifying autism specific behaviors in young children and is worthwhile for SLPs who see many children with ASD in their practice. ADOS training is available through Western Psychological Services. (http://portal.wpspublish.com/portal/page?_pageid=53,80783&_dad=portal&_schema=PORTAL)

Intervention for Toddlers with ASD

As we discussed in Chapter 6, the primary role for SLPs working with toddlers with ASD who remain in the prelinguistic phase of development (as many with this disorder will) is to establish the foundational skills for language learning—imitation, prelinguistic communication, and play skills—to enhance language comprehension, which is usually impaired in this population (Hudry et al., 2010), and to work toward the acquisition of spoken language. For children with no speech who are showing communicative intent, Signs and other AAC approaches may be presented as a bridge to speech, but vocal imitation and speech production should also be a focus of intervention for these children. More detailed discussion of intervention for prelinguistic children with ASD can be found in Chapter 6.

Toddlers with AAC who are in the emerging language stage will be those who use some words, many of whom display immediate or delayed echolalia. Here our primary intervention goals will be to, again, enhance attention to speech and receptive language ability, to increase spontaneous spoken vocabulary and utterance length, and to work with echolalia (not extinguish it) to increase its functionality.

Receptive Language

Little research has been directed to increasing receptive language in toddlers with ASD, but work by Adamson, Bakeman, Deckner, & Romski (2009) indicates that symbol infused joint attention; that is, the amount of time spent attending to a shared object that the communication partner is naming and talking about; is related to the growth of receptive (as well as expressive) language. This suggests that working toward increased understanding of language would include

- providing highly engaging joint attentional opportunities, by
  - sharing interesting objects and activities with the client
  - actively attracting their attention and gaze to the object and to the communication partner
  - providing simple, repetitive language to accompany the activity

Kasari et al. (2008) provide detailed discussion of joint attention intervention for this population. Taylor and Hoch (2008) used applied behavior analytic approach, in which an instructor walked the child toward a preferred item and waited 5 seconds for the child to initiate a comment on the item. If the child did not, the instructor used physical and gestural prompts to point to the item and provided an echoic prompt to make a comment about the item ("Say, 'Look!'"). They were able to show increases in proto-declaratives in children with ASD using this method.

Medical examination
Rule out hearing and vision loss.
Assess dysmorphology and family history; conduct genetic testing if indicated.
Conduct neurological examination.

↓

Parent report
Obtain thorough developmental history.
Administer structured interview to gather information on social, communicative, play, and adaptive skills, as well as restricted and repetitive behaviors.

↓

Child observation
Provide play context in which to observe social, communicative, play, and repetitive behaviors.
Confirm with parents that observation was consistent with child's typical behavior.

↓

Language and developmental testing
Assess expressive vocabulary, word combinations (if present).
Assess response to name.
Assess receptive vocabulary, understanding of simple word combinations.
Assess nonverbal cognitive abilities.
Evaluate fine and gross motor skills.
Evaluate adaptive behavior.
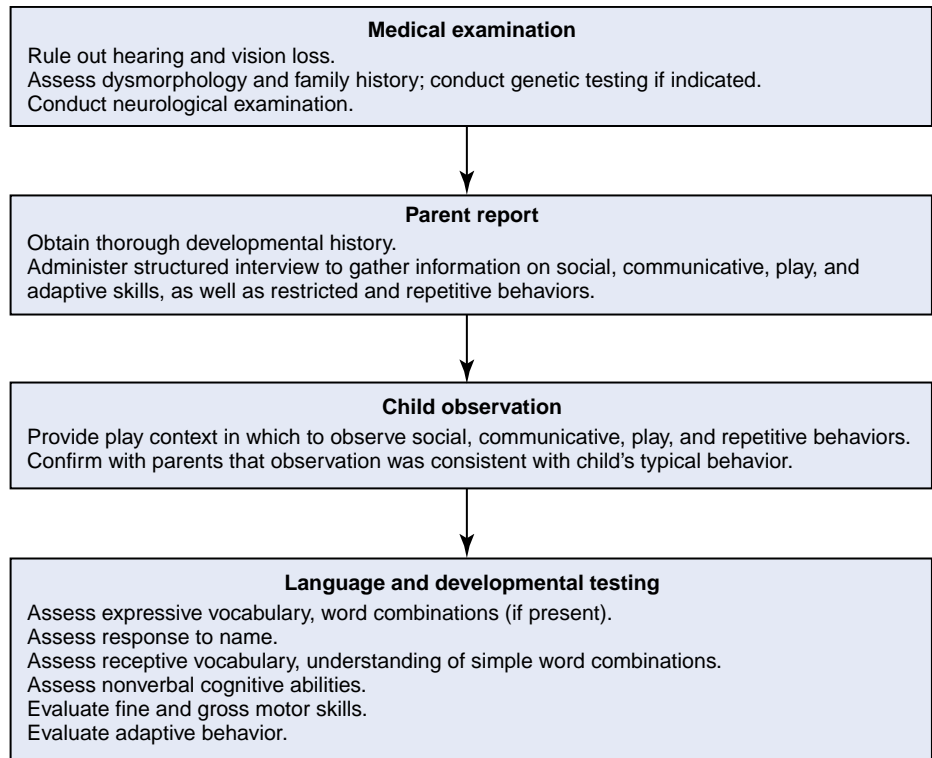
Work by Preissler (2008), in which she found that when taught names of pictures, children with ASD did not recognize the real objects the pictures represented as having the same label as the picture, suggests that children with ASD have difficulty understanding that pictures are representations of objects. This means that it is important to teach receptive language in relation to real, functional objects rather than pictures with this population.

Vocabulary and Utterance Length

Several approaches have shown promise for increasing expressive vocabulary in young children with ASD. McDuffie, Yoder, and Stone (2006) showed that the techniques used in milieu teaching—such as following the child's attentional lead, labeling objects the child shows interest in, withholding objects in which they child shows interest and using expectant waiting—were associated with increases in spoken vocabulary in children with ASD, and they seem to be effective when presented by both clinicians and parents (McDuffie and Yoder, 2010). Discreet trial methods have also shown efficacy (Prelock et al., 2011), but again, it must be remembered that real objects rather than pictures should be used, and the approach should be supplemented with naturalistic opportunities to use new words learned.

Several applied behavior analysis (ABA) programs have been specifically designed to increase expressive language in children on the autism spectrum. These include *Teach Me Language* (Freeman & Dake, 1997), *Verbal Behavior* (Partington & Sundberg, 1998), and *The "Me" Book* (Lovaas et al., 1980). Reichow and Wolery (2009) reported that these approaches are moderately successful in guiding children with ASD from single words to longer utterances, although as Smith (2001) advised, they should always be supplemented by more functional, naturalistic activities. McClannahan

and Krantz (2005) provide a manual for using script therapy to increase productive language in children with ASD. Their research demonstrates that this approach is especially effective when scripts are first learned, then gradually faded, by removing small parts of the script with each successive practice. McClannahan and Krantz's book provides detailed instructions for using script therapy for children with ASD from prelinguistic to advanced language levels.

Working with Echolalia

When children with ASD start talking, they often begin by imitating what others say, either just after they say it (immediate echolalia), or as a "script" they repeat later (delayed echolalia). Often this talk appears self-directed and is not used for communicative purposes, but it is sometimes used to serve a range of functions (Prizant & Duchan, 1981; Stribling, Rae, & Dickerson, 2007), which are summarized in Table 7-12. Echolalia usually decreases spontaneously as expressive language skill increases (Tager-Flusberg et al., 2005), but part of our role with children at this phase is to push this decrease along. Several approaches to help reduce echolalia include:

• *Using a third person (or puppet) to model what should be said*. For example, to get a child to use language to make a request, instead of prompting, "say _____," demonstrate what happens when the puppet makes an appropriate request (says "I want juice, please" and gets juice), then encourage use of this model. This activity can be turned into a turn taking game, in which the puppet makes a statement and the child imitates it in order to accomplish what the puppet did (make a request, get another piece of a puzzle, etc.). In this way functional models can be given that demonstrate how to use language to accomplish social goals.

TABLE 7-12   Some Communicative Functions of Echolalia

Function	Description and Example
Turn-taking	Adult: How was your weekend?
	Client: Weekend.
Verbal completion	*Completes a familiar routine initiated by an adult.*
	Adult: What do you do first?
	Client: Hang up coat (echoed from adult's completion of routine on previous occasions).
Declaration	*Labels using an echo.*
	Adult: What kind of ice cream do you have?
	Client: Ice cream.
"Yes" answer	Adult: Do you want a cookie?
	Client: Cookie.
Request	Adult: There's a car in the toy garage here.
	Client: Car in garage (used with gesture toward car).
Protest	*Delayed echolalic remark used to protest or prohibit others' action.*
	Adult: Let's do our speech work now.
	Client: Don't you dare! (echoing remark parent made earlier).
Directive	*Delayed echolalia used to direct others' actions.*
	Client: Time to clean up now (echoed from teacher's previous remark; used to tell fellow student to pick up blocks).
Calling	*Delayed echolalia used to get attention.*
	Client: All eyes up here (echoed from teacher's use of same phrase; used to get peer to pay attention to client during play interaction).
Provide information	*Delayed echolalia used to give new information not in the immediate environment.*
	Client: Dog's loose again (echoed from parents' use of same remark; used to inform teacher that something anxiety-producing has happened).

Adapted from Prizant, B., & Rydell, P. (1984). Analysis of functions of delayed echolalia in autistic children. *Journal of Speech and Hearing Research, 27,* 183-192; Stribling, P., Rae, J., & Dickerson, P. (2007). Two forms of spoken repetition in a girl with autism. *International Journal of Language & Communication Disorders, 42(4),* 427-444.

- *Mitigated echolalia.* When an echoed utterance is produced, the clinician can echo it back, then ring a slight change and invite imitation of the change. For example, if the child says, "yellow balloon," the clinician can say "Yellow balloon! I like blue! Blue balloon!" Available materials that correspond to the modified model can be offered and withheld until the mitigated form is produced. Once this can be done in short phrases, longer utterances can be used. When the child is able to make changes fairly quickly, the changes can be made more extensive. Instead of changing one word, the clinician can change a whole phrase within an utterance (Child: "I wanna play bubbles"; Teacher: "You do? I wanna clap hands!"). The same kinds of activities can take place around the social routines being learned. If learning to sing "Five Little Monkeys," for example, the routine can be changed to "Five Little Doggies," etc.
- *Adapting scripts.* Using McClannahan and Krantz's script therapy approach, starting with scripts the child already echoes, and changing small parts of the script to more adaptive, other-directed speech. For example, if the child likes to recite a script from Thomas the Tank Engine, the clinician can start by changing the names and actions in the script to names of people in the child's family and things they normally do, and encouraging the child to imitate these changes, using a script fading procedure.

It is important to remember that, as we work on decreasing echolalia, we want at the same time to work on increasing vocabulary and sentence length, since children with ASD typically decrease their echoed speech as their spontaneous language grows.

CONSIDERATIONS FOR OLDER CLIENTS IN THE EMERGING LANGUAGE STAGE

Some children with severe disabilities remain in the emerging language stage for an extended period. Children with severe intellectual disability, those with autism, and children who suffer severe effects of acquired neurological damage are examples of clients who may present this picture. Many of these children have feeding and swallowing problems; these can be addressed with all the techniques and resources we discussed in Chapter 6. Older clients at this stage of development have some rudimentary form of symbolic communication but have not progressed beyond the one- or two-word (or symbol) stage in their expression of communicative intents. Our responsibilities with these clients are threefold: to maximize the effectiveness of the emerging communicative forms they express, to provide opportunities for them to expand the sophistication of their communication to as great an extent as possible, and to work on expanding the opportunities for and responsiveness to their communication by people in their environment.

Modifying Assessments for Older Clients with Emerging Language

When assessing communication skills in the older client with emerging language, we address the same issues we talked about for children at this stage with mild to moderate disabilities: play and symbolic skills; intentional communicative abilities; comprehension; and expressive capacities in the areas of phonology, vocabulary, and word combinations. When speech is not an option for

these clients, the viability of augmentative and alternative forms of expression also need to be explored. We may have to modify some of our assessment procedures to gain the information we need, though. Let's take a look at how this might be done.

Play and Gesture

The first point to remember in developing play and symbolic assessments for children in the emerging language stage is that the purpose of these evaluations is *not* to determine whether the child has the "prerequisites" for a communication system. Instead, we use this information to help us decide how best to implement communication intervention for these clients. When we evaluate children with motor impairments, they may have trouble demonstrating the symbolic behaviors we usually look for, such as use of objects for pretend or the use of conventional gestures. If this is the case, we may need to turn to other types of nonverbal assessment that can be demonstrated without so much motor involvement. Object permanence skills are one example of cognitive skill that can be demonstrated with eye pointing. Some assessment of object permanence ability, using methods such as those outlined in Dunst (1980), might serve as an index of cognitive skill in severely motorically involved clients. Traditional Piagetian assessments also can be modified by the clinician. For example, we can supply the child with a Velcro mitt to allow him to use a support (pillow or cloth) to obtain a toy out of reach, or attach string toys to switches to allow the child to operate the switch in order to use the string to obtain the toy. Guerette, Tefft, Furumasu, and Moy (1999) have validated a cognitive assessment battery for use with individuals with physical disabilities. Robinson, Bataillon, Fieber, Jackson, and Rasmussen (1985) have developed a parent-interview form to assess sensorimotor skills in children with physical disabilities. These procedures can be helpful in making an estimate of symbolic ability in children with severe speech-motor impairments. In addition, Byrne et al. (2001) reported on the development of new tools that measure brain activity during tasks such as looking at sets of pictures that do and do not match. These emerging protocols do not require either verbal or motor responses; they may be helpful in the future for getting a more accurate picture of the cognitive function of children with severe motor disorders.

Intentional Communication

In assessing intentional communication skills in older clients with emerging language, we want to look at *all* expressions of intent, including nonconventional and maladaptive forms. For clients without functional speech, it is especially important to assess the use of other communicative signals, such as gestures, sounds, limb actions, facial expressions, body postures, and orientation. We need to know what and how the client is attempting to communicate in order to provide more mature means for expressing these intentions that are already present. When we observe maladaptive behavior in these clients, it is especially important to attempt to identify the communicative intent of these behaviors. Rather than ignoring or extinguishing them, we may want to attempt to shape them into more conventional forms. It is important to observe the client in natural settings, such as the home or classroom, to see when these behaviors occur, what precedes them, and how adults in the environment react to them. These observations help us understand what intents the client is communicating by the behavior, what environmental events trigger the behavior, how the contingencies the client receives as a result of the behaviors tend to reinforce rather than reduce them, and the degree to which

breakdowns in communication contribute to maladaptive behavior (Halle, Brady, & Drasgow, 2004). With this information we can work to give the client conventional ways to express the intents once we understand them. In addition, we can work toward modifying the environment so that acceptable behavior is reinforced while maladaptive behavior is not.

Halle et al. (2004) remind us that we need to use both naturalistic observations and structured probes in assessing the communication of AAC users. Naturalistic observations can show us how often communication occurs, how it is responded to, when breakdowns occur, and their relations to maladaptive behavior. This kind of functional assessment is crucial to understanding the communicative needs of clients with emerging language. But it may take a long time to gather all the information we need if we wait for it to happen naturally. That's why we can also learn a lot by using structured communication temptations to elicit particular kinds of communicative acts. For example, if we want to know how a child will clarify a message if it is misunderstood, we can offer the child two objects, see which one he or she chooses, then pretend to misunderstand and give the wrong one. This probe elicits the child's strategies for clarifying communication without having to wait until a natural misunderstanding occurs.

Comprehension

When we assess comprehension skills in older clients with emerging language, we may again be faced with motor impairments that limit a child's ability to respond. If a child cannot point, we can have the client use eye pointing for picture or object identification. Eye-pointing behavior may need to be taught explicitly during the assessment session to maximize its use. Yes/no responses are another alternative to pointing or object manipulation for assessing comprehension. Instead of asking a child, for example, to "Show me, 'The horse pushes the truck,'" we might demonstrate a toy truck pushing a toy horse, and ask "Is the horse pushing the truck?" Any *yes* or *no* response the child has available (head nod, sign, pointing, or eye pointing to a yes or no signal on a communication board) can be accepted. Miller and Paul (1995) provided additional suggestions for modifying informal comprehension assessments for children with a variety of disabilities.

We need to be careful in using pictures for assessing comprehension in clients at this level. As Glennen (1997) discussed, we should not assume that children understand that a picture is a representation of a referent. Before using pictures to test language comprehension, we need to pretest the child's ability to associate pictures with their referents. This can be accomplished by pretesting the child's ability to identify line drawings of common objects with which we know the child is familiar. If the child is unable to do this, Glennen suggests trying the same task with color photographs. If the child is still unable to associate common objects with their photographic representations, we may need to use objects themselves in the comprehension assessment. We also should remember that children with severe impairments might have more difficulties than younger, less impaired children in choosing from an array of several items or pictures. If a child has difficulty in selecting a named object from an array of four pictures, for example, we may try reducing the array to a choice between just two.

Phonological and Lexical Production

Looking at productive skills in older clients with emerging language should include examining both phonological and lexical skills. Reports have appeared in the literature of nonspeaking adolescents

who have developed speech skills (Pickett, Pullara, O'Grady, & Gordon, 2009; Romski & Sevcik, 1996; Windsor, Doyle, & Siegel, 1994), so speech need not be eliminated as a goal, even if a client with emerging language currently uses some AAC system to communicate. Ongoing assessment of phonological production can help identify whether speech will become a possibility for some of these clients. Periodically assessing spontaneous vocalizations for phonetic inventory and syllable structure level can be part of the ongoing evaluation plan for older clients with emerging language. When new sounds or syllable shapes appear in the repertoire, they can be incorporated into speech targets, using facilitating contexts like those outlined in Box 6-7. If an AAC system is already in use, it need not be abandoned. Some clients may be able to produce some communication by means of speech and continue to use the AAC system for the remainder of their communication. Adding some speech to the repertoire of these clients or increasing the amount of speech they produce can expand their communicative range and make their AAC system even more efficient.

To assess lexical knowledge in these older clients with emerging language, the parent checklists we discussed earlier can be very beneficial. The *MacArthur-Bates Communicative Development Inventories* (Fenson et al., 2007) are especially helpful because they contain scales that address symbolic play, words produced, words understood, and word combinations produced. Detailed information in this broad range of areas obtained from parents with intimate knowledge of their child's abilities can provide a very useful picture of the client's skills. The *Vineland Adaptive Behavior Scale II* (Sparrow, Cichetti, & Balla, 2005) is another parent-report instrument that can be very effective for clients at this developmental level. It has excellent psychometric properties and gives an in-depth picture of adaptive uses of both receptive and expressive communication.

Motor Skills Assessment

For clients with severe speech and physical impairments, the choice of an AAC system is strongly dependent on the physical abilities of the client to manipulate the aspects of the system. Signs may be a viable system for children with relatively good motor skills, but if a child's Signs are as unintelligible as his or her speech, another form will have to be investigated. Although this complex issue cannot be explored in detail here, DeCoste (1997) and Sevcik, Barton-Hulsey, & Romski (2008) discussed these issues, emphasizing that the goal of this assessment is *not* to identify motor deficits but rather to discover motor capabilities that *can* be used to access a system. This assessment involves examination of the following five major components:

Movement: Here we try to find the client's best movement pattern; one that is reliable and accurate and can be performed without undue effort and minimal abnormalities of tone and overflow movement. Finger, hand, arm, and head movements are used most often. Chin, mouth, and shoulder movements are used if these others are not available. Lower extremity movements are used as a last resort. Emerging technologies also use eye blink and eye movement. This evaluation is best conducted in collaboration with other professionals, such as occupational and physical therapists, who can assist with the motoric assessment, as well as with teachers and family members who need to facilitate the client's use of the system in everyday settings.

Control site: This refers to the point of contact with the communication device. It may be a body part, such as a fingertip or hand, or an aid, such as headstick or light beam from a laser pointer.

Input method: The communication aid itself provides a method by which the client inputs intentions to communicate. It may be a computer keyboard, touch window, or cardboard with pictures or symbols on it. The device also may include some type of switch or joystick by which the client indicates a selection. Input can take place by means of *direct selection,* where the client indicates directly (by pointing, touching, or using a headstick or laser beam) what he or she wants to choose. If direct selection is not possible because of movement limitations, *scanning* may be used. Here the device goes through a series of choices and, when the one the client wants is indicated, he or she hits a switch to indicate a choice.

Positioning: The optimal placement of the communication device needs to be considered in light of the client's movement abilities, choice of control site, and input method. This often involves trial and error to determine the best arrangement of the device and switching equipment.

Targeting: The number, size, position, and spacing of symbols on the communication array needs to be assessed in order to maximize its accuracy and reliability for the client.

Beukelman and Mirenda (2005); Bridges et al. (1999); DeCoste (1997); and Lloyd, Fuller, and Arvidson (1997) provide detailed guidance for doing this assessment. McNaughton and Beukelman (2010) discuss the issues for adolescents who use AAC as they transition out of school settings.

Intervention Targets and Procedures for Older Clients with Emerging Language

Play and Gesture

It's important to foster symbolic ability in older clients with emerging language. The nice part about this obligation is that it encourages us to engage these clients in play. Because we want to adhere to the principle of using chronologically age-appropriate activities for these older students, the kinds of play we set up will be different from the pretend situations with dolls and toys that we use for children closer to the normal chronological age range for emerging language. Nelson (1998) suggested using practical jokes as play activities with older clients with emerging language. A clinician can model placing a rubber slug on her shoulder and can collude with clients to see how it affects another teacher in the room. Students can then be allowed to communicate requests to play similar tricks on each other and other staff members. Using vocational and daily living props for unconventional, silly uses is another way to encourage play. A clinician might, for example, conclude a lesson on making pudding by putting the mixing bowl on her head (after the designated dishwasher has done his job!) and commenting, "Nice hat!" Students also can be allowed to play similar tricks with other materials they use in group activities, so long as they frame their silliness as a "joke" by producing a comment about it. Similarly, we want to encourage gestures in children who have the motor ability to produce them. Accompanying our own speech with gestures, using the hierarchy in Table 7-3 can encourage children to incorporate gestures into their communicative repertoires.

Intentional Communication

Regardless of the form of a client's communication, whether it be speech, Sign, or some other AAC system, most clients with emerging language need to increase the frequency of their communicative acts. Many also need to expand the range of intentions they

express. When these needs are evident from the assessment, communication temptations will again be a useful technique. As with other methods for older clients, we want to adapt these temptations to make use of age-appropriate materials. Instead of a wind-up toy, for example, we might turn a radio or MP3 player on to favorite music for a moment, then turn it off and wait for a request to turn it on again. Instead of blowing bubbles, then closing the jar lid tightly, we might put a favorite item in a clear glass jar, close the lid tightly, and hand the jar to the client, waiting for a request for help to open the jar. The practical jokes and tricks we talked about in our discussion of play skills also can be very useful contexts for developing joint attentional and commenting behavior.

For clients using or being introduced to AAC systems, we want to expand the frequency and range of communications expressed by means of the AAC modality. Here we may use prompt-free approaches, such as the ones discussed in Chapter 6, to shape behavior into communication and continually up the ante to require more conventional forms of expression. We can reward a random touch to a picture of an MP3 player on a client's communication board by turning on the device for a moment. Later we can require more purposeful pointing or eye pointing before we turn on the music. Still later, we can up the ante to requiring a point at the picture on the communication board and a glance at the clinician.

In addition, we need to find ways to increase the effectiveness of our students' communicative acts. Halle et al. (2004) discuss the role of *functional communication training* (FCT) in providing this kind of support to students with emerging language. FCT goes beyond simply teaching students to express needs; it is aimed at providing strategies for a range of situations in which communication can serve to reduce problem behavior and support integration. FCT involves identifying the purpose of maladaptive behavior, finding out what triggers it, and providing the student with new, more adaptive ways to solve the problems with which they are confronted. Sigagfoos et al. (2004), for example, discussed ways of teaching students with emerging language how to reject objects and activities in a socially acceptable and effective way. These are summarized in Box 7-9. Halle et al. (2004) discuss specific techniques to teach for repairing communicative breakdowns. Ruppert et al. (2009) showed that these interventions tended to result in changes that were maintained even after the intervention was stopped. We will discuss FCT in more detail in Chapter 9.

Comprehension

Encouraging the development of language comprehension in older clients with emerging language involves many of the ILS techniques we discussed in Chapter 3 (expansions, extensions, build-ups and breakdowns, recasts, parallel talk, and self-talk). Cross (1984) suggested further that parents of children with disabilities should be encouraged to make their remarks closely tied in meaning to those of the client, to reduce their directiveness and increase their responsiveness, to speak slowly and clearly, and to talk with their children as often as possible. These activities are helpful to any client in the emerging language stage, regardless of age. For older clients with severe impairments, though, it is especially important to remember that we also want to provide models of talk about objects and events outside the "here and now." Lucariello (1990) referred to these kinds of topics as *displaced talk.* They are crucial for showing clients how language is used to go beyond the immediate context to provide new information. First steps in this direction can include talk about familiar, highly "scripted" events that happened in the recent past (for example, talking about what a

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BOX 7-9   Steps to Teaching Communicative Rejection

1. Identify behaviors used to avoid or escape events.
2. If behavior is unacceptable, inefficient or hard to interpret, replace old form with newer, more efficient and acceptable form.
3. Define new replacement behavior in objective, measurable terms; e.g., "when presented with an unwanted object, student will select the 'don't want' symbol on communication board within 15 seconds."
4. Ensure new form is efficient by making sure the new form is easy to perform and leads to consistent reinforcement. Be sure everyone who interacts with the student knows this.
5. Provide instruction in new form when student is highly motivated to reject. Use incidental teaching techniques to provide extra practice.
6. Create extra opportunities for practice by offering objects or activities, and giving the nonpreferred choice, even when student requests the other.
7. At first use prompts to elicit the new behavior; provide immediate and consistent reinforcement for new behavior, no reinforcement for maladaptive behavior. Gradually fade prompts.
8. Be sure the new behavior is always rewarded with stopping the unwanted object or activity consistently by all who interact with the student.

Adapted from Sigafoos, J., Drasgow, E., Reichle, J., O'Reilly, M., Green, V., & Tait, K. (2004). Tutorial: Teaching communicative rejecting to children with severe disabilities. *American Journal of Speech-Language Pathology, 13,* 31-42.

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client had for breakfast when he arrives at school) or will happen in the near future (for example, talking just before a client leaves school in the afternoon about what will happen at dinner time). Parents, too, should be encouraged to engage in these kinds of simple "there-and-then" displaced talk activities around events with which the client is familiar.

Harris and Riechle (2004) showed that aided language stimulation is especially effective in increasing language comprehension and production in this population. Aided language stimulation involves the adult using both speech and the child's augmentative system when directing input to the child. For example, if an adult is telling a child who uses a picture communication board to eat his cereal, the adult would not only say, "Eat your cereal," but would simultaneously point to the appropriate picture(s) in the child's communication book. Providing this enriched input appears to encourage children not only to learn the meaning of their augmentative symbols, but to use them more frequently, as well.

Production

One of the crucial decisions to be made for children with severe impairments concerns is whether to focus on an AAC system for expression or to provide structured speech training. Yoder, Warren, and McCathren (1998) showed that speech development is significantly related to the child's number of consonant-vowel (CV) vocalizations in a 15-minute communication sample (more than one CV production per four minutes predicted the development of functional speech 1 year after the assessment); the rate of proto-declaratives produced (more than one comment per five minutes

predicted functional speech); and the receptive-to-expressive vocabulary ratio, as assessed by parent report on Fenson et al.'s (2007) *Communicative Development Inventory* (more than four words said for every 100 understood predicted functional speech). These findings can be helpful in differentiating which children have the highest likelihood of developing speech skills from those for whom AAC should be the main focus of intervention. Millar, Light, and Schlosser (2006) report in a meta-analysis that, although nonverbal children supplied with AAC systems made only small gains in spoken language production, none of the cases studied demonstrated decreases in use of speech, so AAC does not appear to impede speech production, although it should not, on its own, be expected to lead to large changes in spoken language ability. Still the power to communicate, even in a nonspoken modality, is an important end in itself for nonverbal clients.

The means of deciding what AAC modality will be most effective to facilitate communication in clients at emerging language

Clients in the emerging language stage can use AAC devices to produce their first expressive language forms.

Communication programs implemented on standard consumer electronic devices are less stigmatizing and enhance interactive opportunities.

levels is, again, too complex an issue to discuss in detail here. Beukelman and Mirenda (2005), Bridges et al. (1999), Millikin (1997), and von Tetzchner and Grove (2003) provided detailed discussions of the considerations that go into making this decision. Light and Drager (2007) and Romski et al. (2010) discuss AAC issues that pertain particularly to young children. For starters, though, there are a few rules of thumb we can use to guide us.

For clients with severe speech and physical impairments, motor access to the system is a central issue. The choice of an AAC system is strongly dependent on the physical abilities of the client to manipulate the input to the system. DeCoste's (1997) assessments will all provide important input into making the choice of the AAC system. This process is best conducted in collaboration with other professionals, such as occupational and physical therapists who can assist with the motoric evaluation, as well as with teachers and family members who need to facilitate the client's use of the system in everyday settings. The SLP should not try to make this decision in isolation.

The choice of a symbol system for the communication aid must be considered carefully, too. Even pictorial systems have varying degrees of transparency (how close the icon is to the thing it represents) and complexity (how many aspects of the symbol need to be processed and decoded), as we discussed in Chapter 3. Bridges et al. (1999) and Millikin (1997) addressed this issue in detail. Moreover, Preissler (2003) found that children with severe disabilities often fail to understand that pictures represent objects, and simply make associations between pictures and objects without knowledge of their referential function. This means that if we use a picture system, such as the Picture Exchange Communication System (PECS; Bondy, Tincani, & Frost, 2004), we need to make sure that children develop the understanding that a picture stands for a class of objects.

As a general guideline, we will want to provide more iconic systems (such as pictures or drawings) for children with developmental levels less than 18 months, although a small set of more symbolic items can be learned even at low developmental levels (Romski & Sevcik, 1996). More symbolic representations, such as Sign or Blissymbols, are appropriate for children with developmental levels greater than 18 months. In general, written systems are used with clients whose developmental levels are at least school age, although pre-literacy experiences and instruction in alphabet letters should be provided at much earlier points in development for all clients.

Systems that include a speech generating device have been shown to encourage not only increases in communicative expression but in vocalization as well (Mirenda, 2003; Paul, 1998; Romski & Sevcik, 1996; Sigafoos, Didden, & O'Reilly, 2003). Brady (2000) showed that using Voice-Onset Communication Aids (VOCAs) in joint attention routines also increased children's understanding of the words being introduced. Whenever possible, clients who need AAC—even those with low cognitive levels—should be provided with electronic VOCAs. And this advice becomes easier to implement as technology advances. For example, voice output systems such as Proloquo2go have been developed for iPhone and iPad platforms that allow children to select symbols to be spoken aloud by the program (Sennott & Bowker, 2009). These platforms provide enhanced opportunities for children who use AAC to interact with peers in ways that are more appealing and less stigmatizing than traditional communication books and boards.

In choosing lexical items to include in AAC systems for older clients, we will want to include words (or signs, Blissymbols, or

other symbols) for the functions that are typically expressed in early speech, but we also want to consider words for other functions that are more appropriate for the daily living situations in which the client operates. These might include symbols for the objects the client uses in vocational activities, for chores that are part of the daily living curriculum, or for recreational activities that are part of the leisure-time program. Crestani, Clendon, and Hemsley (2010) and Fried-Oken and More (1992) discussed in detail some issues surrounding selecting a lexicon for AAC users. Beukelman and Tice (1990) developed a software program (the Vocabulary Tool Box) that allows for the development of a customized lexicon to be used in conjunction with a computer-assisted AAC system. Fallon, Light, and Paige (2001) developed a questionnaire method that enlists parents' help in selecting the most appropriate first vocabulary for children beginning an AAC system that clinicians may wish to use in the endeavor.

For children with severe hearing impairment (HI) who are at the emerging-language stage, use of a total communication (TC) system is especially appropriate. Although TC is not, as we discussed earlier, appropriate for teaching grammatical aspects of language because of the mismatch between the syntactic rules of English and American Sign Language (ASL), it is ideal for demonstrating the early symbolic aspects of language, using single words and two-word combinations. TC can be used to introduce symbolic communication to children with severe HI and to get them to express early semantic relations with single signs and two-sign combinations. When language level moves beyond the two-word stage, the clinician will be in a good position to observe the aspect of the TC signal, auditory or visual, for which the client shows a preference. This information is very helpful in deciding, in conjunction with other information about the client and family, whether to concentrate further instruction in the oral modality or whether ASL will be a more accessible system for this client. When older clients with emerging language produce close to 50 different lexical items, using whatever communication system was developed for them, we should begin to encourage them to combine symbols to express the semantic relations typical of this period. Vertical structuring and milieu teaching, using both the mand-model and incidental teaching approaches we discussed in Chapter 3, can be adapted to clients who use AAC systems. Many of the other programs listed in Appendices 6-7 and 7-3 also can be useful for helping parents encourage clients to make the transition to multisymbol productions. Again, in working with older clients with emerging language we want to use age-appropriate materials, topics, and scripts to encourage this transition. Instead of using dolls and toys to do vertical structuring activities, for example, we can use daily living or recreational contexts. If a client is learning to shelve groceries as a vocational activity, we might do some vertical structuring of object-location relations in this context. As the client works, we might say, "You put soap there. You put the soap on the shelf. Tell me your job." If the client says "soap," we can reply, "Where are you putting it?" If the client says "shelf," we can respond, "Yes, you put the soap on the shelf." We can then wait for a response from the client. If it contains the target two-word phrase ("soap shelf"), we can praise lavishly. If not, we can model the two-word utterance again and go on to another vertically structured model. Binger, Maguire-Marshall, and Kent-Walsh (2011); Fey (2008); and Sutton, Soto, and Blockberger (2002) discuss additional approaches aimed at moving children who use of AAC from one-word to grammatical productions.

As we saw when talking about providing clients with AAC in Chapter 6, teaching the client to use the system is only half the battle. The other half is getting communication partners to interact with the client around the AAC. Johnston, Reichle, and Evans (2004) described the barriers communication partners face in interacting with AAC users. The important point to remember, however, is that, in developing an effective AAC system, we will need to go beyond teaching it to the client; we will also need to work directly with parents, teachers, and peers to encourage and support them in making the system work for the client. Using more normative platforms, such as smart phones and notepad computers, can help in this endeavor. In addition, *aided language stimulation*, the use of the AAC device on the part of adults for language input as well as for the client to use in production, has been shown to be effective in AAC users' learning of new words (Dada & Alant, 2009).

Emergent Literacy

Normally developing toddlers engage in a variety of pre-literacy activities around book reading and storytelling during the emerging language period (Snow, Burns, & Griffin, 1998). Children with disabilities who function in this stage need similar opportunities to develop basic pre-literacy skills. If even minimal reading and writing skills can be developed, they greatly enhance a client's opportunities for communication and independent living. We talked about some techniques for doing so in Chapter 4. In working with clients who are functioning in the emerging language stage, we want to emphasize to parents the importance of book reading and storytelling and remind them that their child can benefit from such opportunities. Books chosen for these clients should contain simple pictures that can be labeled or described with a few words. Real stories with plots and multiple characters will probably be too advanced for children at this stage to comprehend. Showing children simple, attractive pictures in books and labeling them with one- and two-word descriptions will be appropriate for now. Parents can be encouraged to do this kind of simple book "reading" whenever they have time on their hands with their child, such as when they are waiting for transportation or for a professional visit. Even if only a magazine is available in the waiting room, rather than a real children's book, parents can be advised to find attractive pictures in it (such as pictures of babies or animals in ads) and to provide simple labels as they show the pictures to the child. Pictures on smart phones and notepad computers can be used in a similar way. In this way the time the parent spends with the child can be used productively, and other times during the family's busy day will not have to be set aside.

Other literacy-related activities also can be suggested for both home and school. Parents can be encouraged to talk about writing and its functions by showing the shopping list when they go to the store, leaving written messages for family members on the refrigerator, and reading aloud the signs they encounter on the street or at the doctor's office. Parents also can invite clients to "write" letters and thank-you notes to friends and family, even if they begin by only drawing or scribbling. Teachers can be urged to display print—in the form of alphabet posters, signs displaying classroom rules and routines, labels for objects, and so on—around the classroom at the client's eye level (not the

teacher's!). We also can advise that teachers give clients access to "literacy artifacts," such as letters for felt boards and magnetic boards; paper stapled into books for drawing, writing, and pasting labeled pictures; and ample materials for writing and drawing that are adapted to the clients' physical limitations. These simple opportunities can provide an easily taken path toward the development of reading and writing skills. These skills, in turn, can make a great deal of difference in the communicative ability and potential for independence in clients with severe disabilities. Pebly and Koppenhaver (2001), Sturm and Clendon (2004), and Wood and Hood (2004) discuss ways to include book sharing and literacy activities in intervention programs for children who use AAC. Some of these recommendations are outlined in Box 7-10.

For children such as these who come from culturally different backgrounds, we want to encourage the development of emergent literacy skills, but we'll need to be sensitive to the different ways in which parents from these cultures traditionally interact with their children. Many will be more comfortable telling stories orally than reading to their child from a book. When this is the case, we should encourage parents to tell their children as many stories as they can and to tell the same stories again and again. We can help parents find library books that contain pictures of culturally relevant items and events that they can label and discuss with their child. As described in Chapter 5 we'll want to encourage parents to read to their children in the language in which the parents are most comfortable, even if that is not English. If reading is not an activity in which parents want to engage, we can urge them to provide some of the other kinds of early literacy experiences we talked about instead. The point is to find the kind of activity the parent likes and feels good doing with the child, even if it is not the one we would prefer. By collaborating with the parents to develop an emergent literacy program that works for their family, rather than telling them what they "should" do to develop pre-literacy skills,

we have a better chance of ensuring cooperation and success. This issue actually pertains to the whole enterprise of supplying an AAC system (Parette, Huer, & Wyatt, 2002). We need to work with families to find a way to make the AAC system a viable means of communication for the client within the context of their values and preferences.

CONCLUSIONS

Assessment and intervention for the child functioning at the 18- to 36-month level will always be family-centered, since the family is the social system that has the greatest impact on the life of a developmentally young child. Being family-centered, as we have seen, means being responsive to the interests and concerns of the family; being sure that they are involved in all the decisions made about assessment and intervention for the child; and respecting their culture, traditions, and personal style. When assessing communication in a child at the level of emerging language, we need to make use of a variety of informal procedures that allow us to look at how the child uses and understands communication in natural settings. The goal of the assessment of communication is to learn not only what clients can say in terms of sounds, words, and sentences, but also what they understand, what nonverbal means of communication are available to them, and what play and gestural abilities are present. Integrating information from the assessment of all these areas allows us to develop an intervention program that makes the best use of the skills the child has to build more mature communication. Parents may participate as agents of this intervention but do not have to be the only agents. As always, we want to provide an appropriate mix of services that best meets the needs of the particular child and family.

Let's see how this approach might work for the little boy we met at the beginning of the chapter, Joey.

BOX 7-10   Emergent Literacy Intervention Strategies for Children with Emerging Language who use AAC

Model literacy activities: encourage parents and teachers to demonstrate their use of books to get information and entertainment, writing lists, labeling objects in the environment with signs, and so on.

Make literacy artifacts attractive and accessible: print menus for school lunches and song sheets for favorite songs, label photos of favorite people and activities, make sure children have opportunities to write and draw with interesting materials, such as MagnaDoodle, EtchASketch, alphabet letters made from felt, plastic, etc.

Provide opportunities to request specific books and reading activities: include pictures of favorite books and several reading related options ("pick a book," "read to me," "read it again," "turn the page") on communication boards.

Provide adapted writing opportunities: for example, put a marker through a hole cut in a tennis ball or a pencil on a headstick.

Use multimedia: Interactive storybooks on CD-ROM or downloadable "apps" can be used to increase interactions with texts.

Increase story participation: Put a series of pictures copied from a favorite book on a communication board overlay and have the client "retell" the story by pointing to the pictures, or program a VOCA to emit story elements so the student can "retell" it.

Build from these routine productions to develop concepts (if an overlay for "Over the River and Through the Woods" has been made, use the "over" symbol in other contexts, such as Simon Says, in which the client instructs peers to go *over, under* and *through*) and multiword expressions (encourage client to pair "over" symbol with another to describe events, such as *over the river, over the bridge, over the barn*).

Encourage the development of phonological awareness: pair known pictures on the communication board with their written form in which first or last letters are underlined. Make a page of all /b/ words and talk with child about how all the words on the page start with the same sound; encourage the child to point to other objects in the environment that begin with the same sound; provide a "sounds like" symbol on the communication board, and help children identify words that "sound like" boat (e.g., coat, float, goat) using pictures or yes/no responses.

Adapted from Pebly, M., & Koppenhaver, D. A. (2001). Emergent and early literacy interventions for students with severe communication impairments. *Seminars in Speech and Language, 22,* 221-232.

When Joey went to the doctor for his next checkup and was still talking very little, the pediatrician recommended a speech and language evaluation. Ms. Bauer, after reviewing his medical records and audiological report, interviewed the parents about Joey's feeding, babbling, and social skills. Joey's parents told Ms. Bauer that Joey did not have any trouble with feeding, but he had been a somewhat "unhappy" baby, crying more and babbling less than they remembered his brother doing. They reported that he made some sounds now, but most sounded like "aa-aa" instead of like the /bababa/ they heard from most babies. He seemed so uninterested in people and didn't babble back and forth the way his brother had.

Ms. Bauer talked with them about what they thought Joey understood, asked the parents to describe how Joey did get his messages across, and how the parents felt about his communication. She then explained that she wanted to observe how Joey played and how he communicated with familiar people and that she also would like them to make an audio recording at home so she could hear the kinds of sounds Joey made. She suggested that a comprehensive developmental assessment might be helpful and that they consider starting this process by taking Joey to a psychologist who could do a cognitive evaluation before she did the communication evaluation.

Ms. Bauer also talked with the parents about their concerns for Joey's ability to take part in a preschool program and about their worries for his success in school when the time came. Joey's parents told her that they had a lot of concerns about his ability to get along in preschool, especially since his mother was planning on going back to college in the fall and needed to have him in day care several days a week. His father especially worried that Joey would not be able to make it in school and might be put in a special class. They were very eager for Ms. Bauer to assess speech and language, but they did not want Joey to have an IQ test. They thought he was too young and didn't want him labeled "retarded." They would be happy to make a recording at home, though.

Ms. Bauer told them that she appreciated their willingness to make an audio recording and respected their desire not to have him labeled too early. She talked with them about what they wanted most for him to get out of any intervention program she developed. She explained that many children with slow speech development do "grow out of" their slow start, but she agreed with the parents that it was wise not to take chances with such an important part of development. She stated again her concern that Joey might need a more comprehensive assessment, but agreed to do a preliminary evaluation. She said she would also like to do an informal assessment of cognitive skills that was not an IQ test. Joey's parents agreed to this approach. Ms. Bauer devised an assessment plan for Joey (Table 7-13).

After gathering the assessment data, Ms. Bauer concluded that Joey's play skills were restricted to non-appropriate uses of objects with little evidence of symbolic play, even in response to a model. He showed a restricted range and limited frequency of communicative intents and showed poor comprehension and response to his name, and a lack of comprehension strategy use. He had a phonetic inventory of only six consonants. He rarely put more than one consonant in an utterance, had an expressive vocabulary of 16 words, and almost never combined words spontaneously into sentences, although he did produce some longer utterances that appeared to be frozen chunks he'd heard, usually from TV commercials. The communicative intent of these utterances was often difficult to interpret. Ms. Bauer explained these results to the parents. She let them know that she thought Joey's problems might extend beyond language to a more pervasive disorder. She reiterated her preference for a multidisciplinary evaluation to explore his problems more fully.

Joey's parents were not ready for this step. They wanted Ms. Bauer to "teach him to talk." They felt if he would just begin talking normally, his other problems would go away. They begged Ms. Bauer to work with him. Ms. Bauer explained that she didn't believe she could teach Joey to talk normally, at least not in a short period of time, and she felt strongly that he had other needs. She offered a compromise. She would agree to see Joey for 3 months and would attempt to teach him, not to talk per se, but to increase his communication. At the end of the 3 months, if she still felt his needs were more pervasive, the parents would be asked to have a full evaluation done. If the full evaluation indicated the need, continued intervention would use a more integrated approach, incorporating findings from the entire team.

Ms. Bauer's interim intervention plan focused on using communication temptations to increase the range of communication. She planned to use a milieu teaching approach to increase use of consonants in communication and eventually to add expressive vocabulary items to his repertoire. Ms. Bauer also wanted to work on developing conventional and symbolic play skills. She used part of each session to model this behavior with toys Joey was most interested in and asked the parents to carry over these modeling activities at home. She encouraged the parents to continue to model a wide range of words to Joey as he played. The parents and Ms. Bauer worked together to figure out what intents Joey was conveying by his use of frozen phrases from TV. When they discovered his intentions, they provided a simple one- or two-word conventional utterance to use to express the same idea.

Joey continued to use some of his inappropriate language and still was content to play alone with his rubber bands a lot of the time. He still showed limited pretend play, although he could imitate more appropriate use of toys in structured play sessions. At the end of the 3-month trial period, Ms. Bauer discussed progress with Joey's parents, and they agreed to the multidisciplinary assessment they had discussed earlier. They were glad to see the growth Joey had shown. They saw more clearly now, from the observations Ms. Bauer discussed with them and from their understanding of Ms. Bauer's work with Joey, what he could do, as well as the areas in which he remained different from other children.

TABLE 7-13 Assessment Plan for Joey

Area to be Assessed	Assessment Tool
Nonverbal cognitive skill	Dunst procedures for assessing sensorimotor development
Symbolic play activity	Nicolich play assessment from observation of a structured parent-child play session
Vocal skills	Vocal assessment from audiotape made during home play session
Nonverbal communication	Communication Intention Worksheet assessment from observation of an unstructured parent-child play session
Receptive language	Informal comprehension procedures
Phonological skills	Phonetic inventory and SSL derived from audiotape made during home play session
Productive lexicon	*Language Development Survey* filled out by parents
Productive semantics and syntax	Speech-sample analysis of audiotape made during home play session if LDS vocabulary is larger than 50 words

STUDY GUIDE

I. Early Assessment and Intervention
  A. Discuss the pros and cons of early intervention for delayed language development in toddlers.
  B. What is meant by "children with emerging language" in this chapter?
  C. What is involved in "family-centered" intervention for toddlers? Why is it important?
  D. Describe the communication skills seen in normally developing 18-month-olds in terms of comprehension, vocabulary size, sentence structure, and phonology. Do the same with 24-month-olds and 30-month-olds. How does this information affect practice in early assessment and intervention?
  E. What is the purpose of a symbolic play assessment? Describe levels of play and gesture and how they can be used to conduct a play assessment.
  F. What are the components of a communication assessment for children with emerging language?
  G. What formal tools are available for assessing the 18- to 36-month age range?
  H. What is the rationale for using informal assessment procedures for children with emerging language?
  I. How can nonverbal communication be assessed? What are the three dimensions of the assessment?
  J. Discuss the role of cultural differences in assessing parent-child communication.
  K. Describe formal and informal methods available for assessing comprehension in children with emerging language. Why is it important to look not only at what the child understands but at what comprehension strategies he or she uses?
  L. How can speech-motor development be assessed in children with emerging language?
  M. Give three methods of collecting a speech sample from children with emerging language. What are the pros and cons of using speech samples to assess vocabulary size in children with emerging language? Of using parent report?
  N. Describe two methods of assessing phonological skill in children with emerging language. Why are independent phonological assessments more appropriate than relational methods for children with emerging language?
  O. Describe the methods you would use to assess semantic-syntactic development in children with emerging language.
  P. Describe the decision process for determining whether and in what areas children with emerging language can benefit from communication intervention.
  Q. How does family-centered practice affect decisions about intervention for toddlers? What are its implications for who will deliver the intervention?
  R. Under what circumstances would you attempt to develop symbolic play skills in a child with emerging language? How would you do it?
  S. What methods would you use to increase nonverbal communication skills in a child with emerging language?
  T. How can maladaptive forms of communication be handled?
  U. Under what conditions would you include work on receptive language in the communication program for a child with emerging language? What methods would you use?
  V. Would you work on diminishing phonological process use by a child with emerging language? Why or why not? If not, what phonological skills would you target?
  W. What considerations go into choosing a first lexicon?
  X. What methods would you use to increase the vocabulary size of a child with emerging language?
  Y. Describe one CD, one hybrid, and one CC approach to developing two-word combinations in the speech of a child with emerging language.
  Z. Do you think adult speech to children with emerging language should be telegraphic? Why or why not?
II. Considerations for Toddlers with ASD
  A. What instruments have been developed specifically for diagnosing ASD?
  B. What are the areas of communication you would expect to be delayed in toddlers with ASD?
  C. What are the primary areas of intervention that should be addressed in toddlers with ASD?
III. Considerations for Older Clients with Emerging Language
  A. Discuss adaptation of assessment methods that can be used to evaluate communication skills in older clients at the emerging language stage.
  B. What aspects of intervention are unique to older, severely impaired clients with emerging language?
  C. Describe the role of emerging literacy skills in older clients with emerging language. What functions can emergent literacy serve for these clients?
  D. Define Functional Communication Training and its role in AAC provision for children with severe disorders.
  E. Talk about considerations in developing emergent literacy for children from culturally different backgrounds.

General Communication Assessments for Children Younger than 3 Years of Age

Instrument	Comment
Assessing Prelinguistic and Early Linguistic Behaviors in Developmentally Young Children (Olswang, Stoel-Gammon, Coggins, & Carpenter, 1987)	Provides assessments of phonology, expressive language, preverbal communication, play, and cognitive antecedents to word meaning; norm-referenced data from relatively small sample.
Birth to Three Assessment and Intervention System—Second Edition (Ammer & Bangs, 2000)	Provides examiners with an integrated, three-component system for screening, assessing, and intervening with children ages birth to 3 years; the three component parts are the Screening Test of Developmental Abilities, Comprehensive Test of Developmental Abilities, and the Manual for Teaching Developmental Abilities.
Carolina Curriculum for Infants and Toddlers—Third Edition (Johnson-Martin, Attermeier, & Hacker, 2004)	Provides an in-depth whole child assessment and intervention covering 26 domains of development for children ages birth to 24 months; looks at areas of cognition, communication, social skills, fine and gross motor skills; excellent sections on preverbal and verbal communication.
The Capute Scales: Cognitive Adaptive Test and Clinical Linguistic and Auditory Milestone Scale (CAT/CLAMS; Accardo & Capute, 2005)	Norm-referenced 100-item screening and assessment instrument; surveys broad range of communicative behaviors and visual-motor functioning; designed for use by pediatricians with infants 1–36 months.
Communication and Symbolic Behavior Scales—Developmental Profile (CSBS DP; Wetherby & Prizant, 1993)	Norm-referenced screening tool for identifying infants at risk for developmental delay or disability. Includes assessment of symbolic play, nonverbal communication, and expressive and receptive language. Contains a checklist, caregiver questionnaire, and behavior sample.
Early Language Milestones Scale—Second Edition (ELM-2; Coplan, 1993)	Designed for pediatric screening; pass/fail criterion only; evaluates expressive, receptive, and visual skills; best for identifying severe delays.
Early Learning Accomplishment Profile (E-LAP; Glover, Preminger, & Sanford, 1995)	Developed to assess gross and fine motor skills and social, cognitive, and language areas; designed to identify the developmental level of functioning.
Early Screening Profile (Harrison et al., 1990)	Screens development in cognitive language, motor, self-help/social, articulation, health, development, and home environments. Helps identify children at risk for learning problems.
Environmental Prelanguage Battery (MacDonald & Carroll, 1992)	Assesses early prelinguistic communication skills such as play, gestures, imitation, and following directions.
Expressive One-Word Picture Vocabulary Test—2000 Edition (EOWPVT [2000]; Brownell, 2000)	Offers an in-depth assessment of a child's speaking vocabulary by asking the child to make word-picture associations; comprehensive manual provides standard scores, scales scores, stanines, percentiles, and age equivalents.
Interaction Checklist for Augmentative Communication—Revised (Bolton & Dashiell, 1991)	Developed for clients with physical barriers to speech, but provides assessment of interactive behaviors useful with developmentally young clients.
Language Development Survey (LDS; Rescorla, 1989)	Screening tool for evaluating expressive language; parent-report instrument; good validity on identifying language delay in toddlers.
MacArthur-Bates Communicative Development Inventories—Second Edition (Fenson et al., 2007)	Parent-report instrument with scales for assessing expressive and receptive vocabulary sizes and early grammatical production; reports good validity when compared with direct observation measures.
Preschool Language Scale—Fifth Edition (PLS-5; Zimmerman, Steiner, & Pond, 2011)	Measures a broad range of receptive and expressive language skills; provides standard scores and percentile ranks in addition to age equivalents for auditory comprehension, expressive communication, and total language; PLS tasks are ordered to reflect acquisition of sequential developmental milestones in language.

Instrument	Comment
Receptive One Word Picture Vocabulary Test—2000 Edition (ROWPVT [2000]; Brownell, 2000)	Provides an assessment of receptive vocabulary; child indicates (from four possible alternatives) the picture that represents a word spoken by the examiner; test is individually administered and can be administered and scored in 20 min.
Receptive-Expressive Emergent Language Scale—Third Edition (REEL -3; Bzoch, League, & Brown 2003)	Parent-interview instrument; tends to overestimate comprehension level.
Reynell Developmental Language Scales III (Edwards et. al., 1999)	Designed to measure language skills in young or developmentally delayed children; the verbal comprehension scale measures receptive language skills (both verbal and nonverbal), and the expressive language scale assesses expressive language skills using three sets of items (structure, vocabulary, and content).
Rossetti Infant and Toddler Language Scale (Rossetti, 1990)	Used to assess preverbal and verbal communication skills and interaction in children from birth–3 yr; criterion-referenced measure looks at language comprehension, language expression, interaction, attachment, gestures, pragmatics, and play.
Sequenced Inventory of Communication Development—Revised (SICD-R; Hedrick, Prather, & Tobin, 1984)	Diagnostic test that evaluates the communication abilities of children with and without intellectual disability who are functioning between 4 mo and 4 yr of age.
Symbolic Play Test—Second Edition (Lowe & Costello, 1988)	Assessment provides an objective indication of child's early concept formation and symbolization; includes a format for informal data collection of play features.
Test of Early Language Development—Third Edition (TELD-3; Hresko, Reid, & Hammill, 1999)	Yields an overall spoken language score and includes scores for subtests of receptive and expressive language; psychometric qualities include demographics, reliability, validity, and limited bias.
Test of Pretend Play (ToPP; Lewis & Boucher, 1999)	ToPP is designed to assess the three different types of symbolic play: substituting one object for another object or person; attributing an imagined property to an object or person; or making a reference to an absent object, person, or substance; ToPP also is designed to assess whether the child can incorporate several symbolic actions into a meaningful sequence, and a child's level of conceptual development.
The Nonspeech Test (AAC) (Huer, 1988)	Standardized on preschoolers and children with multiple disabilities in schools and institutions; this test of receptive and expressive language is popular for children who are nonspeaking; test yields an age equivalency score in monthly increments from 0 to 48 mo.
Transdisciplinary Play-Based Assessment: A Functional Approach to Working with Young Children—Revised (Linder, 1993)	A dynamic comprehensive instrument that provides information to conduct play sessions that combine insights of parents with the expertise of a transdisciplinary team; uses specific observation guidelines to assess a child's cognitive, social, emotional, communication, and language development during play time.

Analyses of Transcript in Box 7-3

Proportion of Multiword Utterances
Number of single-word utterances: 20
Number of multiword utterances: 16
Proportion: 44%
Semantic Relations Expressed in Multiword Utterances
Attribute-entity: #29
Possessor-possession:—
Agent-action: #14, #26, #36
Agent-object: #36
Action-object: #36

Demonstrative-entity: #17
Entity-locative: #7, #9, #11, #26, #27
Action-locative: #26
Recurrence:—
Nonexistence, denial, rejection: #5, #7, #17, #20
Disappearance:—
Other: #2, #3, #12, #19, #33
Proportion of Multiword Utterances in "Other" Category
5/16 = 31%

Training Resources
for Parents of Toddlers

Resource	Source	Comments
"Learning Through (and from) Mothers" (Levenstein, 1971)	P. Levenstein; in *Childhood Education, 48* (December), 130-134, 1971	"Toy Demonstrators" use verbal interaction techniques with mothers and their 2-yr-old children.
"Pre-Computer Skills for Young Children" (Symington, 1990)	L. Symington; in *Exceptional Parent, 20,* 36-38, 1990	Suggests activities to train young disabled children skills for using the computer.
"Taking Turns" (MacDonald & Gillette, 1985)	J. MacDonald & Y. Gillette; in *Exceptional Parent, 15* (September), 49-52, 1985	Focuses on turn-taking as a primary approach to language learning.
Adaptive Play for Special-Needs Children: Strategies to Enhance Communication and Learning (Musselwhite, 1986)	C.R. Musselwhite; San Diego, CA: College-Hill Press, 1986	Intended for professionals, paraprofessionals, and parents; has information on early communication through speech: parent-child dialogues, puppetry; early augmentative communication; annotated bibliography on adaptive play.
Beautiful Beginnings: A Developmental Curriculum for Infants and Toddlers (Raikes & McCall-Whitmer, 2006)	H. Raikes & J. McCall-Whitmer; Baltimore, MD: Brookes Publishing	Activity-based approach to enhancing infant and toddler development in communication, gross motor, fine motor, intellectual, discovery, social, self-help, and pretend.
Beyond Baby Talk (Apel & Masterson, 2001)	K. Apel & J. Masterson; New York: Prima Publishing	A book for parents that answers questions about their baby's speech and language development.
Developmental Therapy for Young Children with Autistic Characteristics (Bachrach, Mosley, Swindle, & Wood, 1978)	A.W. Bachrach, A.R. Mosley, F.L. Swindle, & M.M. Wood; Baltimore, MD: University Park Press, 1978	Samples of techniques and materials, routines and environments, activity periods, learning experiences, and home programs designed for 0–3 yr; for teachers and parents; organized from "stage one" through normal developmental sequences.
Early Childhood STEP (Dinkmeyer et al., 1989)	D. Dinkmeyer, et al; Circle Pines, MN: American Guidance Service	Kit including parent guide, videos, posters; Spanish version available.
Early Communication Games: Routine Based Play for the First Two Years (Casey-Harvey, 1995)	A. Casey-Harvey; Austin, TX: Pro-Ed	Examines and provides examples of play for children birth–24 mo, developing initial communication skills.
Ecological Communication System (MacDonald & Gillette, 1986)	J.D. MacDonald & Y. Gillette; Columbus, OH: The Ohio State University, 1986	Two treatment modules available: (1) turn-taking with actions—functional interactive play and (2) turn-taking with communications (initial conversation).
Everybody's Different: Understanding and Changing Our Reactions to Disabilities (Miller & Sammons, 1999)	N. Miller & C. Sammons; Baltimore, MD: Brookes Publishing Co., 1999	Discusses ways in which personal thoughts, feelings, and questions about disabilities can obstruct effective communication between people; offers strategies, activities, and exercises that enhance development and social relationships.
Every Day Matters: Activities for You and Your Child (Washburn Child Guidance Center, 1997)	Washburn Child Guidance Center; Circle Pines, MN: American Guidance Service, 1997	Simple, easy-to-use suggestions for parent-child learning experiences; covers five developmental areas: discipline, self-esteem, infant care, language, and coordination.
Games to Play with Toddlers— Revised Edition (Silberg, 2002)	J. Silberg; Beltsville, MD: Gryphon House, 2002	Games that develop areas important for the growth of a 12- to 24-mo-old: language, creativity, coordination, confidence, problem-solving, and gross motor skills.

Continued

Resource	Source	Comments
Games to Play With Two Year Olds—Revised Edition (Silberg, 2002)	J. Silberg; Beltsville, MD: Gryphon House, 2002	Games that develop areas important for the growth of a 2-yr-old: language, coordination, social interactions, and problem-solving skills.
Helping Babies Learn: Developmental Profiles and Activities for Infants and Toddlers (Furuno, Reilly, Hosaka, Inatsuka, & Fabey, 1998)	S. Furuno, K. O'Reilly, C. Hosaka, T. Inatsuka, & B. Falbey; San Antonio, TX: Communication Skill Builders, 1998	Shows parents how to help children ages birth–3 yr realize their fullest potential; emphasizes parent-child partnerships by focusing on developmental activities occurring in daily life; provides parents with reproducible activities to integrate all aspects of development.
It Takes Two to Talk: A Practical Guide for Parents of Children with Language Delays (Hanen Centre, 2004)	J. Pepper & E. Weitzman; Toronto, Ontario, Canada: The Hanen Centre, 2004	Parent handbook focuses on the child's attempts to communicate; guides parents to respond in ways that facilitate interaction; "You Initiate Opportunities for Language Learning" (the second part of the guide) suggests ways to increase opportunities for communication.
Learning Through Play: A Resource Manual for Teachers and Parents (Fewell & Vadasy, 1983)	R. R. Fewell & P.F. Vadasy; Hingham, MA: Teaching Resources Corp., 1983	Contains activities to stimulate learning targeted at birth–3 mo, 4–6 mo, 7–9 mo, 10–12 mo, 13–18 mo, 19–24 mo, 25–30 mo, and 31–36 mo, specific sections on language.
Learning to Talk Is Child's Play (Ausberger, Martin, & Creighton, 1982)	C. Ausberger, M. Martin, & J. Creighton; Tucson, AZ: Communication Skill Builders, 1982	For parents, preschool teachers; stresses use of responsive language teaching through adult-child dialogues.
Parent Articles for Early Intervention (Dunn-Klein, 1977)	M. Dunn-Klein; Austin, TX: Pro-Ed, 1977	Compilation of articles for parents of children, ages birth–3 yr, who have communication and physical disorders; articles are grouped by 12 major topics, including communication, cognitive development and play, family support, and personal care; each article answers commonly asked questions, includes detailed instructions and additional resources for further reading, and suggests related activities and materials.
Parent-Child Habilitation (IHRP, 1987)	Infant Hearing Resource Publications; Portland, OR: IHRP, 1987	Uses play as teaching milieu, gives techniques for teaching speech and language to hearing-impaired toddlers.
Preparing Children to Learn: Parent Letters (McNay, Kottwitz, Simmons, McLean, 1996)	V. McNay, E. Kottwitz, S. Simmons, & M. McLean; San Antonio, TX: Communication Skill Builders, 1996	Covers assessment, planning, and implementation for children ages 1 mo–5 yr, addressing the full span of developmental objectives in interpersonal interactions and communication, cognition, receptive language, expressive language, and movement.
Puppetry, Language, and the Special Child: Discovering Alternative Languages (Renfro, 1984)	N. Renfro; Austin, TX: Nancy Renfro Studios, 1984	Describes activities to integrate visual and verbal aspects of puppetry to enhance language and communication.
Read, Play, and Learn (Linder, 2004)	T. Linder; Baltimore, MD: Paul H. Brookes, 2008.	Uses popular children's books to promote early learning.
Systematic Training for Effective Parenting (Dinkmeyer, McKay, Dinkmeyer, 1997)	D. Dinkmeyer, L. McKay, & S. Dinkmeyer; Windsor, Berkshire, SL4 1DF, UK: NFER-Nelson Darville House, 1997	Available in book and video form.
Talking with Your Baby (Honig, 1996)	A.S. Honig; Syracuse University Press, 1996	How to help low-literacy parents, and parents for whom English is a second language, enhance the literacy and cognitive development of their children in the home environment through daily activities.
Teach Me Language (Freeman & Dake, 1998)	S. Freeman & L. Dake; New York: SKF Books, Inc., 1998	Program designed for teaching parents with a step-by-step manual of instructions, explanations, examples, games, and cards to attack language weaknesses common to children with PDD and other disabilities.
The Home Stretch (Cansler, 1982)	D. Cansler; Winston-Salem, NC: Kaplan Early Learning Company, 1982	Encourages parents to use unit topics at home (e.g., body parts, people, family, clothing).
Children with Disabilities (Batshaw, 2007)	M. Batshaw, L. Pellegrino, N. Roizen; Baltimore, MD: Brookes Publishing Co., 2007	Comprehensive volume offers advice on a wide range of issues, such as finding the right physician, learning important care techniques, and fulfilling educational requirements. Detailed chapters explore behavior management, treatment, nutrition, therapy services, and medicines.

Resource	Source	Comments
You and Your Small Wonder: Parent Books of Learning Activities for Infants and Toddlers (Karnes, 1997)	M. Karnes; Circle Pines, MN: American Guidance, 1997	Includes two books full of playlike learning activities, building skills in natural ways; clear instructions and photos for demonstration; includes mealtime, changing, bath time, and indoor/outdoor activities.
Ready for Preschool (Hertzog, 2008)	N. Hertzog; Waco, TX: Prufock Press, 2008	Provides detailed guidance to parents on how to foster development of skills to be successful in preschool in their children; how to use every-day experiences to teach these skills.
Parent Articles 2: More Articles Enhance Parent Involvement (DeFeo, n.d.)	A. DeFeo, San Antonio, TX: Pearson, n.d.	Information covering a variety of topics, from explanations of specific disorders to the emotional challenges of having a child with special needs; several articles written by parents.
Special Children, Challenged Parents: The Struggles and Rewards of Raising a Child with a Disability, Revised Edition (Naseef, 2001)	R. Naseef, Baltimore, MD: Brookes Publishing, Co.	Provides information regarding resources, such as support groups and communicating with professionals, for parents of children with disabilities; written by a clinical psychologist who is a parent of a child with autism.
Talk to Me, Baby! How You Can Support Young Children's Language Development (Bardige, 2009)	B. Bardige; Baltimore, MD: Brookes Publishing Co.	Guidebook for parents and professionals on how to interact with young children to support emergent language; suggestions for activities and ways to utilize every-day interaction.
Handprints: Home Programs for Hand Skills (Piaraccini & Vance, 2001)	V. Pieraccini & D. Vance; Arizona: Imaginart	Articles for parents and easy-to-do home activities to improve development of hand skills.
Lip Prints: Home Program for Oral-Motor Skills (Hanson, 2004)	J. Hanson	Utilizes child-based play and play-based therapy to treat and prevent oral motor, feeding, swallowing, and/or articulation problems; articles cover range of topics such as neonatal intensive care unit and transitioning to food and utensils.

Videos for Training Parents and Teachers of Toddlers

Resource	Source	Comments
Activity-Based Intervention (Bricker & Pretti-Frontczak, 2004)	Executive Producer: D. Bricker Co-Directors: P. Veltman and A. Munkres Brookes Publishing Co. PO Box 10624 Baltimore, MD 21285	Intervention techniques provide daily routines and activities to foster skill development in children with special needs. 14 min.
Beginning Language Connections (Educational Productions, 1995)	Educational Productions 7412 SW Beaverton-Hillsdale Highway, Suite 210 Portland, OR 97225	The first in a 4-video series called *First Steps*. 30-min video, practice exercises, trainers manual, overheads, handouts, and activities. Shows how adults' interactions with infants and toddlers are key to their language learning. Available in Spanish.
Building Conversations (Educational Productions, 1995)	Educational Productions 7412 SW Beaverton-Hillsdale Highway, Suite 210 Portland, OR 97225	The fourth in a 4-video series called *First Steps*. 30-min video, practice exercises, trainers manual, overheads, handouts, and activities. Shows how animated exchanges with verbal and nonverbal children continually enhance their emerging communication and social skills. Available in Spanish.
Learning Language and Loving It, Teaching Tape (Hanen Centre, 1993)	The Hanen Centre 1075 Bay St., Suite 515 Toronto, ON M5S 2B1	Provides an overview of typical development from birth–3 yr; designed to accompany Hanen Early Language Parent Program.
Let's Talk (Educational Productions, 1988)	Educational Productions 7412 SW Beaverton-Hillsdale Highway, Suite 210 Portland, OR 97225	33-min video, Facilitator's Guide. Describes communication skills that invite children and encourage talking, how to avoid asking questions that stop conversations, and how to correct a child's speech/language errors in a positive way.
Now You're Talking (Educational Productions, 1988)	Educational Productions 7412 SW Beaverton-Hillsdale Highway, Suite 210 Portland, OR 97225	30-min video, Facilitator's Guide. Describes how to add to the child's topic and extend conversation, how to ask questions that stimulate thinking and problem solving, how to support all of a child's efforts to communicate.
Oh Say What They See (Educational Productions, 1985)	Educational Productions 7412 SW Beaverton-Hillsdale Highway, Suite 210 Portland, OR 97225	Methods used in indirect language stimulation: self-talk, parallel talk, reinforcement, and expansion methods.
Reading the Child's Message (Educational Productions, 1995)	Educational Productions 7412 SW Beaverton-Hillsdale Highway, Suite 210 Portland, OR 97225	The second in a 4-video series called *First Steps*. 30-min video, practice exercises, trainers manual, overheads, handouts, and activities. Takes a close look at messages babies and toddlers are sending from birth. Available in Spanish.
Successfully Educating Preschoolers with Special Needs: Ages 2 ½ to 5, A Guide for Parents, A Tool for Educators (Thal et al., 2002)	G.M. Hanlon; Baltimore, MD: Brookes Publishing	30-min video, offers practical information about preschool education and special education services for children ages 2 ½ to 5.
Successfully Educating Preschoolers with Special Needs: Early Intervention for Ages Birth to Three (Hanlon, 1999)	G.M. Hanlon; Baltimore, MD: Brookes Publishing	60-min video; gives parents an introduction to the early intervention process.

Resource	Source	Comments
Talking with Young Children (Educational Productions, 1995)	Educational Productions 7412 SW Beaverton-Hillsdale Highway, Suite 210 Portland, OR 97225	Part of a 4-video series called *First Steps*. 30-min video, practice exercises, trainers manual, overheads, handouts, and activities. Demonstrates how children must understand what words and concepts mean before they can begin to use words or signs to communicate. Available in Spanish.
The Handicapped Child: Infancy Through Preschool; Program 5—Cognitive/Language Development (Concept Media, 1978)	Concept Media PO Box 19542 Irvine, CA 92714	Elements for fostering language development are discussed; sequence of language development briefly described.
First Steps: Supporting Language Development with Infants, Toddlers, and Twos (Teaching Strategies, Inc., n.d.)	Teaching Strategies, Inc.; Washington, DC:	Teaches techniques to support language development and encourage facilitative parenting practices.
Helping Your Child Learn (South Dakota Deafblind Project, 1992)	South Dakota Deafblind Project; South Dakota Department of Education	This three-video series advises parents in when, where, what, and how to teach their child with special needs to communicate, interact socially, and participate in activities of daily living.

Assessment of Developing Language

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. Describe family-centered assessment procedures appropriate for preschool clients.
2. List areas outside of communication abilities that are necessary to assess in young children.
3. Discuss issues and methods for screening for communication disorders in preschool children.
4. Discuss the uses and abuses of standardized tests for communication assessment during the preschool period.
5. Describe a range of criterion-referenced and observational methods for assessing speech and language development.
6. Analyze samples of communication including conversation and narration.
7. Discuss the application of assessment methods for children at early stages of language development to older students with severe communication disorders.

Jerry was the third child in the family, so when he was a little slower than his sisters to get started talking, no one thought much about it. But when he entered preschool at age 4, his teacher, Mrs. Hamilton, noticed that his speech seemed immature. He made mistakes that other 4-year-olds in the class didn't make, such as leaving out the little words and endings in sentences. He'd say, "Me a big boy," and "I want two cracker." He seemed not to know the words for many things other children could name, and he often used vague or idiosyncratic labels to refer to common objects. He called a pineapple a "spiky," for example. Some of his words were hard to understand, too. He made some errors, such as saying /fʌm/ for thumb, that were like those made by lots of 4-year-olds, but he also left out sounds and parts of words in ways that weren't typical of children his age. He said "mato" for tomato and /bʌ/ for bug. All these errors combined made his speech difficult to understand at times. Mrs. Hamilton noticed that when Jerry had trouble making himself understood, he often became angry, sometimes hitting or pushing the child who did not get his message.

At the parent conference that fall, Mrs. Hamilton told Jerry's parents that she felt Jerry was a bright child but that he was having some trouble with his communication skills. She explained that these problems might go away by themselves in time, but at present they were causing Jerry some frustration and interfering with his ability to get along with other children and succeed in the classroom. She recommended that Jerry's parents consider having a speech-language pathologist (SLP) evaluate Jerry's language skills and determine whether some intervention would help him navigate this period of his development.

Jerry is a preschool child with a specific disorder of language learning. Like many such children, his problem includes several aspects of language development; these problems often affect his ability to get along in the social situations he encounters when he ventures outside the family circle. Jerry exemplifies just one of the many kinds of preschool children a practicing SLP encounters. Other such children have hearing losses. Some may be developmentally delayed or have autistic behaviors. Others have accompanying emotional disturbances or a history of experiential problems, such as parental substance abuse. Still others may have suffered acquired neurological damage. Some, of course, are older than the typical preschool-age range. Whatever other conditions surround the language disorder, though, the children we will consider in this and the next chapter share certain language characteristics:

- They have expressive vocabularies larger than 50 words.
- They have begun combining words into sentences.
- They have not yet acquired all the basic sentence structures of the language.

For children who are of preschool age but have expressive vocabularies smaller than 50 words or are not yet combining words, more appropriate assessment and remedial strategies can be found in Chapter 7, which deals with the emerging language period when first words are beginning to appear and a few two-word combinations may be used. Children who are functioning at the emerging-language level, even if they are of preschool age or older, benefit most from procedures aimed at this early phase of language development.

The period we'll call the "developing language" stage is the one that occurs when normally speaking children are between 2 or 3 and 5 years of age. Another way to describe this period is to say that it refers to language levels in Brown's stages II through V. That is, children with developing language have mean lengths of utterance (MLU) of more than two but generally not much more than five morphemes. These children are in the most explosive stage of language development, the period in which they move from telegraphic utterances to the mastery of basic sentence structures. For children with typical development, this process begins around 2 years of age and proceeds rapidly during the preschool period. For children with disorders of language learning, though, the process is more protracted. They may be a good deal older than 2 when they start it, and they may be well into school age before they complete it. When we discuss language assessment and intervention at the developing language level here and in Chapter 9, we are referring to those children whose *language* functions in the period between Brown's stages II and V. The children themselves, though, may be chronologically older than preschool age. The principles of this and the following chapter can be applied to children of any age who have started combining words but have yet to develop the full set of forms for expressing their intentions.

FAMILY-CENTERED ASSESSMENT

The first thing we need to know when we begin an assessment is that the Individuals with Disabilities Education Act (IDEA) makes specific requirements for the inclusion of the family in the evaluation and intervention processes. IDEA reminds us that we need to enlist parents as partners in the assessment process from the very beginning for any child with a disability. Recent IDEA regulations stipulate that parents must be specifically included as members of the Individual Educational Planning (IEP) team. They require that parents' concerns be considered during the evaluation process and that all evaluations be disclosed to families at least 5 school days before any hearing process takes place. The regulations state further that the parents must be notified about any services delivered to the child and given progress reports at least as often as parents of typical children are. They must be told of their right to see any records or reports about their child and of their right to seek an evaluation outside the local educational agency, if they choose. A preassessment conference is often very useful to allow parents to meet members of the assessment team, to explain families' legal rights to them, and to give parents enough information and answer their questions so that they can give informed consent to the assessment procedures.

Family-centered practice means more than merely complying with these legal requirements, though. In addition, it means that we rely on parents as an important source of information about the child. We discussed interviewing parents on developmental and history information in Chapter 2. Standardized interview formats, such as the *Vineland Adaptive Behavior Scales II* (Sparrow, Cicchetti, & Balla, 2005), can be used to help establish general developmental level. Questionnaires about general and medical history can be used to gather information from parents as well. But family-centered practice also means that, from the first encounter with the family, we convey to them a sense of "being in this together," a desire and intention to address the family's concerns about the child and to respect the family's point of view.

As discussed in Chapters 6 and 7, family involvement does not necessarily mean that the family must be evaluated along with the child. This is often both off-putting and threatening to families. It does mean that we need to seek the family's perspective on the child's strengths and weaknesses, identify the family's concerns for the child, and find out what priorities the family has for the skills the child needs to learn to function most effectively. Let's take Jerry as an example. Suppose the family takes Jerry to the preschool assessment center of the local educational agency. The parents talk with the assessment team leader and the SLP there about Mrs. Hamilton's recommendation. They express some dismay that Jerry seems to be having so much trouble, since they haven't experienced difficulties with him at home. They say Mrs. Hamilton thinks he is bright, but now they wonder whether he might be retarded. Their main concern is helping Jerry get along better in school and avoid any problems when he reaches kindergarten. They don't want him labeled a "troublemaker."

How would we use a family-centered approach to assessment to deal with these concerns and use them to structure the assessment plan? First, we should try to assure parents that our evaluation reflects the "real" child. Assessment should be completed over a period of time in a variety of contexts, using naturalistic activities (Rini & Hindenlang, 2007). We want to ensure that the family is confident the team truly has a sense of who their child is. Second,

we want to gather extensive information about the child from family members, so that they are assured that their perspective on the child is being included in the appraisal. Whether we used structured measures, like the *Vineland* or more informal interviews, we want to acknowledge that parents have the broadest and deepest knowledge about their child, and that we hope to draw on that knowledge as we conduct the evaluation. Third, all of the parents' anxieties should be addressed. If the parents are worried that Jerry might have intellectual disability (ID), even if the assessment team does not believe this is very likely, his cognitive and adaptive skills ought to be assessed. Referral can be made for a psychological evaluation to assess cognitive level. Alternatively, the speech-language clinician might ask the family whether they would be comfortable with her doing an informal cognitive assessment based on play behavior. She might assure the parents that if the child performs within the normal range on this measure, further assessment might not be necessary, but if she has any concerns at all about cognitive functioning, a referral for testing in greater depth can be made. The speech-language clinician also can offer to use the *Vineland Adaptive Behavior Scales II* (Sparrow, Cicchetti, & Balla, 2005) to assess adaptive behavior, since a child must function below the normal range in *both* cognitive and adaptive areas to qualify for a diagnosis of ID. In any case, a family-centered approach requires that we take the parents' concerns seriously and incorporate them into the assessment plan.

Next, the clinician would need to address the discrepancy between the parents' perceptions and those of Mrs. Hamilton. The assessment team might ask the parents to talk about how they see Jerry in relation to the family, how he gets along with his sisters, and whether and how he plays with children in the neighborhood. They might then ask the parents to review some of Mrs. Hamilton's concerns, to have them check their thoughts about Jerry's social skills with what the teacher told them to see whether the two seem to be in line in any areas. We want to give the parents the impression that we trust their viewpoint and at the same time help them to see that everyone—including children—acts differently in different situations. A clinician might explain that seeing Jerry interact with several different people through the course of the evaluation helps both the parents and the assessment team to get a fuller picture of Jerry's language and social skills. The team might request permission to observe Jerry playing with his mother or sister, either in their home or at the center, and also to go to Jerry's preschool and do an observation there.

The team also would want to work with the parents to plan the evaluation to include not only areas in which problems are currently obvious, such as his immature speech and language skills, but also areas about which parents have other concerns. Jerry's parents expressed doubts about his ability to succeed in kindergarten. In this case, the team might suggest including a special education evaluation in the assessment. This would give the team a chance to look at his readiness skills and give the parents more information about the skills Jerry has that will equip him for kindergarten, what skills he is lacking, and what skills they might be able to help him acquire. The team also can assure the parents that the recommendations that come out of the assessment will not only address basic oral language but also will provide information about ways the parents can help get Jerry ready for school. The team could then check with the parents to be sure (1) that what they have heard makes sense to them, (2) that it addresses the concerns they have about Jerry, and (3) that any other questions they forgot to ask or that came to mind during the discussion are addressed and considered in the evaluation plan.

What if, after the assessment takes place, conflicts arise between the family and the clinician or team about the recommendations based on the assessment? Suppose, for example, that the team evaluating Jerry believes that he needs a special preschool program that would overlap with the hours of his neighborhood preschool program, so that he was unable to attend both. Suppose further that the parents feel very strongly that they want him in the neighborhood program. How would a family-centered approach address such a problem? Again, the key is an attitude of respect and accommodation for the family on the part of the assessment team. Can a compromise solution be reached that would meet both the team's need to feel Jerry was receiving adequate services and his parents' need to see him in a "normal" preschool setting? Can a discussion with the parents allow both parties to express their concerns in a context of mutual respect so that either the parents or the assessment team might modify their views about what is best for Jerry? If no mutually acceptable solution can be reached, can the team defer to the parents' decision and cordially invite them to bring Jerry back at a later time so that everyone can reconsider his situation? These tactics would convey to the family that the team understands that the parents have Jerry's best interests at heart and that they are doing the best they can to provide for his needs as they perceive them. Such an attitude allows disagreements to take place without alienating the families of the children we hope to be able to serve. There may be rare cases in which we suspect serious abuse or neglect, which might make us less comfortable with deferring to parental decisions. Even in these situations, though, we want to be able to maintain a relationship with the family. This is the only way we will be able to serve the child. In such cases, it is incumbent upon us to make referrals to the appropriate social service agencies that can address the caretaking problem. However, we would still want to take a family-centered stance in trying to set up services to meet the needs of the child.

Family-centered assessment, then, does not mean assessing families, trying to identify their weaknesses. Instead it means including families in the process of deciding why, what, and how to assess each child. Moreover, it means taking the family's concerns seriously and treating parents as a valid and reliable source of information about the child. It also means respecting the parents' decisions about their child, even when we disagree with them. While it is always appropriate to try to resolve disagreements through compromise and courteous persuasion, we will not always succeed. When we do not, family-centered clinicians defer to the family's judgment and try to maintain a relationship with the family that will make them feel welcome to come back another time, when the child's problems, or their feelings about them, change. Bruce, DiVenere, and Bergeron (1998); Dunst, Trivette, and Deal (1988); and Rini and Hindenlang (2007) provided additional discussion on family-centered practice.

ASSESSING COLLATERAL AREAS

When we talked about assessment in Chapter 2, we discussed the importance of assessing every client referred for a speech or language disorder in the areas of hearing and speech-motor ability. This principle, of course, holds true for the child with developing language. Audiometric screening and, if necessary, full evaluation should be conducted, even if hearing problems have never been mentioned in the child's medical history. Similarly, any child in the developing language phase who has difficulty talking should receive a thorough speech-motor assessment, following the guidelines given in Chapter 2.

Some language clinicians, particularly those in private practice settings, function independently in their assessment activities, making referrals to other professionals for information on collateral areas outside their own field of expertise. The majority of clinicians who do assessment in school, hospital, or nonprofit agency settings, though, usually conduct their assessments as part of a multidisciplinary or transdisciplinary team, as we discussed in Chapter 2. It could be, though, that information on collateral areas of particular interest will not be within the expertise of anyone else on the team. When this is the case, a referral to an outside agency may be necessary. Alternatively, the clinician might decide to do some informal evaluation in these areas to get a sense of how they relate to the child's language functioning.

We've talked before about the dangers of requiring that certain cognitive skills be present before language skills are taught. If we see a child of preschool age who is unable to accomplish any object permanence tasks, for example, we do not want to conclude that the child cannot learn language. We know such simple prerequisite relationships do not capture the complexity of the interactions of cognitive and linguistic development (Johnston, 1994; Mainela-Arnold, Evans, & Alibali, 2006; Nelson, 2000; Whitmire, 2000a). Still, we do need to know something about the child's general level of development, to help both in planning appropriate contexts and materials for intervention and in deciding on appropriate language goals. If, for example, a 7-year-old with a developmental delay is found to have a general developmental level of 15 to 18 months, we would want to focus on acquisition of single symbols, and stimulating language growth, using the goals and approaches advocated for children with emerging language (see Chapter 7) for some time. If, on the other hand, another developmentally delayed 7-year-old had a general developmental level of 30 to 36 months, we would focus more on approaches appropriate for children with developing language (that is, we would move more quickly from single words to two-word combinations and on to three- and four-word sentences and might consider more focused, clinician-delivered intervention). The point is that knowing something about general developmental level does not necessarily dictate what language skills are targeted, but it may influence the context, pace, and intensity of the intervention.

SCREENING FOR LANGUAGE DISORDERS IN THE PERIOD OF DEVELOPING LANGUAGE

Remember that *screening* is deciding whether a child is significantly different from other children in terms of language skills. To make this decision, we want a procedure that is relatively quick yet psychometrically sound, so that it is a fair measure of whether the child performs within the normal range. The point of screening is not to assess all areas of language but to get an idea about the child's general level of functioning in both of the major modalities: comprehension and production. Screening measures should always be standardized instruments; deciding whether a child is significantly different from other children is exactly what standardized tests do best.

Many standardized instruments are commercially available for screening purposes with preschool populations. A sampling of these is presented in Appendices 8-1 and 8-2. One example is the

General Language Screen (Stott, Merricks, Bolton, & Goodyer, 2002), a parent-report screening measure for 3-year-olds that appears in Figure 8-1. Luinge, Post, Wit, and Goorhuis-Brouwer (2006) provide another example of a screening instrument designed to identify language delays in children 12 to 72 months old. Chiat and Roy (2007) suggest using a modified word repetition test, similar to but simpler than the non-word repetition measures used with school-aged children, to identify risk for language impairment in preschoolers.

Choosing which instrument to use should not be based on random factors, such as what happens to be on the shelf or what was advertised in a recent catalog. As clinicians, we have a responsibility to review all testing instruments and to choose those that are the most efficient and fair. For screening, that means that we want a test that is short and psychometrically sound. Reasonable levels of sensitivity and specificity have been reported for some preschool language screeners, including the *Early Language Milestone Scale—2* (Coplan, 1993), the *Language Development Survey* (Klee, Pearce, & Carson, 2000; Rescorla, 1989), the *Clinical Linguistic and Auditory Milestone Scale* (Clark, Jorgensen, & Blondeau, 1995), the *Levett-Muir Language Screening Test* (Levett & Muir, 1983), the *Screening Kit of Language Development* (Bliss & Allen, 1984), the *Fluharty Preschool Speech and Language Screening Test* (Allen & Bliss, 1987), the *Language Use Inventory* (O'Neill, 2007), the *Sentence Repetition Screening Test* (Sturner, Funk, & Green, 1996), and the *Structured Photographic Expressive*

Child's Name _____   Parents' Name _____

DOB _____   Age _____   Phone# _____

Please circle the answer below that best describes your child's use and understanding of language at the present time.

1. When your child speaks can he or she be understood by you?   YES   NO

2. When your child speaks can he or she be understood by other members of your family?   YES   NO

3. When your child speaks can he or she be understood by other strangers?   YES   NO

4. Can your child string three or more words together in a meaningful way?   YES   NO

5. Can your child follow two-step instructions; e.g., "Pick up the block and put it on the table?"   YES   NO

6. Can your child answer "where" questions; e.g., "Where is your teddy?"   YES   NO

7. Can your child make a choice when asked; e.g., "Would you like milk or orange juice to drink?"   YES   NO

8. Can your child place objects in, under or on when asked; e.g.,   YES   NO

       "Put the toys in the box."

       "Put the cup on the table."

       "Put the shoes under the chair."

9. Does your child enjoy listening to simple stories?   YES   NO

10. Is what your child says usually meaningful and relevant to the ongoing conversation or situation?   YES   NO

11. Can your child say more than fifty words?   YES   NO

12. Are you confident that your child has never had a hearing loss, including one that came and went over a period of weeks or months?   YES   NO

If the answer to one or more of the above questions is NO, in your view is there any obvious, known reason why this should be so?

_____

_____

FIGURE 8-1   *General Language Screen* for 3-year-olds. A NO response on any item is a trigger for further evaluation. (Reprinted with permission from Stott, D., Merricks, M., Bolton, P., & Goodyer, I. [2002]. Screening for speech and language disorders: The reliability, validity and accuracy of the General Language Screen. *International Journal of Language and Communication Disorders*, *37,* 133-150.)

Language Test—Preschool: Second Edition (Dawson et al., 2004; Greenslade, Plante, & Vance, 2009). When we look for a screening measure, we should examine test manuals for information on sensitivity and specificity, as well as other psychometric properties (see Chapter 2). It is important to know the properties of the tests we use and to choose tests with properties that are the best match for the assessment question that we are trying to answer. In practice, this means we have an obligation to read the statistical sections of the manuals of all the tests we use and to base decisions about their use not only on their efficiency and attractiveness, but also on how well their measurement properties stack up. There ARE such things as bad tests: tests that are poorly constructed and do not give enough psychometric information for us to decide whether they test fairly and accurately. But there are very few tests that are so good that they are right for every situation. Clinicians need to match tests to their needs on the basis, at least to some extent, of the tests' statistical properties.

There's one other consideration when doing screening: a child's level of risk. When deciding whether to provide a more extensive evaluation, it is wise to factor risk into the decision. Harrison and McLeod (2010), after reviewing the literature on risk and studying a nationally representative sample of 4- to 5-year-old children, reported that boys were at greater risk for language impairment than girls, as were children with hearing impairments, and those with difficult temperaments. Family history of speech, language, reading, or learning problems also increased risk (Barry, Yasin, & Bishop, 2007). Knowing these risk factors can help to determine which children who may not fail screening, but simply score toward the low end, could benefit from additional evaluation in universal screening situations, or which children should get high priority for screening in others.

In addition to the risk factors for language delay identified by Barry et al. (2007) and Harrison and McLeod (2010), we also need to think about risk for reading problems in preschoolers with oral language delays. Serry, Rose, and Liamputtong (2008) discuss the role the SLP can play in identifying preschoolers at risk for reading failure on the basis of their oral language difficulties. Both Flax et al. (2009) and Serry et al. (2008) suggest that, in addition to phonological processing delays, receptive language disabilities are key risk factors for the emergence of reading problems in preschoolers. These findings suggest that preschool children for whom teachers report delays in phonological awareness skills (such as identifying words that start/end with the same sound or rhymes) or in general comprehension are good candidates for screening and perhaps more in-depth assessment to reduce the risk of reading failure by shoring up weak phonological and language skills during the preschool years.

USING STANDARDIZED TESTS IN ASSESSING DEVELOPING LANGUAGE

Everything we just discussed about choosing screening instruments for children with developing language applies to choosing more in-depth standardized tests as well. Remember that the thing standardized tests do best is to show whether a child is significantly different from children in their norming samples, so every standardized test we use has a screening component. That means that when we choose a standardized instrument, we need to be sure that it provides us with some more information than we got from the initial screening test. If the standardized test only tells us again that the child is different from other children in general language skills, we have wasted our time and the child's in giving it. Let's look at what information is provided by standardized tests available for assessment of this stage of language development and see how they might enhance our evaluation of the client with developing language. A sample of standardized tests designed for use with children in the developing language phase is given in Appendices 8-3 and 8-4.

Let's take Jerry as our example again. Suppose Jerry, after failing a screening measure given by the SLP, is given the *Test of Language Development—4 Primary* (TOLD-4:P; Newcomer & Hammill, 2008) to explore his profile of language skills across a range of components of language. This test provides a standardized measure of several areas of expressive and receptive language and allows us to construct a profile such as the one in Figure 8-2, which displays Jerry's scores on the TOLD-P:4. The profile tells us that Jerry is performing adequately in several areas of receptive language, but that his expressive skills, and particularly his articulation, are low for his age. This profile suggests that we need to focus on expressive areas of language development, including the area of phonology.

Another strategy for obtaining similar information would be to choose several tests, each of which focuses on one area. For example, we might select the *Test of Auditory Comprehension of Language—3* (Carrow-Woolfolk, 1999a) to look at receptive vocabulary and syntax, the *Goldman-Fristoe Test of Articulation—Second Edition* (GFTA-2; Goldman & Fristoe, 2000) to examine single-word pronunciation, the *Expressive Vocabulary Test—2* (Williams, 2007) to investigate productive semantics, and the *Structured Photographic Expressive Language Test—Third Edition* (Dawson, Stout, & Eyer, 2003; Perona, Plant, & Vance, 2005) to explore expressive sentence structures. We could use the results from this test battery, too, to construct a profile that outlines strengths and weaknesses in language skills.

Now let's be clear about what tests such as these would tell us. Like the screening measures, standardized tests tell us whether a child is different from other children. A battery similar to the ones we've outlined here would tell us in what aspects of language a child performs significantly below his or her peers. This information, in turn, would alert us to the areas we would need to address in a remedial program. However, the results of the standardized tests would *not* necessarily tell us what specific forms, functions, and structures to target. They identify areas in which the child is deficient, but they don't pinpoint the specific deficiencies. Why not?

For one thing, they are designed to sample a variety of behaviors within a domain so that they can get a valid comparison across children. That means there won't be many examples of any particular structure. *The Test of Auditory Comprehension of Language—3* (Carrow-Woolfolk, 1999a), for example, has only one item that tests comprehension of plural forms. If Jerry fails that item, would you target plural forms as part of your remedial program? It's hard to say. It's possible that he really doesn't understand the meaning of the plural marker, but there might be other reasons why a child might fail that item. Maybe he wasn't paying very close attention at that moment. Maybe he didn't know the words in the sentence. Before deciding to target plurals, we would want to see more of a *pattern* of performance. A standardized test is not designed to provide that kind of information.

Here's another reason that standardized tests don't give us all the information we need for remedial planning. Take the

Test of Language Development–Primary: Fourth Edition

TOLD-P:4

Examiner Record Booklet

Phyllis L. Newcomer   Donald D. Hammill
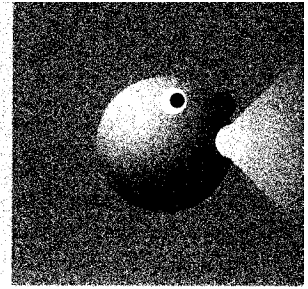
Section 1. Identifying Information

Name _Jerry G._   Female ☐   Male ☑   Grade _PRE - K_

	Year	Month	Day
Date Tested	12	10	1
Date of Birth	08	06	1
Age*	4	4	0

School _Day Bright_
Examiner's Name _N. Dieterle_
Examiner's Title _SLP_

*When accessing the normative tables, use years and months. Do not round up.

Section 2. Subtest Performance

Subtests	Raw Scores	Age Equivalents (in months)	%ile Ranks	Scaled Scores	SEMs	Descriptive Terms
Core						
Picture Vocabulary (PV)	13	48	50	10	1	Average
Relational Vocabulary (RV)	7	48	37	9	1	Average
Oral Vocabulary (OV)	8-9	<48	16	7	1	Below Average
Syntactic Understanding (SU)	16	57	63	11	1	Average
Sentence Imitation (SI)	2	<48	9	6	1	Below Average
Morphological Completion (MC)	16	69	4	7	1	Below Average
Supplemental						
Word Discrimination (WD)	16	60	63	11	1	Average
Phonemic Analysis (PA)	7-8	<48	25	8	1	Average
Word Articulation (WA)	8	<48	9	6	1	Below Average

Section 3. Composite Performance

Composites	PV	RV	OV	SU	SI	MC	Sum of Scaled Scores	%ile Ranks	Index Scores	SEMs	Descriptive Terms
Listening	10			11			21	55	102	5	Average
Organizing		9			6		15	18	86	4	Below Average
Speaking			7			7	14	12	82	4	Below Average
Grammar				11	6	7	24	21	88	3	Below Average
Semantics	10	9	7				26	30	92	4	Average
Spoken Language	10	9	7	11	6	7	50	21	88	3	Below Average

Section 4. Descriptive Terms

Scaled Scores	1–3	4–5	6–7	8–12	13–14	15–16	17–20
Descriptive Terms	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior
Index Scores	<70	70–79	80–89	90–110	111–120	121–130	>130

FIGURE 8-2 *Test of Language Development—4: Primary* record form.   (Reprinted with permission from Newcomer, P. & Hammill, D. [2008]. *Test of Language Development—4: Primary, Examiner Record Booklet*. Austin, TX: Pro-Ed.)

Goldman-Fristoe Test of Articulatio—Second Edition (Goldman & Fristoe, 2000) or the *Patterned Elicitation of Syntax Test* (Young & Perachio, 1993). These measures will be very effective for showing us whether Jerry is different from other children in articulating single words and imitating grammatical sentences, respectively. However, research shows that although children's scores on standardized and naturalistic language procedures are related, children do not make the same errors on both types of assessment, so we cannot identify forms for remediation from the standard test items (Morrison & Shriberg, 1992; Prutting, Gallagher, & Mulac, 1975; Shriberg & Kwiatkowski, 1980). Moreover some children do better on tests than on naturalistic measures (Condouris, Mayer, & Tager-Flusberg, 2003), suggesting that the tests may not be fully tapping their difficulties in real life communication. Standardized tests, particularly those designed to measure expressive skills, tend to use elicited production formats. Standardized tests of expressive syntax usually require children to imitate sentences spoken by the examiner. Standardized tests of articulation require children to produce single words in response to pictures. Both these formats tend to elicit performance that is substantially different from the performance of the same children in spontaneous speech. Not only do children produce different frequencies of errors in these imitation and citation formats, they make different kinds of errors, too. So knowing the errors Jerry makes on one of these measures doesn't tell us what errors he will make when he actually tries to talk to someone. It's the errors that children make when they actually talk that we need to address in intervention, so we need to know what those are. Standardized tests do not necessarily give us this information. Criterion-referenced measures, such as language sampling, are much more valid and effective for gathering information on the errors children make in real communicative situations.

Does this mean that we should not use standardized tests in assessment? Should we go directly from screening to criterion-referenced measures and language sampling? My opinion is that we should not. Standardized testing is valuable for doing exactly what it was designed to do: pointing out the areas in which the child is performing significantly more poorly than peers. Using standardized tests to identify general areas of deficit is more efficient than doing in-depth criterion-referenced probing in every area. Standardized tests can narrow down the range of areas we need to evaluate with criterion-referenced procedures.

Let's take Jerry as our example again. Standardized testing told us that Jerry's receptive skills are within normal limits. This suggests that we do not need to do any further assessment in these areas. His expressive syntax did exhibit mild deficits, though. Now we need to know specifically and in detail what his expressive errors are like when he tries to communicate in real interactions. That's where criterion-referenced procedures and language sampling come in. But remember: standardized testing was very efficient both in documenting broad areas of deficit and in narrowing the focus of our criterion-referenced evaluation. Using standardized testing in this way to sharpen the focus of the criterion-referenced assessment saves a good deal of time. It also provides the norm-referenced documentation required by many educational and service agencies to qualify the client for intervention. Standardized testing, then, is one aspect of an assessment plan. Used wisely and appropriately, with an understanding of its functions and limitations, it makes the assessment process efficient and economical.

CRITERION-REFERENCED ASSESSMENT AND BEHAVIORAL OBSERVATION FOR CHILDREN WITH DEVELOPING LANGUAGE

Standardized testing is not enough, though. As we have seen, standardized tests don't tell us what mistakes the client makes in real conversation, and these are the mistakes we need to address in intervention. Nonstandardized assessments are needed to complete the picture. Nonstandardized or informal evaluation does not mean the assessment is spontaneous or unplanned. On the contrary, nonstandardized assessment requires *more* planning than use of standardized tests, since the clinician must decide on the linguistic stimuli, specify a developmentally appropriate response, and choose materials and contexts for gathering the data, all without instruction from a standardized procedure. An effective approach to nonstandardized assessment is to compile all the information from the standardized portion, evaluate it, decide what informal assessments are needed, plan them, and collect the data in a subsequent session with the client. This suggests that nonstandardized assessment may not always take place during the formal "evaluation" session with the client, but may happen in the early part of the intervention phase. In other words, assessment may not be complete when the one or two sessions we label as "assessment" are over.

For clinicians working in diagnostic settings, where assessment and making recommendations for intervention are their only tasks, this means that one assessment session is not usually enough. We should plan to see each client at least twice, once for formal assessment and once to do some nonstandardized evaluations that are indicated by the results of the formal procedures. For clinicians who do both assessment and intervention as part of their jobs, this means we should not feel constrained to get all the assessment data during the first evaluation session. Assessment can continue into the intervention period, as it is an ongoing part of the intervention.

Assessing Speech Sound Production

A clinically useful approach to analysis of a child's speech production is to start out just talking with the child for 5 to 10 minutes to get a sense of general intelligibility. Gordon-Brannan (1994) and Morris, Wilcox, and Schooling (1995) discussed issues in assessing intelligibility. Morris et al. advocate using the *Preschool Speech Intelligibility Measure* (PSIM), which consists of having children repeat a list of words. The child's productions are recorded and listeners are asked to judge which word a child says on each trial from a group of similar sounding words (e.g., *warm, store, swarm, for, horn, corn, door, torn, born, floor, storm,* and *form*). This measure can be very useful for documenting changes in intelligibility over the course of an intervention program. As a more informal measure, it is useful for making an initial determination about whether intelligibility is impaired. The clinician can also rate intelligibility in a short conversation by estimating the proportion of intelligible words. Gordon-Brannan and Weiss (2006) advocate collecting a conversational sample and counting 200 consecutive words within the sample. The clinician then listens to this portion of the sample again, counts the number of unintelligible words, and divides by the number of words in the sample. This figure is then subtracted from 100 to get a percentage of unintelligible words. Beltyukova, Stone, and Ellis (2008) report that this method shows high reliability and discriminatory power. Gordon-Brannan & Weiss (2006) and Coplan and Gleason (1988) provide guidelines for judging when children in

the developing language period show a lower level of intelligibility than would be expected for their age. These are summarized in Table 8-1. *The Children's Speech Intelligibility Measure* (Wilcox & Morris, 1990) is another method available. Coplan and Gleason have shown that children whose intelligibility is below age expectations are at increased risk for the presence of a range of developmental disorders, not just speech delay. In fact, 46% of the children in their study who were identified on the basis of failing an intelligibility screen turned out to have developmental difficulties beyond speech and language, so identifying poor intelligibility in a preschooler should lead to a more intensive assessment of the child's abilities in a range of areas of development.

If the short speech sample indicates that a client is hard to understand, the next step in our clinical procedure would be to do an articulation test. We also might do an articulation test if the child is intelligible but makes more articulation errors than we would expect on the basis of developmental level. Although, as Morrison and Shriberg (1992) showed, articulation tests do not always identify the pronunciation errors children will make in spontaneous conversation, they do reliably show whether a child is significantly different from other children. Articulation tests are relatively quick and easy to administer and score. As such, they are sensible approaches to the problem of deciding whether speech sound production is an area that needs to be addressed in an intervention program. An articulation test can be given to decide whether more information is needed about the child's phonology. If the child scores within the normal range on the articulation test *and* intelligibility in conversation appears adequate, further assessment of speech sound production is not likely to be necessary.

If a child scores below the normal range on an articulation test or conversational speech is judged hard to understand, we will want to examine the nature of the child's speech sound difficulties. Shriberg (2010) has proposed a classification system for speech sound disorders without known cause in children. For most children in the developing language period, speech delay, which is identified in children 3 to 9 years old who show a pattern of sound deletions and/or substitutions, is the appropriate category label. Although most of these children will eventually develop typical speech, they are at increased risk for literacy delays (Hesketh, 2004; Leitao & Fletcher, 2004), as well as social difficulties, like those Jerry's teacher pointed out. For these reasons, intervention is warranted, both to improve speech intelligibility and to help the child develop awareness of sounds so that risk for reading problems is reduced (Gillon, 2005a; Kirk & Gillon, 2007).

Although speech delays are defined by the presence of sound omissions and substitutions, often these errors occur not in isolation, but in patterns. For example, a child may have trouble producing closed consonant-vowel-consonant (CVC) syllables, regardless of the

TABLE 8-1   Expected Relations between Age and Intelligibility in Typically Speaking Children

Age (MO)	Percent Intelligible Words
24	50
36	80
48	100

Adapted from Gordon-Brannan, G., & Weiss, C. (2006). *Clinical management of articulatory and phonic disorders.* Hagerstown, MD: Lippincott, Williams, & Wilkins.

particular sound that comes at the end of the word. These patterns, which are often referred to as *phonological processes* (Prezas & Hodson, 2010), can sometimes be treated more efficiently than treating each individual sound error separately. For this reason, many clinicians will not only identify the individual omissions and substitutions a child makes, but will look for these kinds of patterns, as well. How would we accomplish this? One way is to look not only at the child's responses to an articulation test, but to examine errors in spontaneous speech, as well. This approach allows us to analyze the child's production at two levels (Williams, 2001): *independent analysis,* which describes what the child produces, regardless of whether it is correct by adult standards, and *relational analysis,* which compares the child's production to adult targets and looks for error patterns. When we assessed speech sound production in the emerging language stage, we used primarily independent analyses. Let's look at examples of the most common approaches to each of these types of analysis for children in the developing language period.

Independent Analysis: Phonetic Inventory

A phonetic inventory tells us what sounds a child says without comparing the child's production with an adult target. To collect a phonetic inventory we simply write down, or check off on a checklist, each consonant a child produces, regardless of whether it is the correct one for that context by adult standards. The articulation test results can be used to collect phonetic inventory information. Each consonant that the client produces in response to the articulation test stimuli, whether correctly or incorrectly used, can be listed. Alternatively, the phonetic inventory can be derived from a sample of conversational speech. All the consonants the client produces can be taken to comprise the phonetic inventory. Each consonant needs to be recorded only once, regardless of how many times it appears. The result is a list of the set of consonants the child produces.

Suppose, for example, that Jerry never produces a /z/ in the appropriate context. We might be tempted to try to teach him "how" to say /z/, perhaps using isolated sound drills and nonsense words. But suppose further that we find /z/ does appear in his phonetic inventory. Perhaps he uses it in one or two words where /d/ is required. Clearly, then, he knows "how" to say /z/. What we need to teach him is not *how* to say it but, as Shriberg (1987) has argued, *when* to say it. In this case, an approach to intervention focusing on whole words and meaningful contrasts, is appropriate. If /z/ never appeared at all in the phonetic inventory, then Jerry really does need to learn "how" to say the /z/ sound and an approach that focuses on motor production may be more appropriate.

Shriberg (1993) has grouped consonants by their normal order of acquisition. He divided the 24 consonant phonemes of English into three groups: the early eight (those that are used first in development), the middle eight (the group that appears next), and the late eight (the group that appears latest in normal acquisition). Shriberg's assignment of consonants to these groups is given in Box 8-1. This scheme can be useful in deciding where in the process of acquiring sounds a client is, based on the phonetic inventory. If the inventory contains only sounds from the earliest group, some articulatory and motor training work may be necessary to elicit later-developing sounds. If the inventory contains sounds from both the early and middle groups, more emphasis might be placed on getting the client to produce these sounds in their correct contexts. If sounds from all three groups are present but speech still contains many errors, then, we would want to concentrate on getting the child to use the sounds he or she already has in appropriate

BOX 8-1 Groups of Sounds Ordered Developmentally

Early 8: /m/ /b/ /j/ /n/ /w/ /d/ /p/ /h/
Middle 8: /t/ /ŋ/ /k/ /g/ /f/ /v/ /tʃ/ /dʒ/
Late 8: /ʃ/ /θ/ /s/ /z/ /ð/ /l/ /ʒ/

Adapted from Shriberg, L. (1993). Four new speech and prosody-voice measures for genetics research and other studies in developmental phonological disorders. *Journal of Speech and Hearing Research, 36,* 105-140.

contexts. If middle and later sounds are present, but many early sounds are missing, we might conclude that this child is showing atypical speech sound development and might look for speech-motor or other organic bases of the disorder.

Phonetic inventories are easy to collect from continuous speech samples, by simply listening to a recording of the sample and writing down or checking off the first appearance of each consonant the client uses. They can be very helpful in deciding which sounds are in the inventory and need not be approached with motor training or articulatory procedures. They also can help identify sounds that are truly absent, suggesting that the child needs to learn "how" to say them. Looking at the distribution of sounds and comparing them with Shriberg's (1993) scheme also can be helpful in deciding whether speech sound acquisition is delayed or proceeding along a deviant course. Williams (2001) also suggested conducting a distributional analysis of the phonetic inventory to determine in what word positions (initial, medial, final) the child's sounds appear.

Relational Analysis: Errors and Error Patterns

The relational analysis is used to determine not what sounds the child can say, but what differences exist between the child's production and adult target forms. Articulation tests give us this information about individual sounds in individual words. But since the 1970s, speech researchers and clinicians have been interested in describing not just individual errors in child speech, but also the patterns or rules that govern these errors. One particular approach to analysis of error patterns has been productive in this research: the use of *phonological simplification processes* to describe sound changes. Simplification processes have been described in detail by many authors, including Ball and Kent (1999); Bauman-Waengler (2004); Bernthal and Bankson (2004); Creaghead, Newman, and Secord (1989); Gordon-Brannan and Weiss (2006); Grunwell (1987); Hodson and Paden (1991); Ingram (1976); and Shriberg and Kwiatkowski (1980). Detailed definitions and discussion can be found in these writings. For our purposes, let's just say that simplification processes are a way of describing sound changes that appear to be rule-governed attempts, which apply across a class of sounds or syllable structures, to make pronunciation easier. One example of a phonological simplification process is *unstressed syllable deletion.* It applies across the class of words containing more than two syllables and results in productions in which the least stressed syllable is dropped (*mato* for *tomato*). *Velar fronting* is another example. It applies across all sounds produced in the velar position (in English /g/, /k/, and /ŋ/) and results in the production of each one as the corresponding sound produced with the same manner, nasality, and voicing in the alveolar position (/d/, /t/, and /n/, respectively).

There are many ways to conduct process analysis. Some methods resemble articulation testing. These elicit single words or single

sentences from children and apply phonological analysis procedures, analyzing errors according to the type of simplification process used. The *Clinical Assessment of Articulation and Phonology* (Secord & Donohue, 2000), the *Bankson-Bernthal Test of Phonology* (Bankson & Bernthal, 1990), the *Computerized Articulation and Phonology Evaluation System* (Masterson & Bernhardt, 2001), and the *Hodson Assessment of Phonological Patterns—Third Edition* (Hodson, 2004) are some examples. Other approaches provide guidelines for reanalyzing data gathered from an articulation test by means of phonological analysis procedures. Khan and Lewis (2002) have developed one such procedure. Masterson, Bernhardt, and Hofheinz, (2005) showed that single word measures such as these provide sufficient and representative information for phonological evaluation.

A brief conversational sample is a useful adjunct to single word testing, as a check on the representativeness of the single-word sample. Several procedures are available in the literature for organizing this analysis. Bauman-Waengler (2004); Grunwell (1987); Ingram (1981); Lund and Duchan (1993); Owens (2004); Shipley and McAfee (2004); Shriberg and Kwiatkowski (1980); and Williams (2001) provided guidelines for approaches to phonological analysis of continuous speech. Andrews and Fey (1986) suggested procedures for applying Hodson's analysis scheme for single words to spontaneous speech. These samples can be relatively short; Shriberg and Kwiatkowski (1980) suggest 100 different words produced in spontaneous speech is enough. This would generally involve about 10 to 15 minutes of continuous speech on the part of the child. Since many children with phonological disorders are difficult to understand, Shriberg and Kwiatkowski suggested that instead of using an open-ended conversational format for eliciting the speech sample, as we did when we got our initial general measure of intelligibility, we use a more structured task. We can give the child a complex picture with lots of different items in it to describe, such as the pages found in a "big" Richard Scary book. These kinds of stimuli elicit a sample in which the referents are known and the gloss of the child's speech is much easier to determine. Whether you use a conversational or picture description format to elicit your sample, you can reanalyze the same sample later for syntactic, semantic, pragmatic, and phonological information. So here's how a clinician might proceed:

1. Give the child a complex picture book, and ask him or her to tell about some of the things in the picture. Or ask the child to engage in conversation around common play materials with the parent.
2. Audio record the sample.
3. While the child is talking, quickly get down the gloss and phonemic transcription of the first 100 different words. (Have a piece of paper already labeled with two columns [gloss, phonemic transcription] and 100 numbered rows, or use the forms provided by Shriberg and Kwiatkowski [1980].)
4. Later, check the recording for any glosses or transcriptions you aren't sure about. You also can collect your phonetic inventory during the same pass through the recording. Save the recording for later analyses of other language areas.

Using this approach, we would first conduct the independent analysis, listing each consonant the child produced, regardless of whether is it correct. Next we do the relational analysis, analyzing the child's first 100 words for error patterns. Shriberg and Kwiatkowski provided detailed guidelines and abundant worksheets for performing this analysis. Basically, in doing these analyses we are looking for the appearance of the common patterns, such as:

1. Final consonant deletion (leaving off the last sound in a CVC word, such as saying /da/ for *dog*).

2. Velar fronting (pronouncing /k/, /g/, and /ŋ/ as /t/, /d/, and /n/, respectively, such as saying /tʌb/ for *cub*).
3. Stopping (pronouncing fricatives as the corresponding stops, such as saying /to/ for *sew*).
4. Palatal fronting (producing palatal sounds in the alveolar position, such as saying /su/ for *shoe*).
5. Liquid simplification (substituting another sound for one of the liquids [/l/ and /r/], such as saying /wawi pap/ for *lollipop*).
6. Assimilation (making two sounds in a word more alike, such as saying /dadi/ for *doggy*).
7. Cluster reduction (dropping one or more sounds from a cluster or making substitutions within the cluster, such as saying /pe/ for *play*).
8. Unstressed syllable deletion (leaving off the least stressed syllable in a multisyllablic word, such as saying /næ næ / for *banana*).

This analysis can tell us (1) which sounds are subject to simplification in which words; (2) what patterns of errors appear across sounds; (3) whether processes are fading out at the typical time in the typical order (Figure 8-3 provides information on the typical developmental sequence of phonological processes). (4) whether atypical processes appear (that is, whether a large number of errors cannot be assigned to any of the common patterns listed above); and (5) how consistent the use of each process is for each sound; that is, whether the child uses the process in every context or only in some. For example, does the child always substitute stops for fricatives, or only some of the time? With the information provided by this analysis, we can begin to formulate an appropriate intervention program for a child with speech delay. Williams, McLeod, and McCauley (2010) present detailed discussions of the various methods available for remediating speech sound disorders in children.

Shriberg and Austin (1998) reported that 30% to 40% of children with language disorders also have speech problems. Furthermore, 15% to 20% of children with speech delays have concomitant problems in vocabulary, grammar, or both. This suggests that we must be careful not to let the child's unintelligibility blind us to possible language components of the disorder. Every child who

presents with speech sound delay should receive a thorough language assessment, to identify any areas of linguistic disorder that might not be obvious because the child's speech is so hard to understand.

Assessing Phonological Processing: Preventing Reading Failure

The term *phonological processing* refers to a child's ability to perceive, store, retrieve, and manipulate sounds for language (Serry, Rose, & Liamputton, 2009). (It's important to keep this term separate from the term *phonological processes,* which refers to the rule-governed simplifications that are common in young children's speech.) Phonological processing includes phonological awareness (skills such as the ability to detect rhymes, number of syllables, and first/last sounds in words), rapid automatic naming (such as saying the days of the week quickly), and phonological memory (seen in the ability to repeat unfamiliar nonsense words). These phonological processing abilities grow during the preschool period, and are well-known to be related to learning to read and spell (Anthony et al., 2007; Gillon, 2004; Serry et al., 2008). The implication for SLPs is that these abilities are another aspect of phonological development to consider in assessment, so that if we detect weaknesses in these areas, we can build some phonological processing activities into the child's program, as a means of preventing later difficulties in learning to read (Gillon, 2005a). For younger preschoolers, under the age of 4, informal assessment of the ability to recognize and produce rhymes—by asking children to find two pictures out of three whose names rhyme or to complete rhymes such as "You like dogs and he likes _____(frogs)"—can alert the clinician to deficits in these earliest-emerging phonological processing abilities. For 4- to 5-year-olds, informal assessment of the ability to provide a word with the same first sound as a given word ("Can you think of a word that starts with the same sound as *dog?*"), to count syllables in words (Can you clap for each part in the word *hippopotamus?*) can help determine whether more in-depth assessment of phonological processing is indicated. Schuele, Skibbe, and Rao (2007) provide additional guidance on assessing
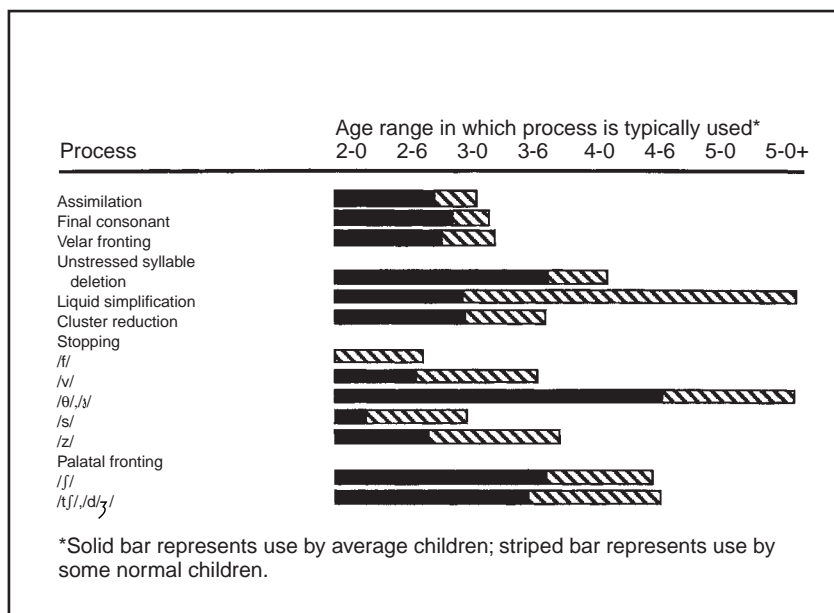
FIGURE 8-3 Developmental sequence of phonological processes. (Adapted from Grunwell, P. [1987]. *Clinical Phonology* [2nd ed.], p. 229. Baltimore, MD: Williams & Wilkins.)

Informal assessment of phonological processing can include having children identify rhymes in rhyming picture books.

phonological processing. Appendix 11-3 has more information on standard instruments for phonological process assessment. Finally, Shriberg et al. (2009) have developed a non-word repetition test appropriate for children as young as 3 years that can also be useful in identifying difficulties in phonological processing. Here's the bottom line: children with speech and/or language delays as preschoolers are at risk for reading failure in school, and deficits in phonological processing increase this risk. For this reason, some assessment of phonological processing for preschoolers with speech and/or language delays can identify children at highest risk for difficulty in learning to read and can guide the clinician to include activities to promote phonological processing into the speech/language intervention program. There is some evidence that doing so will help to lessen later reading problems in these children (Gillon, 2005a; Justice, 2006; Skibbe et al., 2008).

Criterion-Referenced Language Assessment

Just as standardized assessments of speech sound production do not always answer all our questions about a child's speech, standardized assessments of language skill, although able to point out general areas of deficit, do not tell us everything we need to know about a client's linguistic functioning. To get a fuller picture, we need to use some nonstandardized measures to tell us what kinds of errors the child makes in more naturalistic contexts. In general, standardized assessments for children with developing language can detect deficits in several broad areas. Depending on the tests used, the following areas can usually be examined:

- Receptive vocabulary (by responding to words by picture pointing)
- Expressive vocabulary (by naming pictures or defining words)
- Receptive syntax and morphology (by pointing to one of several pictures, including contrasting foils that depict a sentence spoken by the examiner [Point to: "The *boys* are here."])
- Expressive syntax and morphology (by imitating sentences or filling in blanks with words containing grammatical morphemes ["I have a dress; you have two . . . "])

Several areas of language function are usually *not* covered by standardized tests. These include pragmatics and semantic areas other than associating words with pictures. A standardized test battery,

then, can usually point out whether a child has deficits in each of the broad areas outlined in the preceding list. Once the areas of deficit have been identified, though, we want to look at each one more closely, using informal assessment procedures to examine specific error types and pinpoint targets for intervention. We also want to look at pragmatic and semantic areas not covered by standardized tests, if history and discussions with the family indicate that the child might be having any trouble in these areas. That's where nonstandardized, criterion-referenced procedures come in.

Vocabulary

Guidelines for Vocabulary Assessment and Intervention

Generally speaking, the size of receptive vocabulary is larger than that of expressive vocabulary in children, and children can commonly recognize a pictured item by name, even though they may not be able to come up with the label for the same item in a confrontation naming task. The conventional wisdom is that if a child can produce a word, he or she must understand what it means. This is not entirely true, though. Research on children's word-learning strategies (Bloom, 2001; Dollaghan, 1985; Rice, Buhr, & Nemeth, 1990) suggests that preschoolers can pick up some notion of a word's meaning from very brief exposure, but that the meaning will be quite limited until the child acquires additional experience with the word. Researchers call this strategy "fast mapping" (Carey, 1978). What it implies for us as clinicians is that children's understanding of word meaning, even when they produce the word themselves, may be more limited than the adult's understanding of the meaning of the same word. The result is that it is difficult, with children in the developing language phase, to make a clear differentiation between the knowledge required to understand a word and the knowledge required to use it. It is not entirely true to say that "comprehension precedes production," because a word may very well be produced even when comprehension of the word is very limited, by adult standards. This implies that clinicians should handle receptive and expressive vocabulary knowledge in an integrated way.

What does this mean in practice? It implies that we should not worry too much about assessing vocabulary separately in each modality and then treating each modality separately. If a child does poorly on a receptive vocabulary test, such as the *Peabody Picture Vocabulary Test IV* (Dunn & Dunn, 2006), the logical next step in assessment is to use criterion-referenced methods to look at what words the child has difficulty understanding. But there would not seem to be a need to teach these words receptively first, before trying to get a child to say them. Since children normally say words with only limited knowledge of their meaning, production can be targeted from the beginning of the intervention program. In short, we would recommend a strategy, following Lahey (1988), of focusing on comprehension during assessment but on production during intervention.

There are two exceptions. First, for children with very limited speech sound production, words should be selected for production that the child can pronounce or at least approximate. Schwartz and Leonard (1982) showed that children in the early stages of speech sound acquisition are selective about words that they try to produce, attempting only those that have at least a beginning sound that is already in their repertoire. For clients who are still in this very early stage of speech development, then, pronounceability should be a consideration in choosing words that we are trying to get the child to say. Intervention for vocabulary might focus on

receptive skills while work is going on to increase the child's speech sound repertoire.

The second exception has to do with word retrieval. It may be that a child has a normal receptive vocabulary size on a standardized test but uses very few words in spontaneous speech or does very poorly on a naming test such as the *Expressive One-Word Picture Vocabulary Test—Revised* (Brownell, 2000). We may suspect that the problem is the inability to recall words when needed for production rather than lack of knowledge of the words. Word-retrieval skills are often assessed in test batteries for learning-disabled children of school age, since word retrieval problems commonly coexist with reading deficits (Brackenbury & Pye, 2005; Wolf, Bally, & Morris, 1986). Retrieval is not typically included in the assessment of the child with developing language. However, if word retrieval appears to be a problem—because of a large decrement on an expressive vocabulary test when compared with the score on a receptive measure, or because the child seems to have trouble recalling words in spontaneous conversation—intervention should focus more sharply on helping the child to recall and produce the words he or she already knows, in addition to increasing vocabulary size.

Let's summarize our suggestions for working with vocabulary at the developing language level. Because of the issue of fast mapping and the complicated relationship between comprehension and production of word meaning in the developing language period, we would advocate the following strategy for handling vocabulary issues:

First, assess receptive vocabulary skills with a standardized instrument.

- If the child scores below the normal range, do criterion-referenced assessment of word classes that are important in the child's communicative environment. Target words identified in this assessment, using both receptive and expressive intervention activities, with the emphasis on production. Control for pronounceability with children in the early stages of speech acquisition.
- If the child scores within the normal range on the receptive vocabulary test, but history or parent or teacher report indicates concern about word use, assess expressive vocabulary with a standardized naming test. Watch for signs of word-finding problems, such as circumlocutions, overly general labels (*thingy*), or inability to name items responded to correctly on the receptive test. If there is evidence of a retrieval problem, focus intervention on practicing the recall and production of already known words, providing strategies such as using phonetic and semantic cues for retrieval (see details in Chapter 12).

Methods of Criterion-Referenced Vocabulary Assessment

Standardized measures of vocabulary typically tell us whether a child's ability to recognize and produce the names of items pictured in the test is similar to that of other children. Sometimes we want to know what a child knows about a particular category of words. We may need this information because this set of words is important for the child's success in preschool. Colors or spatial terms (*in, on, under, beside, in front, behind, next to,* and so on) needed for following directions might be examples. Perhaps the child needs a set of word meanings for getting along better in social situations. One example of this might be the child with autism who uses a lot of echolalia when answering questions. We might want to know whether this child comprehends the meaning of the

question words, since research on echolalia (Prizant & Duchan, 1981) suggests that children with autism often use echoing as a response when they don't know a more appropriate way to answer a question. Another example is verbs, which are known to be especially difficult for children with language disorders (Windfuhr, Faragher, & Conti-Ramsden, 2002), and are not frequently assessed on standardized tests. These kinds of word classes are reasonable targets for criterion-referenced assessment.

Suppose we (or the client's parents or teachers) identify a set of words that are important for a child who scored low on a vocabulary test to know. We can look at knowledge of these words by using a nonstandardized assessment protocol. A variety of games and informal procedures can be used to probe children's knowledge of word meanings. For example, the understanding of question words can be assessed. James (1990) provided an order of acquisition of the understanding of question words. This order is given in Figure 8-4. One means of assessing the comprehension of these question words is to read the child a short, simple story and ask questions about it during the reading (for example, if reading *Chicken Little,* the clinician might read the first page, where Chicken Little tries to tell her friends the sky was falling, then ask, "What was falling?"). We would use this procedure to avoid testing memory rather than the question words of interest. The clinician can choose questions so that each question word is used at least three times. Using a checklist such as the one in Figure 8-5, the clinician can record the child's responses to each trial of each of the question words used in the procedure. This alerts the clinician to the question words the child can answer appropriately and identifies the question words the child has trouble answering accurately. These may be targeted for the intervention program.

Here's another example: the "hiding game." This procedure can be used to assess understanding of spatial prepositions. Normative data come from Boehm (1989). In the hiding game the clinician arranges two identical cups on the floor or table so that one is inverted and one is right side up. The clinician gives the client a raisin to hide from a somewhat backward puppet. The catch is that the child must hide the raisin in the place the clinician indicates.

Question word	Age that normally-developing children response appropriately (years-months)	Number of trials	Number of correct responses
What . . . ?	2-0	_____	_____
Where . . . ?	2-6	_____	_____
Who . . . ?	3-0	_____	_____
Whose . . . ?	3-0	_____	_____
Why . . . ?	3-0	_____	_____
How many?	3-0 (response with a number, though not necessarily the right one, is acceptable)	_____	_____
How . . . ?	3-6	_____	_____
When . . . ?	4-6 or older	_____	_____

FIGURE 8-4 A checklist for evaluating comprehension of question words. (Adapted from James, S. [1990]. *Normal language acquisition.* Boston, MA: College-Hill Press.)

Spatial preposition	Age that normally-developing children comprehend (years-months)	Number of trials	Number of correct placements
Beside	3-0	_____	_____
In	3-0	_____	_____
In front of	3-0	_____	_____
Next to	3-0	_____	_____
On	3-0	_____	_____
Over	3-0	_____	_____
Out	3-0	_____	_____
Under	3-0	_____	_____
On top	4-0	_____	_____
Between	4-0	_____	_____
Behind	5-0	_____	_____
Below	5-0	_____	_____
Above	6-6	_____	_____

FIGURE 8-5 A checklist for evaluating understanding of spatial terms. (Adapted from Boehm, A. [1989]. *Boehm resource guide for basic concept teaching*. San Antonio, TX: Psychological Corp.)

The clinician then tells the child to hide the raisin in locations such as *in, on, under, beside,* or *next to* a cup or *between* the cups. The child hides the raisin and the puppet then "looks" for it in the place the clinician said to put it. If the puppet finds the raisin where the clinician said it should go, the puppet wins the raisin. However, this puppet is a picky eater and does not like raisins, so he always offers the treat to the client. The game continues until each spatial preposition has been tested three times. Using a checklist such as the one in Figure 8-5, the clinician can assess the level of the child's understanding of spatial terms and identify those that the child has trouble comprehending. These might be included as intervention targets.

These are just two ideas. Clinicians can come up with a variety of "games" and activities such as these to get more information

Games can be incorporated into informal criterion-referenced assessments.

about a child's comprehension of certain classes of words. Miller and Paul (1995) provided additional ideas. The point is this: when a child scores poorly on a standardized measure of receptive vocabulary, specific content categories can be probed with informal techniques when necessary. This kind of assessment allows us to evaluate a client's understanding of meanings that are important in his or her communicative interactions. These meanings can, if found to be problematic, be included as targets of intervention.

Syntax and Morphology

Receptive Syntax and Morphology
Unlike vocabulary, syntax and morphology need to be carefully assessed in each of the receptive and expressive modalities. The reason is this: children commonly produce sentence forms, such as agent-action-object constructions, even when they fail to perform correctly on comprehension tests of these same forms in settings where nonlinguistic cues have been removed (Chapman, 1978; Paul, 2000c). Knowing that a child produces a sentence type does not necessarily mean that the child fully comprehends the same sentence if it is spoken to him in a decontextualized format. We do need, then, to be careful about assessing comprehension and production of syntactic forms separately.

Some writers (Lund & Duchan, 1993; Rees & Shulman, 1978) have raised the question of whether the difference between *contextualized* and *decontextualized* comprehension invalidates the use of standardized tests in this area. In real communicative situations, they argue, it is rarely necessary to get all the information needed for a response from the words and sentences. Many other cues are available, including knowledge of what usually happens in situations (often called "scripts" or "event knowledge"); facial, intonational, and gestural cues; and objects and events in the immediate environment that provide nonlinguistic support, to name a few. Most children can take advantage of all these additional cues to assist their understanding of the words and sentences they hear. But if these cues are removed, a child is likely to do more poorly. This is as true for normally developing preschoolers as it is for children with language problems (Naito & Kikuo, 2004; Paul, Fisher, & Cohen, 1988). Of course, most of our standardized and many of our nonstandardized methods of assessing receptive syntax and morphology use decontextualized settings. Children typically perform more poorly on these than they would if the same forms were used in a more normal communicative context. Is this a bad thing?

As you might guess, the answer would be, "It depends." It depends on how we interpret the results of the decontextualized assessments and whether we include some contextualized assessments for contrasting information. We can look at the decontextualized results as a window onto how much *linguistic* comprehension a child displays and as a way to identify linguistic forms than can cause problems when few other cues are available. This information is very useful for contrasting with performance on production tasks. It can help us determine whether the child can demonstrate linguistic comprehension for forms he or she is not using at all in speech; whether linguistic comprehension and production are about on par; or whether, as normally developing children do in some stages of development (Chapman & Miller, 1975), the child is producing some forms that he or she does not comprehend in decontextualized formats. Knowing how comprehension contrasts with production can help us to decide whether to focus strictly on production skills in the intervention program or whether activities that foster both comprehension and production—such as focused stimulation and verbal script approaches (see Chapters 3 and 9 for

details)—might be more appropriate. In this way, looking at comprehension skills in decontextualized formats can be useful.

Contrasting this performance not only with production but also with performance in more contextualized activities also can be very informative. Lord (1985) advocated this approach for looking at comprehension skills in children with autism. We believe it can be helpful for evaluating receptive skills in any child at a developing language level who has trouble with decontextualized comprehension. Here's why: if a child can take advantage of the nonlinguistic cues in the environment, he or she is in a good position to benefit from intervention activities, such as child-centered approaches, that provide enriched language carefully matched to the nonlinguistic context. Child-centered activities would be an important component of intervention for such a child. But suppose a client does no better on a contextualized assessment than on a standardized test. Some research (Paul, 1990; Paul, Fisher, & Cohen, 1988) on children with autism and specific language disorders suggests that these children are not as efficient as normally developing preschoolers at integrating information from linguistic and nonlinguistic sources. For clients such as these, approaches that make use of naturalistic nonlinguistic context may provide too complex a mix of cues. These clients may need to have the input scaled down, with very clear, simple connections made between the forms being taught and their meanings. For these clients a less naturalistic, more structured form of input may be needed to increase receptive skills.

The following is a general strategy for assessing syntactic and morphological comprehension at the developing language level:

1. Use a standardized test of receptive syntax and morphology to determine whether deficits exist in this area.
2. If the client performs below the normal range, use criterion-referenced decontextualized procedures to probe forms that appear to be causing trouble.
3. If the client performs poorly on the criterion-referenced assessments, test the same forms in a contextualized format, providing familiar scripts and nonlinguistic contexts; facial, gestural, and intonational cues; language closely tied to objects in the immediate environment; and expected instructions.
   a. If the child does better in the contextualized format, compare performance on comprehension to production. Target forms and structures that the child comprehends well but does not produce as initial targets for a production approach. Target structures that the child does not comprehend well for child-centered, focused stimulation, or verbal script approaches to work on comprehension and production simultaneously.
   b. If the child does not do better in the contextualized format, provide more-structured, less-complex input using more hybrid and clinician-directed activities for both comprehension and production.

Criterion-Referenced Methods for Assessing Receptive Syntax and Morphology

Remember that one reason we may need to do criterion-referenced assessment of receptive syntax and morphology is that standardized tests generally provide very few items per structure. This means that, when a child fails, it is hard to know how significant that failure is. Criterion-referenced assessment can help us to decide, for example, whether a child really doesn't know what a structure means or whether he or she just wasn't paying much attention to that particular item on the test. What we want to do on criterion-referenced assessment, then, is to use the standardized test data to point out structures the child may be having trouble understanding. We can then probe these areas in more depth with criterion-referenced procedures. Let's look at some examples of criterion-referenced methods for assessing understanding of language structure in both contextualized and decontextualized formats.

Decontextualized Formats

Recall from the discussion of comprehension assessment in Chapter 2 that we have several means available to evaluate comprehension, including picture pointing, behavioral compliance, object manipulation, and judgment. We would choose one of these methods based on the child's developmental level and on how well each matches to structures we want to test. It would be fairly easy to use pictures or object manipulation to test understanding of plurals, for example ("Show me the apple/apples."). Behavioral compliance might be a better procedure for testing understanding of *is (verb) ing* constructions ("Show me: the girl is jumping."). Judgment tasks are usually not appropriate for preschoolers.

Just as we could construct games and activities to test receptive vocabulary, we can follow a similar procedure for probing the comprehension of those structures that were identified as possible sources of errors on a standardized test. Sentences containing past and future tense might be one example. Suppose a client missed the past- and future-tense items on a standardized test. We would want to find out whether comprehension of these items is really impaired. We might construct an activity such as the one in Box 8-2.

This is just one example of a method for probing a client's understanding of specific syntactic and morphological forms. Clinicians can devise simple activities such as these for any form on which additional information is needed. Miller and Paul (1995) provided additional activities. Notice that activities such as these, although not standardized, still remove most of the nonlinguistic context and require the child to understand the message from just the words and sentences. We can, as we've seen, contrast performance on decontextualized assessments such as these to performance in more naturalistic comprehension situations. Let's see how.

Assessing Comprehension Strategies

In Chapter 7 we talked about some methods of assessing comprehension and comprehension strategies in children with emerging language. We said it was important to look at what children do when they *don't* understand all the words and sentences in decontextualized activities. If they use strategies such as those used by normally developing children, we can feel more confident that comprehension skills are proceeding along a normal course. Naturalistic approaches such as indirect language stimulation and verbal script therapy will be useful for increasing receptive skills. If, on the other hand, clients are not using typical strategies, we might conclude that they are not able to take advantage of naturalistic communicative cues for comprehending and may need more structured input. The techniques outlined for assessing comprehension strategies at the emerging language stage in Chapter 7 also can be used with children at a developing language level. Here we would be looking for use of strategies such as "child as agent" and "probable events."

Remember that normally developing children at the 2- to 3-year level of comprehension are able to process *agent-action-object* instructions, but also they still rely on a "probable event strategy" for deciding which noun represents the agent and object of action. That is, when presented with a sentence, such as "The mommy feeds the baby," children in the 24- to 36-month period typically

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BOX 8-2   Decontextualized Criterion-Referenced Activity for Probing Understanding of Past and Future Tense

Clinician: This is my friend Sammy (display a puppet). Sammy likes to help people, but he doesn't always do it right away. I'll ask Sammy to help me. Sammy, please set the table. In puppet voice: I will set the table. In normal voice: He said he will, but he's not going to do it right now. It's not done yet. I'll try something else. Sammy, please clean your room. Puppet voice: I cleaned my room. Normal voice: Good! I didn't have to wait for that one. Sammy cleaned his room! It's done! Give several additional examples. Then say: You listen now. Listen to Sammy. Then tell me if the job is done.

CLINICIAN	"SAMMY"	CORRECT CLIENT RESPONSE	+/−
Please make the bed.	I will make it.	not done	——————
Please tie your shoe.	I tied it.	done	——————
Please eat your soup.	I will eat it.	not done	——————
Please help me.	I helped you.	done	——————
Please hop to it!	I hopped to it!	done	——————
Please stand still.	I will stand still.	not done	——————
Please stop jumping.	I stopped jumping.	done	——————
Wash your face.	I washed . . .	done	——————
Dry your hands.	I will dry . . .	not done	——————
Please get my hat.	I will get . . .	not done	——————
Please call Dad.	I called Dad.	done	——————
Please go away.	I will go . . .	not done	——————

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perform successfully on an object-manipulation task. But if asked to act out the sentence, "The baby feeds the mommy," they are likely to interpret it in the more probable direction (the mommy feeds baby). To test for basic 2- to 3-year-level comprehension skills, then, a series of probable agent-action-object sentences could be presented for a child to act out with some toys. If the child uses a "child-as-agent" strategy by performing designated actions on the named object himself or herself, he or she is demonstrating an 18- to 24-month-level comprehension strategy.

If the child performs correctly on the probable sentences, we can move to the next level of receptive language development. Correct comprehension of both probable and improbable simple sentences is typical of normally developing children at the 3- to 4-year level of comprehension (Chapman, 1978). We can present more agent-action-object sentences for the child to act out, interspersing probable ("The boy pushes the wagon.") and improbable sentences ("The wagon pushes the boy."). If the child performs correctly on both types, we can conclude that linguistic comprehension of agent-action-object sentences is present. If the child gets the probable sentences correct but the improbable ones wrong, we can suspect the use of a probable-event strategy. This client is showing comprehension that is following the normal path. However, if the client does not do any better on the probable than improbable types, we might conclude that the client was not taking advantage of nonlinguistic background information to help in processing sentences. A client like this, who has comprehension deficits, might benefit from more structured input that matches language very clearly and simply to ongoing events. Such a child also might need to develop a fuller set of "scripts" or event expectations to aid in comprehension. Work on play scripts around familiar events, in which the clinician and child re-enact a set of recurring actions over and over, also might be useful. The clinician could include such scripted play as part of every session, carefully choosing simple language forms to match each action in the script and being careful to repeat each action and its accompanying language exactly during each re-enactment.

Comprehension strategies also can be examined by looking at the errors in the other nonstandardized assessments conducted. For example, if spatial prepositions are assessed, the clinician can look at the child's errors to see whether the child tended to place objects "in" containers when told to put them "on," or "on" surfaces when told to put them "under." These types of errors would be representative of a "probable location strategy" (Chapman, 1978), which is typical of 2- to 3-year-old children. If a child at a 4-year developmental level uses them, they would be evidence of comprehension that is delayed but is nonetheless developing along a normal course.

Information from nonstandardized assessments, then, can be useful not only for probing specific forms and structures, but also for looking at children's strategies for comprehending difficult language. These strategies can give a clinician additional information about how a child deals with language input. Such information can be useful, as we've seen, in developing an intervention program.

Assessing Comprehension in Contextualized Settings
We've talked about using nonstandardized assessment both to probe comprehension of specific forms and to look at strategies for comprehending difficult input. For both these purposes we are looking at comprehension in somewhat contrived situations. If we want to know more about how a child responds to language in a more naturalistic setting, we can set up some communicative situations and observe the child's responses. The reason for doing so, again, is as a contrast to the performance on the decontextualized situations. If a child does just fine on a standardized comprehension test, there is no need to assess comprehension further in a naturalistic setting. However, if the child is not so good at responding to language in formal contexts, it would be nice to know whether he or she does better in more natural ones.

One way to do this is to look at clients' responses to speech addressed to them in ordinary conversation. We can use the sample collected for speech or expressive syntactic analysis. Besides looking at what the child said, we can look at how it related to what was said to the child. We can, for example, compute a percentage of *contingent responses* on the child's part. Contingent responses are those that relate semantically to the previous speaker's utterance. If you say, "Would you like an ice cream?" and I say, "Yeah, I'm in the mood for chocolate," my utterance is clearly related to and contingent upon yours. But if you said, "Would you like an ice cream?" and I answered, "The Kentucky Derby is run in May," the relation between your utterance and mine would not be very clear. According to Bloom, Rocissano, and Hood (1976), children's proportion of contingent utterances rises from less than half at 24 months to more than 75% at 42 months. Looking at contingent responses in spontaneous speech can give us some notion of whether the child is processing the linguistic input well enough to respond contingently.

Lund and Duchan (1993) suggested examining children's language samples to look for a variety of comprehension errors. They suggested, for example, examining responses to questions in the speech sample for understanding of the question words. They suggested further looking at responses to adult requests to determine whether the request was understood. Analyzing spontaneous speech samples for information about comprehension is another way to make use of the conversational samples we collect during the nonstandardized phase of assessment.

Criterion-Referenced Methods for Assessing Productive Syntax and Morphology
Speech Sample Analysis

We've talked about a variety of ways to use samples of conversational speech to fill out our picture of a client's language skills. Perhaps the most prevalent use of speech-sample analysis is for the purpose of assessing productive syntax and morphology. Costanza-Smith (2010) and Hewitta, Hammer, Yont, and Tomblin (2005) discuss the clinical utility of language sampling. Among other things, spontaneous speech provides the most valid look at how a client uses words and sentences in natural situations. It is more sensitive than standardized tests for identifying preschoolers with clinically diagnosed language delays, more effective for treatment planning and outcome monitoring, and a more valid reflection of the child's use of language in everyday contexts (Costanza-Smith, 2010). So if we really want to know how a client produces language forms, the best way to find out is to take a sample of the use of these forms in real communication.

The first decision we need to make when we do speech sample analysis concerns how we *collect the sample.* Quite a bit of research has focused on how the sampling context affects the quality of language samples. Schmidt and Windsor (1993), for example, showed that there was little difference in MLUs of both normally developing children and those with Down syndrome (DS) when samples were gathered from conversations during structured or unstructured activities. Southwood and Russell (2004) reported that free play yielded more utterances than story generation, but stories yielded longer and more complex sentences, whereas conversation yielded sentences as complex but shorter than those used in stories. But Wagner, Nettelbladt, Shalen, and Nilholm (2000) found that intelligibility and fluency were higher in conversational samples than in narration among preschoolers with language impairments. In addition, children used more complex verb forms in conversation than narration at this age. Sedey, Miolo, and Miller

(1993) demonstrated that the degree of linguistic complexity produced by both normally developing children and those with Down syndrome did not differ in conversations with a parent as opposed to a clinician, although more speech overall and more lexical diversity were found in the parent-child samples. Longhurst and File (1977) showed that more complex language was elicited in conversation, as opposed to picture description. This research suggests that when using a language sample to evaluate expressive syntactic and morphological skills, a language sample based either on a relatively unstructured free-play situation or on a more structured activity with either parent or clinician is an appropriate method at the preschool level, although we will need to consider other contexts for children at higher language levels. Perhaps picture description should be used only for samples collected from unintelligible children and other contexts should be preferred from children who are easier to understand. Costanza-Smith (2010) suggested that a combination of activities within a sampling session may be the best way to gather a complete picture of the child's performance. In any case, children at the level of developing language need some contextual support to give their best performance in speaking situations. For most preschoolers' situations, people, activities, materials, and topics that are familiar will elicit the most representative sample (Owens, 2009). The materials used also can make a difference. O'Brien and Nagle (1987) reported that play with dolls produced more complex language than play with vehicles, for example, in both boys and girls. Table 2-5 gave some suggestions from Miller (1981) for eliciting a representative speech sample from preschoolers.

Both Hubbell (1988) and Owens (2009) emphasized the importance of the adult's interactive style in collecting these samples. They suggested placing few limits on the child's behavior within the interaction, choosing topics of interest and familiar to the child, and attempting to give the child some measure of control over the conversation. These kinds of interactions are most likely to elicit optimal communication from a client with developing language.

How long a sample do we need? Most writers (e.g., Lahey, 1988; Miller, 1981; Nelson, 1998; Price, Hendricks, & Cook, 2010) suggest 50 to 100 utterances. Cole, Mills, and Dale (1989) showed that a 50-utterance sample yields about 80% of the information available in a sample twice as long. Heilman, Nockerts, and Miller (2010) showed that sample length (i.e., 1-min vs. 3-min vs. 7-min cuts) had nearly no effect on measures for syntactic children as a group. They suggest using short samples of conversation as part of a comprehensive assessment used to identify expressive language delay and for progress monitoring in intervention. They caution, however, that analyzing particular *language* features, such as the presence of certain grammatical morphemes, discourse features, and mazes, may require longer samples. Heilmann (2010) suggests that a 50-utterance sample is usually adequate to provide efficient-yet-valid clinical data gathering for preschoolers, and even shorter samples can be used with narrative sample collection. He reports that 50 utterances are typically collected in 4 minutes for preschool children, and that each minute of speech sample takes approximately 5 minutes to transcribe, so that a typical sample from a preschool child can be transcribed in 20 to 30 minutes. He points out that, although this is a considerable amount of time, it is less than it takes to give a standardized test.

Many researchers (e.g., Cole, Mills, & Dale, 1989; Nelson, 1998) have advocated collecting several samples for analysis of productive language, arguing that multiple samples yield more representative information. Cole, Mills, and Dale suggested that

two short samples (say 10 minutes each) taken on two different days would provide a more valid picture of productive language than a single longer sample. Here's our opinion on this issue: language sampling is one of the best methods we have available for establishing productive language baseline function, targeting intervention goals, and evaluating progress in the intervention program. The most important thing about language sampling is to *do it*. If it is possible to collect two or more short samples for analysis, great! The danger arises when we feel we have to collect and analyze more than one sample and therefore decide not to do language sampling at all. If the alternative to collecting multiple samples is not do any analysis of spontaneous speech, then it is better to take just one sample that is as representative as we can make it. We can, for example, include both a free play and a short narrative or conversational sample within one 20 minute sampling session. Doing an imperfect language sample analysis is better for clinical purposes than not doing any at all.

When we collect a speech sample, we usually want to *record the sample* in some way. This allows us to examine it in more detail than we could if we had to get all the information from it in real time. It lets us go back later and pick up information we may have missed the first time around and also allows us to analyze the same sample for several different purposes on several different passes through it. As discussed in Chapter 2, audio recordings are usually used when speech itself is the focus of the assessment and when there is enough intelligible speech present that other information is not needed to figure out what the client is talking about. Video recording can be used when nonverbal context is necessary to decipher the child's meanings or when nonverbal aspects of communication are of interest. The recorded sample is then transcribed at whatever level is appropriate for the analysis being done. Syntactic analyses require only word-by-word transcriptions of the client's speech, probably with the linguistic context of the other speaker's remarks included. If we plan to do speech sound analysis on the same transcript, this requires phonemic transcriptions and, in some cases, phonetic level information as well. Pragmatic analysis necessitates some information about the nonlinguistic context and perhaps about paralinguistic cues that accompany the speech.

Several formats are available for transcription. Miller (1981) provided one example, which involves writing each child and adult utterance on a separate line, with one speaker's utterances indented so it is easy to identify visually who is talking. The child and adult utterances are each numbered consecutively; the child's are numbered C1, C2, and so on, the adult's A1, A2, and so on. Using this method, we also provide columns for morpheme counts, nonlinguistic context, and any comments the transcriber wishes to make. Several symbols are used to indicate questionable transcription, unintelligible utterances, pauses within the utterance, and phonetic transcription. These conventions, along with Miller's transcription format, are shown in Figure 8-6.

One of the most important decisions we make when transcribing is how to separate speech into utterances. Since we transcribe the sample with one utterance per line and often compute morpheme length and do syntactic analysis utterance by utterance, making reliable judgments about when an utterance ends is important. Owens (2009) presented a set of rules that can be used for segmenting utterances in transcripts at the developing language phase. These are summarized in Box 8-3.

One way language level is often assessed in a sample of spontaneous speech is by computing MLU in morphemes. Instructions for computing MLU can be found in Box 8-4. Brown (1973) inaugurated this measure as a means of indexing syntactic development and demonstrated that MLU was a much better yardstick of syntactic development than was age. Brown showed that there was lots of variation in the age at which preschoolers achieved certain syntactic skills, but much less variation in the MLU they displayed when each milestone was reached. For example, some children produced adult question forms at age 2, whereas others did not produce them until close to age 4. But no matter how old the children were when they produced adult question forms, their MLU was always around 3 to 3.5. There has been a good deal of research on the validity of MLU as an index of language development over the years (Eisenberg,

Name of child: _____
Clinic number: _____
Chronogical age: _____
Date of evaluation: _____
Examiners: _____
_____

Child MLU: _____
   Numbers of utterances: _____
   Number of intelligible utterances: _____
   Sources of transcription: _____ Audiotape _____

Adult MLU:
  1.
  2.
  3.

Key:

C = Child	[ ]	Gloss or contextual notes
E = Examiner	( )	Questionable transcription
XXX = Unintelligible	/ /	Phonetic transcription
... = Pause		

Situation variables:
Time of day:
Setting:
Materials used:
Length of interaction:
Participants/Type of interactions: 1.
    2.
    3.
    4.

Pragmatics		Speaker	Utterance number	Dialogue	Morpheme count		Syntax	Semantics
Child	Adult				Child	Adult		

FIGURE 8-6 Transcription format. (Adapted from Miller, J. [1981]. *Assessing language production in children*. Needham Heights, MA: Allyn and Bacon.)

BOX 8-3   Rules for Segmenting Utterances in Preschool Speech Samples

1. A sentence is an utterance:
   Mommy will go to the store yester . . . tomorrow = 1 utterance.
2. A command is an utterance:
   Go home! = 1 utterance.
3. Run-on sentence with *and* should contain no more than one *and* joining clauses. Sentences with more than one *and* should be separated into additional utterances:
   We went on the bus and we got to the zoo and we saw lots of animals and we had ice cream =
   We went on the bus and we got to the zoo /(and) we saw lots of animals /(and) we had ice cream.
4. Other complex and compound sentences are treated as one utterance:
   He was sad because his daddy yelled at him because he broke the cup and spilled the baby's food.
5. Pauses, inhalations, and falling intonation mark the ends of utterances:
   Eat (drop in intonation; pause) . . . oatmeal cookie = 2 utterances: Eat. Oatmeal cookie.
   Eat (momentary delay, no fall in intonation) . . . oatmeal cookie = 1 utterance: Eat oatmeal cookie.

Adapted from Owens, R. (2004). *Language disorders: A functional approach to assessment and intervention* (4th ed.). Boston, MA: Allyn & Bacon.

BOX 8-4   Rules for Computing MLU from a Sample of Spontaneous Speech

1. Segment the child's speech sample into utterances.
2. Transcribe the sample, putting each utterance on a new line.
3. Identify the first 50 consecutive fully intelligible utterances in the transcript. (Eliminate any utterances that are unintelligible or partially unintelligible from the count.)
4. Count the number of morphemes in each utterance, using the following counting rules:
   a. Count each free morpheme (word) and each bound morpheme or inflection (such as plural *-s*, possessive *-'s*, third-person singular *-s*, past-tense *-ed*, present progressive *-ing*, and so on) as one.
   b. In stuttering or false starts, count each word only once. If a word is repeated for emphasis ("No, no, no!"), count each occurrence of the word.
   c. Count compound words *(birthday)*, proper names *(Mickey Mouse)*, and reduplications *(night-night)* as only one morpheme.
   d. Count irregular past-tense forms *(went, saw, came)* as one morpheme. If a child overgeneralizes a past-tense form, such as *goed* or *comed*, count this as two.
   e. Count words with diminutive endings *(doggie, toesie)* as one morpheme.
   f. Count auxiliary verbs *(is, are, was, were, have, had, has, will, could, can, would, must, might, shall, should,* and others) as one, even if they are contracted (*He's* is two morphemes; *aren't* is two morphemes), except for *can't* and *don't*, which count as one.
5. Add up the total number of morphemes in the sample. Then divide by the total number of utterances (usually 50). The result is the MLU.

Adapted from Brown, R. (1973). *A first language: The early stages.* Cambridge, MA: Harvard University Press; Chapman, R. (1981). Exploring children's communicative intents. In J. Miller (Ed.), *Assessing language production in children.* Needham Heights, MA: Allyn and Bacon.

Fersko, & Lundgren, 2001; Klee, 1992; Lahey, Liebergott, Chesnick, Menyuk, & Adams, 1992; Miller, Freiberg, Rolland, & Reeves, 1992). The current consensus would appear to be that MLU alone should never be used to determine whether a child has a delay in language development (Eisenberg, Fersko, & Lundgren, 2001), but it does have some value as one aspect of the description of a child's language level, especially when combined with other information about language production, such as the number of different words (NDW) in a speech sample (Klee et al., 2004; Leonard & Finneran, 2003). Table 8-2 gives the normal range for MLU for children in the developing language period, based on data from Brown (1973); Miller (1981); Miller, Freiberg, Rolland, and Reeves, (1992); Owens (2009); and Rice et al. (2010).

MLU can be computed from a free speech sample to compare other areas of language development to it. This comparison can be used to determine whether some areas of language development are further behind than MLU would suggest, even when the MLU itself is less than would be expected for developmental level. Although we know that the relationship between MLU and grammatical development is not a simple one (Leonard & Finneran,

2003), knowing a child's MLU can help guide the remaining portions of the analysis. For example, if the MLU is less than 3, we may wish to concentrate on semantic analyses, such as the analysis of semantic relations discussed in Chapter 7 or Lahey's (1988) semantic-syntactic analysis procedure. These methods would identify meanings expressed and the basic forms used to express them. The clinician could use this information to target additional meanings for expression or to encourage the child to express all meanings with the most advanced forms currently in the repertoire before attempting to expand syntactic complexity. If the MLU is between 3 and 4.5, further analysis might focus on basic morphological and syntactic markers in simple sentences, since such forms typically develop during these MLU stages. If MLU is greater than 4.5, complex sentence development might be the primary area of assessment, since basic morphological and syntactic structures are usually mastered at this MLU level and more advanced structures are beginning to emerge.

MLU is also a useful way to chart change in productive language, and Rice et al. (2010) report data substantiating that MLU is a reliable and valid marker of language impairment that can be

TABLE 8-2 Typical Values for MLU (Morphemes) and Number of Different Words (NDW) in Preschool Children

Age (mo.)	Normal Range of MLU (+/− 1 s.d.)	Average NDW/50 Utterances
18	1.0–1.6	36
21	1.1–2.1	41
24	1.5–2.2	46
27	1.9–2.4	51
30	2.0–3.0	56
33	2.3–3.5	61
36	2.7–4.0	66
39	2.7–4.2	71
42	3.2–4.3	76
45	3.2–5.0	81
48	3.5–4.7	86
51	3.7–5.7	
54	3.8–6.1	
57	3.9–6.5	
60	4.0–6.8	

Adapted from Brown, R. (1973). *A first language: The early stages.* Cambridge, MA: Harvard University Press; Miller, J. (1981). *Assessing language production in children.* Boston, MA: Allyn & Bacon; Miller, J., Freiberg, D., Rolland, M., & Reeves, N. (1992). Implementing computerized language sample analysis in the public school. *Topics in Language Disorders 12(2),* 69-82; and Rice, M. Smolik, F. Perpich, P. Thompson,T., Rytting, N., & Blossom, M. (2010). Mean length of utterance level in 6 month intervals for children 3 to 9 years old with and without language impairments. *Journal of Speech, Language, and Hearing Research, 53,* 333-349.

used clinically for benchmarking deficits and documenting intervention outcomes. If we track MLU taken from a free speech sample each semester in an intervention program, we have a valid means of showing change in spontaneous speech in response to our intervention. You might like to try computing an MLU on the short transcript in Box 8-5. (Remember that we ordinarily want to use at least 50 utterances to compute an MLU.) Cover the answers in the morpheme column and try your hand. Then check against the morpheme counts given in Box 8-5. Use the data in Table 8-2 to decide whether the MLU you found is appropriate for a child of this age.

There are some disadvantages to using MLU as a speech sample-analysis procedure, though. First, it is too global, in itself, to highlight areas of syntactic deficit. If only one syntactic analysis can be done on a sample, MLU is probably not the best choice, since it gives too general a picture and does not pinpoint specific targets for intervention. Second, MLU computation requires full transcription of a speech sample—a time-consuming process.

One issue in using speech sample analysis concerns *increasing the efficiency of the sampling and analysis* procedures. Should we compute MLU for every speech sample collected for the purpose of syntactic and morphological analysis? Probably not. Other analysis techniques, given limited clinical time and resources, yield more information relevant to intervention planning. We might do these more detailed analyses for initial assessment purposes. Then we might use MLU to track progress in intervention without doing more detailed analyses, but rather probing for specific forms using elicited production contexts and using MLU changes to show that these forms are generalizing to spontaneous speech. This would be a more economical allocation of clinician effort than computing an MLU for every speech sample we analyze.

Many practicing SLPs say that speech sample analysis is impractical for real clinical situations because of the time it takes to transcribe and analyze the sample. Let us give you our view on this issue. Speech sample analysis is sometimes (though not always) more time consuming than scoring a standardized test, but it also provides much richer and more valid information. How can we reconcile this conflict? In our opinion, we need to (1) be very judicious about choosing when to do a speech sample and what analyses to perform and (2) learn to do speech sample analyses more quickly and efficiently.

In deciding when to use a speech sample, we should remember that standardized tests are designed to tell whether a child is different from other children. Dawson et al. (2003), for example, showed that the *Structured Photographic Expressive Language Test—3* (SPELT-3) is very sensitive and specific in identifying children with language disorders. For the purposes of initial identification of expressive language deficit, using a valid tool like the SPELT-3 is certainly recommended. Speech sample analysis, on the other hand, is not constructed psychometrically for this purpose. Speech

Computer-assisted methods can increase efficiency in language sample analysis.

BOX 8-5   Sample Transcript from a Child Aged 4 Years, 2 Months for Morpheme and Sentence-Structure Analysis

KEY
( ) = questionable transcription
[ ] = gloss or contextual notes
/ / = phonetic transcription
XXX = unintelligible
 . . . = pause
C = Child
A = Adult

UTTERANCE	NONLINGUISTIC CONTEXT	MORPHEME COUNT
C1: What this thing?	[point to tape recorder]	3
A: I think it's an audio recorder.		
C2: I can (touch) it?		4
A: I don't think you'd better, honey.		
C3: I talking on it?		5
A: I think so!		
C4: It hearing me?		4
A: Yup.		
C5: It the lady's?		4
A: Yes, it is.		
C6: It not like /gæ miz/ [Grammy's].		5
A: No, Grammy has a bigger one, doesn't she?		
C7: Grammy's don't have buttons on.	[touching buttons]	7
A: No, that's right, hers has dials.		
C8: They got toys in here?		6
A: Sure. Here are some. . . . Let's look at these.		
C9: Yeah, cars in blue box.		6
A: Um-hm, there are some cars in the blue box here.		
C10: I want XXX green car.		4
A: OK, here's the green one.		
C11: Hey, it went under there!		5
A: Well, go get it.		
C12: Got it!		2
A: Good. Is it running OK?		
C13: Yeah, it run good.		4
A: Good. Let's see what else is in here.		
C14: Look, red car.		3
C15: Donny have red car.		4
A: Yes, Donny's car is red, but it's a lot bigger than this one, isn't it?		
C16: Yeah, Donny always drive his car too fast.		8
A: He does! How do you know?		
C17: Daddy say so last time.		5
A: Oh-oh. I better not let you ride in his car again.		
C18: No, I'll tell him go slow.		7
C19: You seed him last time?		6
C20: He hitted a wall!	[jumps up and down]	5
C21: The cop yelled at him!		6
A: Oh, no!		

sample analysis should only be done when it has already been established, by means of standardized testing of expressive language, that the child has a productive language deficit.

The efficiency of speech sample analysis can be increased in two ways. The first is to shortcut some of the steps involved in traditional analysis methods. We can, for one thing, do certain parts of the analysis of connected speech in real time, rather than transcribing the whole sample. The second way is to make use of computer-assisted procedures.

Let's look at the second alternative first. Price, Hendricks, and Cook (2010) provide detailed guidance on incorporating computer-assisted language sampling into clinical practice. They suggest, first, collecting the sample by using either a portable digital recording device or recording directly into a computer,

which for this purpose would require a sound card, an external microphone, and an audio recording software program, such as Audacity (Mazzoni, 2005; http://audacity.sourceforge.net), GoldWave (GoldWave Inc., 2001; www.goldwave.com), or QuickTime Pro (www.apple.com/quicktime/pro). Price et al. (2010) provide instructions for using Audacity to record a language sample.

Once the sample is stored as a digital audio file, the next step is to transcribe it for analysis. Although there is not yet software that can automatically convert the audio file to text, there is software that can make transcription easier. Both CLAN (MacWhinney, 2009) and Transcriber (Barras, Geoffrois, Wu, & Liberman, 1998–2008), are free software programs that divide the audio stream in segments/utterances, and allow the clinician to listen to each utterance any number of times while transcribing it without removing the hands from the keyboard. Price et al. (2010) give a detailed description for downloading and using Transcriber software in this way.

Several computer programs have been developed to assist in speech sample analysis. Table 8-3 provides some examples. Long (1999) and Long and Channell (2001) gave detailed descriptions of several of these programs. Once the sample is transcribed, and codes specific to each program are added, the software identifies and counts features from a list of available options that the clinician chooses. The clinician also can insert special codes into the transcription that allow for the identification and counting of items not on the program's existing menu, or that allow the program to perform various pre-programmed analyses on the coded transcripts. Long (2001) showed that computerized analyses were completed faster and with equal accuracy when compared with manual analysis, when coded transcripts were used. Still, the data entry time required to type in transcripts and insert all appropriate codes can be considerable, especially for those just learning the systems.

But emerging methodologies are beginning to take advantage of more powerful software solutions to simplify the clinician's job in performing language sample analysis. Channell and Johnson (1999) reported on a program that uses probability algorithms to automatically tag words within a speech sample as examples of particular parts of speech, such as nouns, verbs, and pronouns. They found accuracy to range from 60% to 95%. Channell (2003) reported on a fully automated *Developmental Sentence Score* (DSS; Lee, 1974) program in the computerized profiling system, which requires only transcript entry without coding. Channell found that the automated DSS produced overall scores that were highly correlated with manually scored samples, although agreement on particular categories between the automatic and manual analyses was still only 78%. Long and Channell (2001) had reported good agreement between automatic or manual coding for global (normal/not normal) clinical decisions, although Channell's (2003) results suggest that we still have a way to go before obtaining highly accurate descriptions of performance in individual semantic and syntactic categories from uncoded transcript entry, which is necessary in using automated language sample analysis for intervention planning.

Still, with the speed at which technology changes, it probably will not be long before clinicians can rely on "intelligent" software to do a substantial amount of the work involved in clinical language sampling. In addition, advances in automated speech recognition may, before too long, allow us to play an audiosample directly into a computer program that would automatically transcribe it orthographically, so that the clinician would only have to either enter semantic, syntactic, and discourse codes or input the basic transcript into another program that added them automatically and did a prescribed analysis. Figure 8-7 provides an example of a transcript of Jerry's speech as it would be coded in the SALT program (Miller & Chapman, 2008) and analyzed with the standard SALT profile analysis, comparing Jerry's data to that of children of his age in the SALT database.

In the meantime, let's not forget our other option. To analyze morphological and syntactic production, we also can listen to an audiorecorded speech sample, perhaps the same one we collected for speech sound analysis, and analyze it without transcription. Instead of transcribing, Schuele (2010) suggests we could record data gathered from listening onto a worksheet developed from one of the speech-sample analysis procedures we will discuss. We could stop the recording periodically to process the data and listen again to segments about which we

---

TABLE 8-3   Examples of Computer-Assisted Language Sampling Analysis Software

Procedure	Description
Automated LARSP (Bishop, 1985)	Based on *Language Assessment, Remediation, and Sampling Procedure* (LARSP; Crystal, Fletcher, & Garman, 1976).
Computerized Profiling (Long & Fey, 2004)	Includes routines for calculating MLU, Conversational Act Profile (Fey, 1986), Developmental Sentence Score (DSS; Lee, 1974), Profile of Semantics-Lexical Forms (Crystal, 1982), Profile of Phonology (Crystal, 1982), narrative analysis, and Type-Token Ratio (TTR) on coded transcripts.
DSS Computer Program (Hixson, 1985)	Computes DSS on coded transcripts.
Lingquest (Mordecai, Palin, & Palmer, 1985)	Computes MLU, TTR on coded transcripts.
Parrot Easy Language Sample Analysis (Weiner, 1988)	Calculates MLU on coded transcripts.
Pye Analysis of Language (PAL; Pye, 1987)	Provides options for analysis categories on coded transcripts.
Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2003)	Calculates MLU, NDW, Total Number of Words (TNW), allows user to count words/forms in specific categories and create categories and codes. Includes routines for comparing multiple transcripts.
CHILDES, CHAT and CLAN (MacWhinney, 2009)	Includes a database of transcripts, tutorials on data entry, programs for computer analysis of transcripts, methods for linguistic coding, and systems for linking transcripts to digitized audio and video.

were unsure (this would be especially easy if we had used Transcriber software [Barras et al., 2008] on a digitally recorded sample!). However, we would not need to transcribe the entire sample to record the morphemes and syntactic patterns that we heard. These could simply be recorded on the score sheet as we listened to the recording.

This approach has some disadvantages, of course. We would not have a written transcription to put into a client's file. We might miss some morphemes while we were listening for sentence structures or vice versa. It would not be easy to compute an MLU using such an approach. However, this method would make speech sampling for morphological and syntactic production more practical in

A

```
$ CHILD, EXAMI
+C: Jerry
+GENDER: M
+CA: 4;3
+CONTEXT: CON+
[EW] ERROR AT THE WORD LEVEL+
[EU] ERROR AT THE UTTERANCE LEVEL
- 0:00

    E <OK>.
C <WHAT IS> THIS RIGHT HERE?
    E IT LOOK/3S LIKE A LITTLE TABLE WITH AN UMBRELLA.
C HERE.
C RAIN/3S.
    E FOR WHEN IT RAIN/3S.
    E THAT/'S <RIGHT>.
C <YEP>.
C MORE PEOPLE
    .E <MORE PEOPLE>.
C <ELEPHANT GO>?
    E ELEPHANT GO/3S WHERE?
C RIGHT HERE.
    E OH.
C XX FIT HERE.
    E HE DOES/N'T FIT THERE DOES HE?
C RIGHT HERE.
    E OH OK.
    E THAT LOOK/S LIKE A GOOD IDEA.
    E <OH>.
C <HERE>.
C WHAT <IS> THAT?
    E <LOOK>.
    E IT/'S A HIPPOPOTAMUS.
C OH.
C X HERE TOO.
    E PUT HIM RIGHT THERE TOO?
C YEAH.
    E OK.
    E WHAT ELSE DO WE HAVE IN HERE?
C (THIS) THIS GUY.
C *AND THIS GUY.
    E THAT GUY AND THAT GUY.
C MORE?
C WHAT (IS TH*) IS THAT?
- 1:00
    E THIS IS A OH :03 <I/'M> NOT QUITE SURE.
C <CAR>.
: :02
    E <IT ALMOST LOOK/3S> LIKE A BUFFALO OR
SOMETHING.
C <XXX>.
C POP.
    E HERE/'S THE SEAL.
C YEP.
    E YOU SAW POP BOTTLE/S HUH?
C YEP.
    E THOSE ARE PRETTY CUTE.

: :02
C COKE UP.
    E HEY LOOK WHO I HAVE.
C YEP.
C TWO OF THEM?
    E TWO OF THEM.
C OH.
    E TWO MONKEY/S.
C OH.
: :03
C THIS GO[EW:GOES] RIGHT <THERE> RIGHT?
    E <OH>.
    E YEAH THAT GO/3S RIGHT THERE.
    E LOOKIT.
    E THE GORILLA.
C YEP.
    = E "ROARS", LAUGHS.
: :03
C THIS GO?
    E WHERE SHOULD WE PUT THAT SEAL?
C <YEAH>.
    E <I BET HE> WANT/3S TO BE BY WATER.
    E IS THERE ANY WATER TO PUT HIM BY?
C YEAH.
    E WHERE?
C <WATER>.
    E <OH> MAYBE THIS IS WATER UP HERE HUH?
- 2:00
: :03
C GO UP.
: :06
    E UP!
: :03
    E OK WHAT ELSE?
    E HERE/'S A BIRD.
C <YEAH>.
    E <IT/'S> A PARROT.
C MORE?
    E HERE/'S ANOTHER PARROT.
C (THIS GUY) <THIS>^
    E <HERE/'S A> VULTURE.
    E HE LOOKS^
C THIS *IS YOUR/Z.
    E THAT/'S MINE?
C YEP.
    E THANKS.
    E WE/'LL EACH HAVE A BIRD HUH?
C RIGHT HERE.
    E OH YOU/'RE GONNA PUT YOUR/Z RIGHT UP THERE?
C THERE/'S TWO RIGHT?
    E THERE/'S TWO.
    E YOU/'RE RIGHT.
: :02
C THIS.
: :02
    E OK THAT/'S A GOOD IDEA.
    E TAKE THAT OFF.

: :03
C WHAT DO YOU X.
: :11
- 3:00
    E OK.
C WHAT?
    E WHOA THAT GUY/'S GONNA FALL!
C GET THIS.
C ME GET IT [EU].
    E IS HE OK?
C YEAH.
: :16
= C PLAYING WITH SOMETHING, MAKING NOISE.
C WHAT *IS THIS?
C GO.
C THEM.
: :05
    E OH THE MONKEY HANG/3S BY HIS TAIL.
: :04
C TAIL.
C OH.
C WHERE *DO THESE G0 THEN?
C MONKEY/S.
C MONKEY/S.
    E WHERE DO THOSE MONKEY/S GO?
- 4:00
C YEAH.
: :04
C THERE?
    E THERE!
: :10
    E THERE WE GO.
C MORE?
C IN HERE?
    E IS THERE MORE IN THERE?
C MHM.
C BEER.
    E BEER?
    E ANIMAL/S DON'T DRINK BEER.
: :02
C YEAH.
    E DO THEY?
C YEP.
: :06
C XX THIS.
: :05
C WHAT *ARE THESE?
    E THAT/'S COCACOLA.
    E POP BOTTLE/S.
C OH.
: :02
    E <X>.
C <PEAR/S> GO <HERE>.
    E <HERE/'S>>
    E WHAT?
C PEAR/S GO *HERE.
- 5:00
```

FIGURE 8-7   A, SALT coded transcript of Jerry's speech sample.

B

DATABASE PROFILE COMPARISON:STANDARD MEASURES TRANSCRIPT INFORMATION

Speaker: Jerry (Child)
Sample date: 2/2/07
Current Age: 3;3
Context: Conversation
63 C&I Verbal Utts

Database: WisconsinCon.sdb
Subjects: 18 females, 17 males
Age range: 2;9 - 3;9
Context: Conversation
63 C&I Verbal Utts

STANDARD MEASURES

Language measure	Child		Database				
	Score	+/-SD	Mean	Min	Max	SD	%SD
Current Age	3.25	0.26	3.19	2.75	3.75	0.23	7%
Transcript length							
Total Utterances	69	-0.31	70.17	64	78	3.78	5%
# C&I Verbal Utts	63	0.00	63.00	63	63	0.00	0%
No. Complete Words	120**	-2.73	243.11	179	348	45.05	19%
Elapsed Time (5:00)	5.00	-0.83	6.81	4.18	15.05	2.18	32%
Syntax/morphology							
# MLU in Words	1.62**	-2.72	3.23	2.16	4.46	0.59	18%
# MLU in Morphemes	1.73**	-2.74	3.52	2.37	4.97	0.65	19%
Semantics							
# TTR	0.37*	-1.60	0.44	0.33	0.54	0.04	10%
# No. Diff. Word Roots	38**	-3.16	89.37	66	136	16.25	18%
# Total Main Body Words	102**	-2.72	203.51	136	281	37.34	18%
Discourse							
% Responses to Ques	89%*	1.04	74.90	38	94	14.02	19%
Mean Turn Length (wds)	2.27**	-2.09	4.09	2.63	6.06	0.87	21%
Utts. with Overlaps	13**	2.45	6.54	1	12	2.64	40%
Intelligibility							
% Intelligible Utts.	93%	-0.55	94.94	86	100	4.16	4%
Mazes and abandoned utts							
# Utterances with Mazes	2*	-1.71	10.77	3	22	5.13	48%
# No. of Mazes	2*	-1.64	12.20	3	27	6.21	51%
# No. Maze Words	3*	-1.35	22.97	3	70	14.76	64%
# % Maze Wds/Total Wds	3%*	-1.39	9.73	2	24	4.94	51%
Abandoned Utterances	0*	-1.25	2.40	0	7	1.91	80%
Verbal facility and rate							
Words/Minute	24.00*	-1.29	38.28	12.82	62.33	11.05	29%
Between Utt Pauses	20	-0.14	22.60	0	101	19.09	84%
Between Utt Pause Time	1.57	0.10	1.43	0.00	6.35	1.32	92%
Within Utt Pauses	0	-0.61	0.71	0	5	1.18	165%
Within Utt Pause Time	0.00	-0.57	0.03	0.00	0.28	0.06	176%
Omissions and error codes							
# Omitted Words	6*	1.61	2.31	0	7	2.29	99%
# Omitted Bound Morphemes	0	-0.71	1.17	0	7	1.65	141%
Word-level Error Codes	1	-0.85	3.54	0	14	3.00	85%
Utt-level Error Codes	1	-0.54	1.86	0	7	1.59	86%

Calculations based on C&I Verbal Utts; * at least 1 SD (** for 2 SD) from the database mean.

Database selection criteria: age +/- 6 months

FIGURE 8-7, cont'd **B,** SALT Analysis of Jerry's transcript; compared with age-matched database sample.

a clinical setting, and this, to us, seems a sufficient justification. The recording could always be transcribed later, if a written record is needed or an MLU calculation becomes necessary. It can be listened to again by another clinician if reliability information is wanted. Furthermore, Furey and Watkins (2002) showed strong positive correlations between online recordings and those obtained from transcription when analyzing verb productions. This analysis suggests that online analysis can be a viable alternative to transcription procedures and can reduce the time required for language analysis. However, we should note that this study supported accuracy in online recording for one relatively focused aspect of language production. This should emphasize to us that when analyzing language data from a recording rather than a transcript we need to focus on just one aspect of the analysis at a time.

Three key elements are involved in being able to do speech-sample analysis without transcription: practice, *practice*, and **practice!** The only way to achieve competence and make speech sampling valid and efficient is to be completely familiar with the procedure you are using, to the point of having it memorized. This way, your brain becomes the computer that does the analysis. What you need to make this method work are a firm and detailed knowledge of the normal stages of syntactic acquisition, complete familiarity with the structures assessed in the procedure that you are using, and an organization of the analysis firmly in mind before you start. There is no way to achieve this level of knowledge and familiarity except by doing a lot of practice analyses.

These two approaches to speech sample analysis—nontranscribed and computerized—save time on the opposite ends of the process. The former allows the clinician to listen for features in the sample without writing down every word the child says. The computerized methods require us to transcribe the sample, but the computer does the searching and counting automatically. Both methods are faster than transcribing and analyzing by hand, but both require the clinician to—again—practice, practice, practice to make the process efficient. Clinicians committed to doing speech sample analysis can choose their weapon. If you like working with computers, by all means review Price et al. (2010), get one of the speech sample analysis packages, and learn to use it. The investment of time will pay off in a greatly enhanced ability to sample and analyze your clients' speech.

Perhaps, though, you are not a "computer nerd." If you prefer to work with a pencil, devote some time to studying one of the speech-sample analysis methods we'll discuss next. If you choose one procedure and—you guessed it—practice, practice, practice, you can greatly reduce the time it takes to perform the analysis by hand. When you know one procedure well enough, you'll find you don't need to transcribe every sample but will be able to score it directly from your recording. Either way, you will have performed a great service to your clients. You will have learned to make efficient use of the most valid means of assessing a child's productive language.

One more thing: any speech sample analysis procedure requires a fairly elaborated knowledge of English grammar and of normal language development. Hubbell (1988); Justice and Ezell (2002); Quirk, Greenbaum, Leech, and Svartick (1990); and Parker (1986) all supply helpful background information on the basics of English linguistics. Gleason (2001), Haynes and Shulman (1998b), Hoff (2001), Hulit and Howard (2002), Miller (1981), and Owens (2009) provide detailed accounts of the acquisition of English syntax and morphology. Owens (2009) and Retherford (2006) provide step-by-step guides to analyzing language transcripts and provide

information on semantic and pragmatic as well as syntactic and morphological procedures. Extensive information on collecting and transcribing samples also is included in Owens (2009), Price et al. (2010), and Retherford (2006). Retherford provides sample transcripts and audio samples for guided practice and feedback that are very useful in developing the expertise necessary to accomplish language sampling efficiently. These sources are useful references for any clinician beginning the process of speech-sample analysis.

Let's look at some of the *speech sample analysis procedures* available for examining spontaneous speech. Hubbell (1988), Lahey (1988), Lund and Duchan (1993), Owens (2009), and Retherford (2006) provided guidelines for analyzing spontaneous speech using informal, descriptive approaches. Crystal, Fletcher, and Garman (1976) and Tyack and Gottsleben (1977) provided somewhat more formalized approaches that allow the clinician to use the analysis to determine presence of disorder and intervention targets. We will give you some more detailed information on the procedures devised by Lee (1974), Miller (1981), and Scarborough (1990). This is not intended as an endorsement of these procedures over the others. They are simply chosen as a sample of some of the more commonly used procedures. Use of *any* speech sampling analysis goes a long way toward making our assessments of children with developing language more valid measures of real communicative skill.

Miller's (1981) Assigning Structural Stage Procedure is a two-step process. The first involves the analysis of Brown's (1973) grammatical morphemes. The second looks at sentence types and structures. Much of the analysis is available in a computer-assisted form, the SALT program. If you do the analysis by hand, you may transcribe the sample and compute MLU from the transcription, then use the transcription for further analyses. As we suggested earlier, for MLUs less than 3, semantic relational analysis or Lahey's (1988) content-form analysis may be most informative. For samples with MLUs between 3 and 4.5, analysis might focus on basic morphological and syntactic markers in simple sentences. For MLUs greater than 4.5, complex-sentence development might be the primary area of assessment. Alternatively, you can do each step of the two-step analysis on a separate pass by listening to the recorded sample without transcribing or computing MLU. Figures 8-8 and 8-9 provide sample worksheets to use for each step in the analysis.

Miller has assigned each of Brown's (1973) grammatical morphemes to the stage of syntactic development in which it is acquired (contractible and uncontractible forms of the copula and of the auxiliary *be* have been collapsed in Figure 8-8, so the total number of morphemes examined is 12, not the traditional 14). According to Brown, a morpheme is *acquired* when it is used correctly in 90% of its obligatory contexts. An *obligatory context* (OC) is a place in the sentence that requires the morpheme to make the sentence grammatically correct. "I have two new shoe_" for example, is an obligatory context for the plural morpheme. These stage assignments are based on Brown's stages indexed by MLU, although you do not need to compute MLU to do the analysis. You'll notice that some morphemes are acquired in stages II, III, V, and V+, but none in stage IV. That's because many forms emerge in IV but are not acquired until later (that is, they are not used correctly 90% of the time in stage IV). We'll see these emerging forms when we do the second step of the Assigning Structural Stage Procedure.

To do the morpheme analysis, note when each morpheme is used and also when it is required. This allows us to look at correct

FIGURE 8-8 Worksheet for analyzing grammatical morpheme use.

Brown's stage

II

-ing	
obligatory context	realization

in	
oc	r

plural	
oc	r

III

on	
oc	r

possessive	
oc	r

articles	
oc	r

copula *be*	
oc	r

V

regular past	
oc	r

irregular past	
oc	r

regular 3rd sing.	
oc	r

V+

auxiliary *be*	
oc	r

irregular 3rd sing.	
oc	r

usage in obligatory context. That's why there is a column for "obligatory context" and one for "realization" on the form in Figure 8-8. As we listen to the sample, we note when a particular morpheme is required in context (with a "+" in the "obligatory context" column, for example). Then in the "realization" column, we put a "+" if a morpheme is used and a "−" if it is not. When we have listened to the whole sample, we count the number of checks in the "obligatory context" column for each morpheme and divide that number into the number of "+"s that appeared in the "realization" column. This would give us the percentage of appearance of each morpheme in obligatory context. We could then use this information to help decide which morphemes should be targeted in the intervention program. Balason and Dollaghan (2002) warn us, however, that even typical preschoolers do not routinely produce multiple examples of obligatory contexts for all of these morphemes in short speech samples. When interpreting data on grammatical morpheme production, we may need to supplement information from free speech samples with data from probes that attempt to elicit the production of morphemes for which obligatory contexts did not appear in a spontaneous sample.

Let's practice what we've been preaching. Take the short transcript in Box 8-5. (Remember, we ordinarily want to use at least 50 utterances to do a grammatical morpheme analysis.) Try doing a grammatical morpheme analysis on it, using a worksheet such as the one in Figure 8-8. You'll find our analysis in Appendix 8-5.

The second step in Miller's procedure involves analysis of sentence structures. Miller's procedure for this part of the analysis draws on research from normal language acquisition. His manual (Miller, 1981) provided normative data in a set of charts. The child's performance is compared with the data in these charts and assigned to the Brown's stage at which normally speaking children typically first use each form. Again, the stages are indexed by MLU, although it is not absolutely necessary to compute MLU to do the analysis. Rather than using an acquisition or mastery criterion, as the grammatical morpheme analysis does, the sentence-structure procedure uses an *emergence* criterion (that is, stage assignment is based on the appearance of just one instance of a structure). The assumption

made is that one or two instances in a relatively brief speech sample indicate that a form is emerging into the repertoire.

Miller's procedure looks at the following five aspects of sentence structure development:

NP: The elaboration of noun phrases (with articles, demonstratives, pronouns, and quantifiers)

VP: The elaboration of verb phrases (with auxiliary verbs, catenatives, copulas, past-tense marking, and subject-verb agreement marking)

NEG: The production of negative sentences

Q: The production of questions (both yes/no and *wh-*)

COMPLEX: The use of complex sentences

Miller (1981) provided explicit instructions for scoring each form examined in the analysis, with definitions and examples of each of the forms included. Figure 8-9 provides a form that can be used in the Assigning Structural Stage Procedure, showing how forms can be assigned to the stage of development at which each typically appears.

To use Figure 8-9 to accomplish Miller's (1981) Assigning Structural Stage Procedure, we would listen again to our recorded speech sample, utterance by utterance, stopping at the end of each utterance to score it in all appropriate categories. Alternatively, we could score each utterance in a transcription, if we did one. Each utterance would be given the highest score possible in each of the areas (columns in Figure 8-9) for which a score could be given.

To score for NP, each utterance is given the highest score possible for each noun phrase (subject, object of the verb, or predicate nominative) it contained. For example, if a client's utterance 1 is "See big girl," this would receive an NP score of Stage II, because a modified noun occurred in object position in the sentence. The number "1" would be written in the NP/Stage II "S" section of the worksheet. If utterance 2 is "That girl," this utterance would be placed at stage I of NP elaboration, since the modified noun occurs alone, not in a sentence context. A "2" would be written in the "S" column of that section of the form. Noun phrases in subject position are obligatory at Brown's Stage IV. Since this is the case, any

Name _____ Developmental level _____ Age _____ Date _____

Stage	NP	S*	A⁺	VP	S*	A⁺	Negative	S*	A⁺	Question	S*	A⁺	Complex	S*	A⁺
I	NP alone (not in sentence context) with modifier Pronouns:*I, me*			Unmarked V Absent copula Absent auxiliary			*No* or *not* + NP or VP			Routines: *What . . .? What .. . doing? Where .. . going?*					
II	Noun modified in object position Pronouns: *my, it*			Main V marked occasionally *-ing* w/o *be* Catenative alone w/o NP Copula appears occasionally			NP + {*No, not, can't,* or *don't*} + VP			*What* or *Where* + (N) + V					
III	Modified NP may appear in subject position Demonstratives *(this, that, these, those)* and articles *(a, an, the)* appear Pronouns:*you, your, she, them, he, we, her*			Auxiliaries: *can, will* Overgeneralized past tense			*Won't*			Aux.Vs appear in Wh-Qs, W/o inversion Yes-no Qs produced w/ rising intonation only Q words:*why, who, how, whose*					
EIV	Subject NP is obligatory; appears in all sentences			Past modals: *could, should, would, must, might* Catenative + NP			*Isn't, aren't, didn't, doesn't*			Auxiliary Vs and "dummy do" forms appear in wh- and yes/no Qs and are inverted Q words:*when*			*Let's, Let me* Simple infinitive Full proposition Simple wh- Conjoining Conj.:*and*		
LIV-EV	NP can contain three elements Pronouns: *his, him, us, they, our, its*						*Wasn't, weren't, couldn't, wouldn't, shouldn't*						Double embedding Conjoining and embedding w/in one S		
LV	Pronouns: *myself, yourself, their*												Infin. w/ diff.subj. Relative clause Conj.:*if*		
V+	Pronouns: *herself, himself, themselves, ourselves*			have + *en*									Gerund Wh- infinitive *Help, make, watch, let* Conj.:*because*		
V++													Conj.: *when, so*		

*Successful use.
†Attempt; incorrect use.

FIGURE 8-9   Form for scoring Miller's (1981) Assigning Structural Stage Procedure.   (Based on Miller, J. [1981]. *Assessing language production in children*. Needham Heights, MA: Allyn and Bacon.)

sentence that contained a *two-word* noun phrase *as subject* would be scored as Stage IV, regardless of the type of modification, because Stage IV would be the highest stage assignment that could be given to such a sentence. If the client's third utterance were "That girl run," this utterance would be scored at Stage IV of NP elaboration, and a "3" written in the "S" column of that section of Figure 8-9. Any sentence containing a noun phrase of three or more words *(great big dog, a nice girl)* would be scored at Stage late IV to early V.

Similarly, the verb phrase in each sentence would be given the highest score possible. Utterance 3, "That girl run," which was scored as stage IV of NP elaboration, would be scored in the VP elaboration column at Stage I, since the verb is unmarked. A "3" would be written in the "S" column of "unmarked V" on Figure 8-9. If the client's fourth utterance were "I wanna go," a VP score of Stage II would be given because the catenative *gonna* was used without a noun phrase complement. A "4" would be recorded in the "S" column of "catenative alone w/o NP."

Any sentence containing a negative form would be given the highest "neg" score possible, in addition to whatever scores were appropriate for NP and VP elaboration. If the client's fifth utterance were, "I won't stay," the score would be Stage III, since *won't* appears at Stage III on the chart. A "5" would be written in the "S" column of that section of Figure 8-9. Each yes/no question would be scored according to whether it was produced with rising intonation only ("You wanna go?"—Stage III) or with an inverted auxiliary verb or *do* ("Do you wanna go?"—Stage IV). *Wh-* questions would be scored according to both the form of the question and the question word used. For example, if the client said, "When you are going?", he would receive a score of Stage III for the uninverted auxiliary (are going) and Stage IV for the question word *when.*

If any complex sentences, either embedded or conjoined, occur in the transcript, these would be scored in the complex sentence column. Miller (1981) provided detailed descriptions of the types of complex sentences typically seen in the speech of normal preschoolers. The types of embedding the child uses are scored in the complex sentence column. If, for example, the client said, "He's the one that I played with," a score of Stage late V would be given for the relative clause ("that I played with").

Certain conjunctions appear on the worksheet because they are used frequently by normal preschoolers. If these appear in a client's sample, they can be scored appropriately. If a client says, "I like it because it's chocolate," a score of early Stage IV can be given in the complex sentence column for a conjoined sentence, and a score of V+ can be given for the conjunction *because.* You also can note in the Attempt (A) column when forms are unsuccessfully attempted. By this we mean when a context for a form occurs but the correct one does not appear. For example, for utterance No. 3 *(That girl run)*, you *also* could put "3" in the "A" column for the VP Stage II (main V marked occurs occasionally), since a marker (third person singular) should have been there. At this point you might like to try doing a sentence-structure analysis on the sample in Box 8-5. (Remember that we ordinarily want to use at least 50 utterances to perform sentence-structure analysis.) Refer to Miller (1981) as you go, if you have the book available. Try using a worksheet such as the one in Figure 8-9 to practice analyzing the sample for sentence structures. Our analysis appears in Appendix 8-6.

Miller's procedure is descriptive in nature and does not yield a quantitative score. When we have completed both steps in the analysis, we can look across all the categories we have analyzed and identify the stage at which most of the child's scores are falling. This would be considered the child's stage of *mastery.* Any forms missing or in error (attempts) below this stage would be high-priority candidates for intervention, taking into account, of course, other considerations that we discussed in Chapter 3. We would then look for forms missing or attempted at the mastery level. These forms, too, would be candidates for consideration as intervention goals.

It's important to remember, when looking at the results of this and other syntactic analyses, that children with both normal and disordered language usually don't use structures that all score consistently at one level. Some scatter is expected. When looking for targets of intervention, though, we would want first to address forms that are missing or in error below the current baseline, or mastery level. These make appropriate short-term goals. Forms above the current mastery level would be good guides for choosing structures that could improve the child's overall level of functioning and move it closer to an age-appropriate level. This strategy

would help to achieve the long-term goal of bringing the client's communicative skills more in line with developmental level.

Scarborough (1990) presented a norm-referenced extension of Miller's (1981) procedure called the *Index of Productive Syntax* (IPSyn). The IPSyn uses a "productivity criterion" of two appearances of each structure of interest within a 50- to 100-utterance speech sample. Any structure that appears twice in the sample is considered "productive," or within the child's current repertoire. The procedure is efficient in terms of time because only the first two appearances of any structure need to be counted, not the total frequency. The IPSyn orders a broad range of structures in each of Miller's five categories developmentally, so it is easy to identify emerging language levels. It includes many of the structures examined by Miller, and it adds several that Scarborough's research has shown to be diagnostic in children's speech. A sample IPSyn score sheet appears in Figure 8-10.

Although not technically standardized, the IPSyn does provide norm-referenced information from a small sample of preschool children with typical language acquisition. Of course, in general we have already decided that a child has a language disorder before analyzing a speech sample. The IPSyn's norm-referenced information can be used to track progress in an ongoing intervention program, though, as MLU can. But unlike MLU, an IPSyn score used for tracking also gives detailed information on syntactic structures used. If we can show with an IPSyn score that the child is moving closer or into the normal range on structures that we have targeted in the program, we are in a stronger position to argue for our program's efficacy. Moreover, the structural information from the procedure can help decide which syntactic goals have been met and which need additional intervention. Long and Fey's (2004) *Computerized Profiling* contains a software program to accomplish this analysis on entered transcripts.

The IPSyn also can be adapted as a criterion-referenced procedure to look at structures that are productive in a child's repertoire, to identify levels of emerging language, and to find structures currently missing from the repertoire that can be targeted for intervention. Although the procedures and scoring criteria for accomplishing an IPSyn are too extensive to be given here, clinicians who want to combine norm- and criterion-referenced assessment in speech sampling may want to locate Scarborough's (1990) paper in *Applied Psycholinguistics* and try the procedure. This method is worth investigating before you decide which speech sample procedure you choose to study in-depth and use in clinical practice.

A third method of speech sample analysis commonly used by clinicians is Lee's (1974) Developmental Sentence Score (DSS) procedure. Like the IPSyn, the DSS provides both norm- and criterion-referenced information. Hughes, Fey, and Long (1992) argued that, despite the fact that this procedure is close to 40 years old, it is, in their words, "still useful after all these years." The reasons for its longevity include its relatively large norm-referenced data base (more than 200 children), its well-organized format that enables easy visual inspection of a variety of forms at different developmental levels, and its broad range of structures scored in a way that makes diagnostic interpretation possible. Moreover, recent work has moved toward making automated DSS analysis workable (Channell, 2003).

The DSS procedure looks at eight syntactic categories: indefinite pronouns, personal pronouns, main verbs, secondary (embedded) verbs, negative markers, conjunctions, interrogative reversals, and *wh-* question forms. In each category are eight developmentally ordered levels of complexity, which are awarded scores from one point for the simplest level to eight points for the most complex.

INDEX OF PRODUCTIVE SYNTAX

IPSyn Scoresheet

TOTAL IPSyn SCORE [ ]

Noun Phrases Subscale

item	cr	exemplar 1	exemplar 2	pts*
N1 noun				
N2 pronoun				
N3 modifier				
N4 2wd NP				
N5 article	N4			
N6 V+2wd NP	N4			
N7 plural				
N8 preV NP	N4			
N9 3wd NP	N4			
N10 NP adv.	V8			
N11 bound				
N12 other NP				

Verb Phrases SubScale

item	cr	exemplar 1	exemplar 2	pts*
V1 verb				
V2 part/prep				
V3 prep. phr.	V2			
V4 copula	V1			
V5 caten.				
V6 pres.aux	V5			
V7 -ing				
V8 adverb				
V9 pres.mod	V5			
V10 pres.-s				
V11 past mod	V9			
V12 past -ed				
V13 past aux	V6			
V14 med. adv	V8			
V15 ellip/em	*			
V16 past cop	V4			
V17 other VP				

Questions/Negations Subscale

item	cr	exemplar 1	exemplar 2	pts*
Q1 inton. Q				
Q2 rout. Q				
Q3 no(t) X				
Q4 Wh-(N) V				
Q5 N not V	Q3			
Q6 Wh- aux.	Q4*			
Q7 neg aux.	Q5			
Q8 y/n aux.	*			
Q9 Why, etc.				
Q10 tag Q				
Q11 other Q/N				

Sentence Structures Subscale

item	cr	exemplar 1	exemplar 2	pts*
S1 2 words				
S2 S-V	S1			
S3 V-D.O.	S1			
S4 S-V-O	S2,S3			
S5 any conj.				
S6 any 2-VP				
S7 conj.phr.	S5			
S8 infin	V5,S6			
S9 Let's, etc.				
S10 adv.conj.	S5			
S11 pr. compl.	S6			
S12 s-conj-s	S6			
S13 Wh- cl.	S6			
S14 bitrans.	S3			
S15 3-VP sent	S6			
S16 rel. cl.	S6			
S17 infin-2	S8			
S18 gerund	V7,S6			
S19 move sub	S6			
S20 other SS				

NOUN PHRASES TOTAL [ ] VERB PHRASE TOTAL [ ] QUESTION/NEGATIVE TOTAL [ ] SENTENCE STRUCTURE TOTAL [ ]

*V4, V6, V11, V13 or V16

* Score 1 point for each of first two exemplars in transcript. Record 0, 1 or 2 in pts. column, depending on number of exemplars found.

FIGURE 8-10 Index of Productive Syntax (IPSyn) scoresheet. (From Scarborough, H. [1990]. Index of productive syntax. *Applied Psycholinguistics, 11*, 6-7. Reprinted with permission from Cambridge University Press.)

Lee's summary of these levels, categories, and scores appears in Table 8-4. Structures in each of the eight categories are scored by assigning the appropriate number of points to each scorable structure that is present in a complete noun-verb (subject-predicate) utterance in the speech sample. In addition, a "sentence point" is added to the score of each sentence that is completely correct by adult standards. Since the DSS does require 50 complete noun-verb utterances for scoring, it is only appropriate for children whose speech contains primarily full sentences, rather than telegraphic utterances. In general, this would translate to a rule of thumb that the DSS would only be used for children whose MLUs are greater than 3.

Complete scoring instructions for the DSS can be found in Lee (1974). To do this analysis we inspect the speech sample, utterance by utterance, for structures in each of the eight categories and award points for each structure identified, according to the criteria in Table 8-4. For example, if the client said, "Don't you like ice cream?" we would inspect this sentence for structures in each of the eight categories. The *don't* would be scored in the Negative column with 4 points. It also would receive 4 points in the Main Verb column (for *don't like*), as "obligatory do + verb." (It is a peculiarity of the DSS that verbs can receive scores in several of the eight columns.) *You* would receive one point in the Personal Pronoun column. The sentence also would receive six points in the Interrogative Reversals column for the obligatory reversal of *don't* ("You don't like ice cream."/"Don't you like ice cream?"). It also would earn a sentence point for overall correctness. No points could be scored in the Indefinite Pronoun, Secondary Verb, or *Wh-* Question columns for this sentence. Attempt marks (-) are used to indicate that a structure was tried but produced in error. For example, the sentence "I running" would receive an attempt mark (-) in the Main Verb column. Attempt marks receive no numerical score, but they can be inspected at the end of the analysis for error patterns.

Lively (1984) provided useful tips to improve accuracy and efficiency of DSS scoring. Hughes, Fey, and Long (1992) also provided suggestions for clarifying some ambiguous criteria in Lee's manual and for modifying a few rules to make the procedure more clinically useful. These papers are valuable resources for clinicians who decide to make the DSS the language-analysis procedure they implement in clinical practice. Channell (2003), Channell and Johnson (1999), Hixson (1985), and Long and Channell (2001) discuss computerized scoring programs for the DSS.

TABLE 8-4 The Developmental Sentence Scoring Reweighted Scores

Score	Indefinite Pronouns or Noun Modifiers	Personal Pronouns	Main Verbs	Secondary Verbs
1	*It, this, that*	1st and 2nd person: *I, me, my, mine, you, your(s)*	**A.** Uninflected verb: "I *see* you." **B.** Copula, *is*, or *'s*: "*It's* red." **C.** Is + verb + ing: "He *is running*."	
2		3rd person: *he, him, his, she, her, hers*	**A.** *–s* and *ed*: *plays, played* **B.** Irregular past: *ate, saw* **C.** Copula: *am, are, was, were* **D.** Auxiliary: *am, are, was, were*	Five early-developing infinitives: "wanna *see*" ("want to *see*") "I'm gonna *see*." (going to *see*") "I gotta *see*." ("got to *see*") "Lemme [to] *see*." ("let me [to] *see*") "Let's [to] *play*." ("let [us to] *play*")
3	**A.** *No, some, more, all, lot(s), one(s), two (etc.), other(s), another* **B.** *Something, somebody, someone*	**A.** Plurals: *we, us, our(s), they, them, their* **B.** *These, those*		Noncomplementing infinitives: "I stopped *to play*." "I'm afraid *to look*." "It's hard *to do* that."
4	*Nothing, nobody, none, no one*		**A.** *Can, will, may* + verb: *may go* **B.** Obligatory *do* + verb: *don't go* **C.** Emphatic *do* + verb: "I *do see*."	Participle, present or past: "I see a boy *running*." "I found the toy *broken*."
5		Reflexives: *myself, yourself, himself, herself, itself, themselves*		**A.** Early infinitival complements with differing subjects in kernels: "I want you *to come*." "Let him [to] *see*." **B.** Later infinitival complements: "I had *to go*." "I told him *to go*." "I tried to *go*." "He ought *to go*." **C.** Obligatory deletions: "Make it [*to*] go." "I'd better [*to*] go." **D.** Infinitive with *wh*-word: "I know what *to get*." "I know how *to do* it."
6		**A.** *Wh*-pronouns: *who, which, whose, whom, what, that, how many, how much*: "I know *who came*." "That's *what* I said." **B.** *Wh*- word + infinitive: "I know *what* to do." "I know *who(m)* to take."	**A.** *Could, would, should, might* + verb: *might come, could be* **B.** Obligatory *does, did* + verb **C.** Emphatic *does, did* + verb	
7	**A.** *Any, anything, anybody, anyone* **B.** *Every, everything, everybody, everyone* **C.** *Both, few, many, each, several, most, least, much, next, first, last, second (etc.)*	*(His) own, one, oneself, whichever, whoever, whatever*: "Take *whatever* you like."	**A.** Passive with *get*, any tense Passive with *be*, any tense **B.** *Must, shall* + verb: *must come* **C.** *Have* + verb + *en*: "I've *eaten*." **D.** *Have got*: "*I've got* it."	Passive infinitival complement with *get*: "I have *to get dressed*." "I don't want *to get hurt*." With *be*: "I want *to be pulled*." "It's going to *be locked*."
8			**A.** *Have been* + verb + *ing*, *had been* + verb + *ing* **B.** Modal + *have* + verb + *en*: *may have eaten* **C.** Modal + *be* + verb + *ing*: *could be playing* **D.** Other auxiliary combinations: *should have been sleeping*	Gerund: "*Swinging is* fun." "I like *fishing*." "He started *laughing*."

Reprinted with permission from Lee, L. (1974). *Developmental sentence analysis*. (Chart 8 on pages 134–135) Evanston, IL: Northwestern University Press.

Negatives	Conjunctions	Interrogative Reversals	Wh-Questions
It, this, that + copula or auxiliary *Is, 's* + *not*: "It's *not* mine." "This is *not* a dog." "That is *not* moving."		Reversal of copula: "*Isn't* it red?" "*Were they* here?"	
			A. *Who, what, what* + noun: "*Who* am I?" "*What* is he eating?" "*What book* are you reading?" **B.** *Where, how many, how much, what . . . do what . . . for*: "*Where* did it go?" "*How much* do you want?" "*What* is he *do-ing*?" "*What* is a hammer *for*?"
	And		
Can't, don't		Reversal of auxiliary *be*: "*Is he* coming?" "*Isn't he* coming?" "*Was he* going?" "*Wasn't he* going?"	
Isn't, won't	**A.** *But* **B.** *So, and so, so that* **C.** *Or, if*		*When, how, how* + adjective: "*When* shall I come?" "*How* do you do it?" "*How big* is it?"
	Because	**A.** Obligatory *do, does, did*: "*Do* they run?" "*Does* it bite?" "*Didn't* it hurt?" **B.** Reversal of modal: "*Can* you play?" "*Won't* it hurt?" "*Shall* I sit down?" **C.** Tag question: "It's fun, *isn't it*?" "It isn't fun, *is it*?"	
All other negatives: **A.** Uncontracted negatives: "I *cannot go*." "He has *not* gone." **B.** Pronoun-auxiliary or pronoun-copula contraction: "I'*m not* coming." "He'*s not* here." **C.** Auxiliary-negative or copula-negative contraction: "He was*n't* going." "He has*n't* been seen." "It could*n't* be mine." "They are*n't* big."			*Why, what if, how come, how about* + gerund: "*Why* are you crying?" "*What if* I won't do it?" "*How come* he is crying?" "*How about* coming with me?"
	A. *Where, when, how, while, whether (or not), till, until, unless, since, before, after, for, as, as* + adjective + *as, as if, like, that, than*: "I know *where* you are." "Don't come *till* I call." **B.** Obligatory deletions: "I run faster *than* you [run]." "I'm *as* big *as* a man is [big]." "It looks *like* a dog [looks]." **C.** Elliptical deletions (score 0): "That's *why* [I took it]." "I know *how* [I can do it]." **D.** *Wh*-words + infinitive: "I know *how* to do it." "I know *where* to go."	**A.** Reversal of auxiliary *have*: "*Has he* seen you?" **B.** Reversal with two or three auxiliaries: "*Has* he *been* eating?" "*Couldn't* he *have been* crying?" "*Wouldn't* he *have been* going?"	*Whose, which, which* + noun: "*Whose* cat is that? "*Which* book do you want?"

Normative data on DSS scores in relation to age in typically developing children, as presented by Lee, appear in Figure 8-11. To use this graph, we identify the child's age (or developmental level) and read up to the DSS score computed for that child's transcript. If the score falls below the 10th percentile line for that age (or developmental level), we would conclude that the child had a language deficit. We also would be justified in reporting an age-equivalent score, based on the same graph. To find the age equivalent, we would simply read across from the child's DSS score to the 50th percentile line, then read down to determine the age for which that score fell on the 50th percentile. If our client is 5 years, 6 months and earned a DSS score of 5, for example, we would see that a DSS of 5 falls at the 50th percentile for 3-year-olds. So this client's DSS age equivalent would be 3:0. *Remember,* though, that it is only appropriate to report an age-equivalent score if the score falls below the 10th percentile for the child's age. If our 5-year, 6-month-old client got a DSS of 8, we would simply report that this score fell at the 25th percentile for age and was within the normal range.

Like the IPSyn, the DSS can be used as a criterion-referenced procedure, too. Hughes, Fey, and Long (1992) suggested four ways to examine the DSS for goal selection and intervention planning. These are summarized in Box 8-6.

Figure 8-12 provides a worksheet that could be used in scoring a DSS analysis. Why not try using these criteria, along with information from Hughes, Fey, and Long (1992), Lee (1974), and Lively (1984), to score the sample in Box 8-7? Remember that you need noun-verb utterances to score in the DSS, and in a real clinical sample you would need 50 of them. If you don't find 50 noun-verb utterances in Box 8-7, do the analysis on the ones you find, remembering that you will need 50 to get a valid score from a client. My analysis appears in Appendix 8-7.

Elicited Procedures

One drawback in using speech sampling to assess productive syntax and morphology is that the child may not spontaneously produce all the aspects of language in which we are interested. When talking to an unfamiliar adult, for example, a child may be unlikely to produce questions and negative forms, for pragmatic reasons. If these forms simply do not appear in spontaneous speech, how can we know what the child's skills in these areas are? The advantage of criterion-referenced assessment is that we can combine approaches as needed to give us access to additional information. One strategy for doing a criterion-referenced production assessment would be to collect a sample of spontaneous communication, record and analyze it, and identify any structures or functions of interest that did not appear in the sample, in addition to those that appear to be in error. We could then use the strategy we discussed in Chapter 2. An elicited production procedure could be devised to try to get some evidence about these forms. If the child still failed to "take the bait" in the elicited production activity, direct elicited imitation ("Say, 'He is going.'") might be tried as a last resort.

For example, Loeb, Pye, Redmond, and Richardson (1996) provided a procedure for eliciting verb forms. They argue that verbs are an especially important part of the child's lexicon to evaluate because it is known that children with language disorders have particular troubles in acquiring verbs and in using verbs that are precise and varied (Rice & Bode, 1993). Language samples may fail to show whether the child is able to produce some of these more precise and differentiated verbs, so an elicited probe makes sense as a follow-up to speech sample analysis. Loeb et al. identified a set of verbs of various syntactic types and semantic categories and

developed a task in which to elicit them. Their research showed significant differences between typical 4-year-olds and those with disordered language in the ability to produce specific verbs in the elicitation task. These differences were particularly strong for verbs that were lower in their frequency of use (70% of the low frequency verbs were produced correctly by children with typical development, whereas only 55% were produced correctly by children with language disorders). Table 8-5 presents the contexts used to elicit the low frequency verbs.

Questions are another good example to consider. Suppose a client did not produce any questions in a spontaneous speech sample, but use of negatives and auxiliaries suggested that questions might be a problem. A clinician might want to try a quick question elicitation, just to see what questions looked like. Here, a procedure such as the "shy puppet" activity could be used. The "shy puppet" activity is outlined in Table 8-6. Similar activities could be devised to elicit any form of interest that failed to show up in a sample of spontaneous speech.

Complex sentences are another important area of development during this phase. Eisenberg (2005) suggested an elicitation technique that allows us to assess both the production and understanding of sentences with infinitive clauses, one of the first complex types to emerge. Examples are shown in Table 8-7, and the complete protocol, along with a discussion of the levels of difficulty for the tasks, can be found in Eisenberg's paper.

Lund and Duchan (1993), Miller (1981), Redmond (2003), Rowland and Theakston (2009), and Theakston and Rowland (2009) provided additional examples of procedures for eliciting particular language forms. If the child does not produce the form of interest in the elicited format, the clinician could ask the child to imitate the form directly.

Pragmatic Assessment

Although there are tests designed to assess pragmatic skills in children, a "test" of pragmatics is almost a contradiction in terms. Since pragmatics involves the use of language for real communication, we need to assess it in a more naturalistic context, and this implies using criterion-referenced or informal procedures.

Why do we need to assess pragmatics? In our view, the pragmatic assessment supplies two important pieces of information about our clients. First, it can tell us whether clients are stronger or weaker in pragmatic communication relative to their skills in semantics, syntax, and phonology. Bishop, Chan, Adams, Hartley, and Weir (2000), for example, showed that there is a subset of children with specific language impairments who have pragmatic difficulties over and above their problems with language form and content. Children with autism spectrum disorders (Tager-Flusberg, Paul, & Lord, 2005) and those with nonverbal learning disabilities (Volden, 2004) are additional groups for whom pragmatic skills may be a special difficulty. For children with strong pragmatic skills, the clinician can target language forms in both structured and naturalistic contexts with confidence that, once learned, new skills will be incorporated into the clients' communicative repertoire. For clients who do not effectively use the language they have for communication, clinicians will be less willing to make this assumption. Language goals would be taught first in structured activities. Later, carefully scaffolded activities would work toward getting the child to use new language forms in more varied communicative contexts. The clinician would set up naturalistic situations in which the use of the new forms could be modeled for the
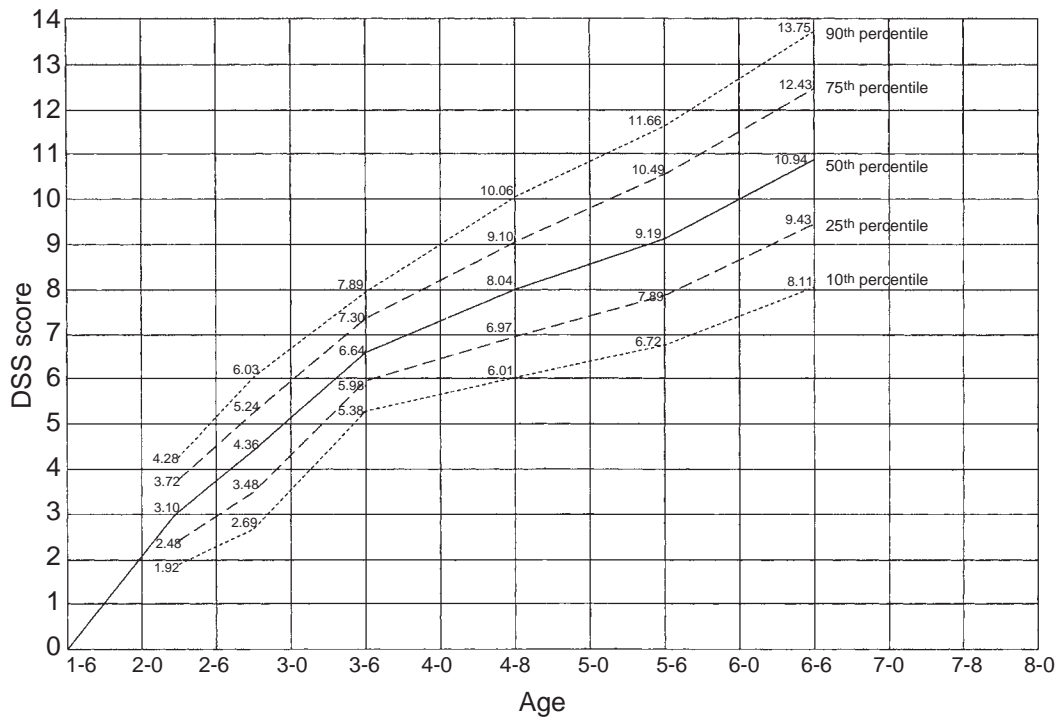
FIGURE 8-11 Age-DSS score relationships. (Reprinted with permission from Lee, L. [1974]. *Developmental sentence analysis* [p. 16]. Evanston, IL: Northwestern University Press.)

BOX 8-6 Suggestions for Using DSS Information for Goal Selection and Intervention Planning

1. Note the frequency of attempt marks for each category. Select a grammatical target that the client is attempting to produce but producing incorrectly.
2. If many low-scoring forms are produced correctly but high-scoring forms are scarce, select forms that are at the level just above those the child is currently producing correctly.
3. Analyze sentences that did not receive a sentence point for patterns of error. If a pattern, such as leaving out articles, is found, target this grammatical class.
4. Examine the frequency of occurrence of forms for each category. Identify infrequent forms at the same level as other forms the child produces consistently and try to increase the frequency of use of the infrequent forms.

Adapted from Hughes, D., Fey, M., & Long, S. (1992). Developmental sentence scoring: Still useful after all these years. *Topics in Language Disorders, 12,* 1-12.

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child. Then the clinician would provide opportunities for the child to use the new form in situations similar to the model. Generalization of new forms to conversation cannot be assumed for the poor communicator, and structured generalization activities, such as those discussed in Chapter 3, are especially important.

The second purpose of assessing pragmatic skills is to identify the pragmatic contexts in which new forms should be practiced. If a child has problems with pragmatic functions, we need to teach the language necessary to achieve those functions. Then we need to provide guided practice, through hybrid and child-centered approaches, in using the newly learned forms to accomplish the pragmatic functions with which the child has trouble. A list of the kinds of pragmatic problems often reported in children with language impairments appears in Table 8-8.

There is one more purpose for pragmatic assessment: to identify the particular problems in conversation and interaction faced by the small group of children for whom pragmatic skills are the only or primary area of deficit. At the preschool level, these children are rare, but a few with diagnoses such as high-functioning autism (see section on ASD, below), nonverbal learning disabilities, or pragmatic language impairment (PLI) may be part of your caseload. For this small group of preschoolers, pragmatic assessment may constitute the main portion of the evaluation.

A variety of procedures have been proposed for looking at pragmatic skills in communicative interactions. O'Neill (2007) provides a parent report measure of pragmatic skills for children 18 to 47 months of age that has well-established psychometric properties and is very useful for identifying pragmatic difficulties in children both with and without other communication disorders. Girolametto (1997) also developed a parent-report measure for profiling pragmatic skills in preschoolers. This measure has demonstrated good internal consistency and test-retest reliability. As

Name _____

Birth date _____

Recording date _____

CA:

$DSS =$ Total score ÷

Numbers of utterances (50)

Sentence #	Indef. pro.	Pers. pro.	Main verb	Sec. verb	Neg.	Conj.	Inter. rev.	Wh- Q	Sent. pt.	Total

FIGURE 8-12 Sample DSS scoring worksheet.

BOX 8-7 Sample Transcript from a Child Aged 4 Years, 8 Months for DSS Practice

Child (C) 1: I got one for you.
    Parent (P) : Oh, you got one, OK.
    P: What else do I get?
C2: Got there.
    P: What's that?
C3: I can't remember.
    P: Well, what are we going to play?
C4: These cups.
    P: What is this?
C5: A box to put something in.
C6: Oh two, up.
C7: Cup two fill up.
    P: What did you bake, anything?
C8: It is.
    P: What is it?
    P: What happened?
C9: I don't spill nothing.
    P: You didn't spill anything, OK.
    P: What's on the plate?
C10: These.
    P: Didn't you bake anything for me?
C11: I did.
    P: Want to play something else?
C12: I wanna play house.
    P: You want to play house?
C13: Yeah, I'm gonna do this.
C14: Play with this too.
C15: The door.
    P: What's in there?
C16: Toys.
    P: Do they have a bed like yours?
C17: Them don't fit in my bed.
C18: Too big for my bed.
    P: Too much stuff on your bed.
    P: Did you bring your dolls down?
C19: Brought my doggie.
C20: See.
C21: No play.
    P: You don't want to play?
C22: No I does.

C23: I make something.
    P: What are you going to make, though?
C24: Potatoes.
    P: Oh I was thinking more of cookies, but that's OK.
C25: And cookies, cookie.
C26: That's the bed.
    P: Oh, guess what today is?
C27: What?
    P: Today's hockey.
C28: Today's hockey?
C29: I wanna put that.
    P: X fix me something to eat.
    P: What are we going to have?
C30: I'm thinking.
C31: Dingdong, that's the door.
C32: Now open it.
C33: Now shut it.
C34: Oh, do it.
C35: You know what this is?
    P: No, what?
C36: A table.
C37: This is our lunch.
C38: A car in the garage.
C39: I opened it.
C40: This door opens.
C41: Who did that?
    P: Are you making a mess?
C42: I gotta fix some.
C43: Who's that?
    P: You drink coffee?
C44: In this.
C45: I'm making this.
    P: How many kids have you got at your house?
C46: Only a baby.
    P: What's our baby's name?
C47: You tell them.
    P: OK, it's Missy.
C48: Yeah, Missy's her name.
C49: She's a big girl.
C50: She's big and she likes cookies.

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part of a family-centered assessment, this measure provides an opportunity to include parental perceptions in the evaluation of young children's conversational ability. The measure appears in Figure 8-13. Girolametto reports that average scores on each of the two scales (responsiveness and assertiveness) of 4.5 or greater should be considered evidence of well-developed pragmatics. Average scores between 3 and 4.4 should be considered as emerging pragmatic competence, whereas those less than 3 should be considered indicative of pragmatic weaknesses.

Many pragmatic assessments involve observation of natural communication. Rice, Sell, and Hadley (1990) developed a method that can be used to assess conversational interactions in a play setting. Prutting and Kirchner's (1983) Pragmatic Protocol is commonly used to assess general pragmatic skills in a global way on the basis of an observation of interaction. The Pragmatic Protocol appears in Figure 8-14. To use it, the clinician observes a child interacting with an adult or peer. The clinician subjectively rates each type of communicative act on the worksheet as either "appropriate" or "inappropriate" on a global basis, taking the entire interaction into account. The resulting data can give a clinician a general idea of whether the majority of the child's communicative behaviors are adequate. Such an assessment allows us to look specifically at pragmatic behaviors that are inappropriate. These behaviors can be modeled for the client in the course of using real communicative situations as contexts for intervention activities.

Roth and Spekman (1984a, b) also presented a framework for assessing pragmatic skills. They divided pragmatics into three areas: communicative intentions, presupposition, and organization of discourse. They advocated using a conversational interaction between child and adult as a basis for observing the pragmatic skills they identified. Table 8-9 gives an outline of guidelines based on Roth and Spekman (1984a, b) for analyzing a communicative interaction. Again, the results of these observations can be used to identify pragmatic behaviors that can be modeled by the clinician in the communicative interactions used to provide contexts for language intervention.

Creaghead (1984) also suggested a protocol for assessing pragmatic skills in children with developing language, which has come to be known as the "Peanut Butter Protocol." This is a structured interaction in which the clinician attempts to elicit communication

TABLE 8-5   The Verb Elicitation Probe

Target Verb*	Objects	Dialogue
Boil	Pot with water on stove	Prompt: This pan has water in it. We turn on the stove, and now the water's getting really hot. What's the water doing?
Bounce	Rubber ball	(Clinician bounces ball on table) Prompt: What's happening?
Close	Stove/oven door	(Clinician closes oven door) Prompt: What did I do?
Enter	Doll house; toy	(Clinician moves toy toward door of house) Prompt: What is he going to do?
Float	Small boat; pan of water	(Clinician places boat in water) Prompt: What is the boat doing?
Fold	Paper	(Clinician folds paper) Prompt: What am I doing?
Follow	A large and a small toy pig	(Clinician has the small pig follow the large one in a curved path) Prompt: See the pigs? What is this (small one) doing?
Leave	Doll house; toy	(Clinician puts toy in house, and begins moving it toward the outside) Prompt: He's done in his house. What is he doing?
Loosen	String around toy dog; fence	(Clinician ties dog to the fence and says, "This is too tight." Loosens.) Prompt: What did I do to the rope?
Return	Two toy animals	(Clinician has one animal wave goodbye to the other, then begin to move away. The second animal then calls the first back. The first begins to move back toward the first) Prompt: What is this one (first animal) doing?
Roar	Tiger	(Clinician has tiger stand on hind legs and says "Rahr!") Prompt: What did the tiger do?
Smash	Play-Doh	(Clinician smashes a small ball of Play-Doh with a slow motion) Prompt: What did I do?
Sweep	Doll; toy broom	(Clinician puts broom on in doll's hand and has her sweep) Prompt: What is she doing?
Swim	Pan with water; plastic toy	(Clinician puts toy in water and makes swimming motions with it) Prompt: What is he doing?
Tear	"Sticky" note sheet	(Clinician slowly tears sheet in half) Prompt: What am I doing?
Wind	Yoyo	(Clinician winds string around yoyo) Prompt: What am I doing?

*Verbs are alphabetized here but should be presented in random order.
Adapted from Loeb, D., Pye, C., Redmond, S., & Richardson, L. (1996). Eliciting verbs from children with specific language impairment. *American Journal of Speech-Language Pathology, 5,* 17-30.

from the child, then notes whether the child rises to the communicative "bait." In addition, it looks at the form of the child's communication. The results of the "Peanut Butter Protocol," like those of the other two examples, can be used to identify communicative acts that the clinician can model for the client in the course of interactions throughout the intervention program. A worksheet based on Creaghead's "Peanut Butter Protocol" appears in Table 8-10.

Numerous other suggestions for assessing pragmatic skills in the developing language phase are available in the literature. Some useful sources are Brinton and Fujiki (1989), Chapman (1981), Lund and Duchan (1993), MacDonald and Carroll (1992), and Shipley and MacAfee (2004). Owens (2009) and Paul (2005), for example, suggested the following categories of analysis to be considered when examining conversational skills in preschoolers:

- *Social vs. nonsocial*: proportion of utterances directed to the listener, rather than self-directed.
- *Topic initiation*: the proportion of new topics introduced by the child rather than the adults.
- *Topic appropriateness*: the proportion of topics that are appropriate to the interpersonal context.
- *Turns/topic*: the number of turns in which the child can maintain a topic.
- *Discourse management*: the number of times the child interrupts another speaker or fails to take a turn appropriately.
- *Contingency*: the proportion of the child's utterances that relate to or are contingent on the previous speaker's remark.

One additional area of pragmatic assessment to consider, particularly for children near the end of the preschool period, is discourse comprehension, the ability to understand a connected text, such as a story. Skarakis-Doyle, Dempsey, and Lee (2008) showed that the ability to retell and recall events from stories discriminated preschoolers with language impairments from those without them. This assessment is especially relevant for identifying children at risk for literacy difficulties, such as children with delays that persist after age four, those with significant speech sound delays, and those with family histories of learning disabilities. For these children especially, discourse comprehension assessment can help to identify those who are likely to need support in the primary grades for developing the oral language comprehension skills that will serve as a strong basis for the acquisition of reading comprehension. Examples of the kinds of items that can be used in this assessment appear in Box 8-8. These kinds of items can be constructed for a simple story book the clinician chooses to use. Although this measure cannot be considered standardized, data from Skarakis-Doyle et al. suggest that children who correctly respond to less than 50% of 6 or more items presented in each of the three tasks (Joint Retell, Detection, and Comprehension Questions) are performing significantly below their 3- to 5-year-old peers, and should be considered at risk, particularly for reading comprehension difficulties.

The most important thing to remember about assessing pragmatics in the developing language phase is that we want to get a picture of whether clients' pragmatic communication skills are better, worse, or equal to their semantic and syntactic abilities. This information helps us choose methods of intervention. Second, we want to know which specific communicative functions need the kind of guided practice we can provide in a carefully thought-out intervention program.

TABLE 8-6   The "Shy Puppet" Activity for Eliciting Questions

Materials: Two puppets.
Procedure: Give the client one puppet and keep the other. Tell the client, "Your puppet Shyster is shy. He wants to ask my puppet Sally some questions, but he's so shy he can't think of what to say. I'll help him. I'll tell you what he would like to ask, and you make him ask Sally the question. Try this one. Shyster, ask Sally what she likes to eat." After the client asks the question, provide an answer from Sally.
Scoring: Use the worksheet below to score the client's question productions. A sample question for each question type is provided. Give at least three opportunities for the client to produce each question type, but randomize the order in which the question types are elicited.

		Client Production		
Question Type	**Example**	**No Response**	**Correct Question Form**	**Other (Transcribe)**
Yes/no	Ask whether she likes ice cream.	_____ _____ _____	_____ _____ _____	_____ _____ _____
What . . . ?	Ask what she's doing.	_____ _____ _____	_____ _____ _____	_____ _____ _____
Where . . . ?	Ask where she lives.	_____ _____ _____	_____ _____ _____	_____ _____ _____
Who . . . ?	Ask who she plays with.	_____ _____ _____	_____ _____ _____	_____ _____ _____
Whose . . . ?	Ask whose toys she wants.	_____ _____ _____	_____ _____ _____	_____ _____ _____
Why . . . ?	Ask why she's sad.	_____ _____ _____	_____ _____ _____	_____ _____ _____
How many . . . ?	Ask how many sisters she has.	_____ _____ _____	_____ _____ _____	_____ _____ _____
How . . . ?	Ask how she plays checkers.	_____ _____ _____	_____ _____ _____	_____ _____ _____
When . . . ?	Ask when she is going home.	_____ _____ _____	_____ _____ _____	_____ _____ _____

TABLE 8-7   Examples of Elicitation Activities for Infinitive Verb Clause Production and Comprehension

Level/Sample Verb	Materials	Set-Up	Action/Dialogue	Production Target	Acting Out Target
1: want (same subject)	Materials: "Barney" "Baby Bop" dolls w/ moveable arms	Barney sitting; Baby Bop standing, facing him	"Barney and Baby Bop are playing school; Barney is the teacher. Baby Bop says to Barney, 'Can I lie down?' Baby Bop wants . . . ? You finish the story. Baby Bop . . . ? Now show me."	Baby Bop wants to lie down.	Makes Baby Bop lie down.
2a: ask	Materials: Barney" "Baby Bop" dolls w/ moveable arms; toy chair	Barney standing next to chair; Baby Bop, facing him	"This is Barney's chair. Baby Bop says to Barney, 'Can you sit in the chair?' Baby Bop asks . . . ? You finish the story. Baby Bop . . . ? Now show me."	Baby Bop asks Barney to sit in the chair.	Sits Baby Bop in chair.
2b: want (different subject)	Materials: "Barney" "Baby Bop" dolls w/ moveable arms; toy pool	Barney standing next to pool; Baby Bop in pool	"Baby Bop is swimming in the pool. She says to Barney, 'C'mon, Barney. You swim, too!' Baby Bop wants . . . ? You finish the story. Baby Bop . . . ? Now show me."	Baby Bop wants Barney to swim.	Puts Barney in pool.

Adapted from Eisenberg, S. (2005). When conversation is not enough: Assessing infinitival complements through elicitation. *American Journal of Speech-Language Pathology, 14(2)*, 92-106.

TABLE 8-8 A Profile of Pragmatic Skills of Children with Language Disorders

Communicative Function	Linguistic Forms Used
Request	Less likely to be grammatically complete.
	Fewer indirect forms used.
	Less flexibility in choice of form.
Comment	Less frequent than in typical populations.
	May be stereotypic in form.
Presupposition	May have difficulty judging what listeners want/need to know.
	Marking depends more on pronouns than does that of normal speakers.
Turn-taking	More inadequate forms used in relating to preceding discourse.
	Turns are shorter in length and involve less speech directed to others.
	Utterances are less adjacent than those of same-age mates (i.e., children with language disorders take longer to follow up the previous speaker's remark with a turn of their own).
	Children with language disorders are less assertive about gaining turns.
Respond	Responses are variable; children with language disorders do not always provide a conversationally obligated response; do not consistently compensate for verbal limitations by using nonverbal responses.
	Responses to requests for clarification are less focused on the informational needs of the requester.
	Responses to other types of speech acts are more likely to be unrelated or inappropriate.
	Responses are frequently incomplete, incorrect, unresponsive to interlocutor's intent, or pragmatically inappropriate.
Speech style adjustments and register variation	Speech style adjustments are made (e.g., for younger speakers).
	Modifications reflect fewer questions about listeners' internal states.
	Adjustments of utterance length and complexity are less finely "tuned" to the needs of the listener.

Adapted from Bishop, D.V.M., Chan, J., Adams, C., Hartley, J., & Weir, F. (2000). Evidence of disproportionate pragmatic difficulties in a subset of children with specific language impairment. *Development and Psychopathology, 12,* 177-199; Craig, H. (1991). Pragmatic characteristics of the child with specific language impairment: An interactionist perspective. In T. Gallagher (Ed.), *Pragmatics of language: Clinical practice issues* (pp. 163-198). San Diego, CA: Singular.

Questions designed to accompany storybooks can be used to assess discourse comprehension.

CONSIDERATIONS FOR THE OLDER CLIENTS WITH SEVERE DISABILITIES AND THOSE WITH ASD AT THE DEVELOPING LANGUAGE STAGE

Older Students with Severe Disabilities Who Function at the Developing Language Level

Some children at developing language levels may be older than preschool age. These older, more severely impaired clients, who may have multiple handicaps, have probably been involved in intervention for some time. Extensive assessment data may be on file, so assessment need not start from scratch. These clients will probably already be identified as eligible for services. There may be a question, though, about their eligibility specifically for language services, particularly if nonverbal and verbal skills are more or less on par. Here the clinician may want to advocate, not necessarily for direct clinical service to the client, but for consultative or collaborative services to increase the client's access and opportunity (Beukelman & Mirenda, 1998) for participating to as great a degree as possible in mainstream activities with chronological age-mates. Increasing opportunities may involve changing policies that provide for separate settings for individuals with disabilities or educating the professionals in new knowledge and skills to enable the inclusion of these students in integrated settings. Increasing access consists of both providing students with compensatory skills, including assistive technology, and adapting the environment to remove barriers to their participation.

Many advocates for the disabled (e.g., Calculator, 1994a, b; Lipsky & Gartner, 1997) see full inclusion in regular education as the goal for all students with disabilities. This approach would suggest, in addition to assessing client skills, assessing the mainstream environment in which the student is to be placed and identifying the demands it will make on the student. The clinician might, for example, observe a second-grade classroom language arts activity to determine what the activity requires of a multiply handicapped 7-year-old functioning at a developing language level. The clinician's role would then be to prepare the student to participate in the activity with whatever resources he or she has available (from producing three-word sentences to using an augmentative or alternative communication [AAC] device). Our role also would include work with the classroom teacher to develop strategies that allow the child's contribution to be invited and rewarded. In this type of enterprise, very little, if any, standardized testing will be needed. Criterion-referenced assessment and behavioral

Instructions

The purpose of this questionnaire is to find out how your child participates in conversations, and what problems, if any, he/she has. By conversation, we mean how your child is able to start conversations, take turns, give information that is on topic, ask questions, and answer questions.

   Please use the following scale to rate each statement.

1	2	3	4	5
Never	Almost never	Sometimes	Often	Always

Throughout this questionnaire, we use the words "ask" or "tell" to describe what your child does in conversation. Since children do communicate nonverbally, please interpret "ask" and "tell" to include gestures, as well as words, phrases, or sentences.

Responsiveness items

1 2 3 4 5   1. If I offer my child a choice of two things that he/she likes, my child tells me which one he/she wants.
1 2 3 4 5   2. If my child knows the name of something he/she tells me the name when I ask.
1 2 3 4 5   3. When I ask a question, my child answers.
1 2 3 4 5   4. If I ask my child to repeat something I haven't understood, he/she does.
1 2 3 4 5   5. In a conversation, my child stays on topic for two or more turns.
1 2 3 4 5   6. My child's responses follow what I am talking about.
1 2 3 4 5   7. My child's answers are connected to what I asked.
1 2 3 4 5   8. My child's sounds/gestures/words match my topic of conversation with him/her.
1 2 3 4 5   9. When I don't understand, my child keeps on trying to get his/her message across.
1 2 3 4 5   10. When I ask my child a question to check what he/she means, he/she answers me.

Assertiveness items

1 2 3 4 5   1. When something new or unusual happens, my child asks about it.
1 2 3 4 5   2. My child asks questions (using sounds/gestures/words).
1 2 3 4 5   3. When my child doesn't know the name of something we are both looking at, he/she asks me what it is.
1 2 3 4 5   4. If I am holding something my child wants, he/she asks for it.
1 2 3 4 5   5. When we are playing a fun game (e.g., tickling) and I suddenly stop, my child asks me for more.
1 2 3 4 5   6. My child asks for help when he/she can't do something and I am nearby.
1 2 3 4 5   7. My child asks me for help when he/she wants something that is out of reach.
1 2 3 4 5   8. When I say something to my child that is not a question, he/she responds.
1 2 3 4 5   9. My child comes to me to start a game or activity that we have done before.
1 2 3 4 5   10. My child starts a conversation with me during familiar routines.
1 2 3 4 5   11. My child tells me when he/she wants to change an activity.
1 2 3 4 5   12. My child asks me to join in his/her play or game.
1 2 3 4 5   13. My child comes to me to tell me about things that interest him/her.
1 2 3 4 5   14. When we are together, my child gets a game going that we have done before.
1 2 3 4 5   15. When we're playing together, my child suggests different play ideas.

Mean score for responsive items (total points/10)_____
Mean score for assertiveness items (total points/15) _____
NOTE: For a copy of the scale for parental use, please contact the author.

FIGURE 8-13   Responsiveness and assertiveness in conversational skills rating scale. (Reprinted with permission from Girolametto, L. [1997]. Development of a parent report measure for profiling the conversational skills of preschool children. *American Journal of Speech-language Pathology, 6[4]*, 33.)

observation, including observation in the classroom and ecological assessment, will probably be our primary assessment tools. One instrument that may be helpful in this enterprise is the *Functional Communication Profile Revised* (Kleiman, 2003). This tool provides checklists for evaluation of communication skills. An alternative method is the *Triple C Checklist* (Iacono, West, Bloomberg, & Johnson, 2009), designed to assess communication skills in individuals with severe disabilities and emerging language (available at www.scopevic.org.au/index.php/yiiCart/frontend/product/product/path/1_3/id/4).

   Clinicians can rate students' current level of functional communication using tools like these, then use these measures as baselines for tracking changes in communicative function as a result of the intervention provided. Figure 8-15 provides a checklist for expressive language adapted from Kleiman (2003), as an example of this type of measure.

School-aged children with severe disorders may continue to function at developing language levels.

Name: _____   Date: _____
Communicative   Communicative
setting observed: _____   partner's relationship: _____

Communicative act	Appropriate	Inappropriate	No opportunity to observe
Utterance act			
A. Verbal or paralinguistic			
1. Intelligibility			
2. Vocal intensity			
3. Voice quality			
4. Prosody			
5. Fluency			
B. Nonverbal			
1. Physical proximity			
2. Physical contacts			
3. Body posture			
4. Foot or leg movements			
5. Hand or arm movements			
6. Gestures			
7. Facial expression			
8. Eye gaze			
Propositional act			
A. Lexical selection and use			
1. Specificity and accuracy			
B. Specifying relationships between words			
1. Word order			
2. Given and new information			
C. Stylistic variations			
1. Varying of communicative style			
Illocutionary and perlocutionary acts			
A. Speech acts			
1. Speech act pair analysis			
2. Variety of speech acts			
B. Topic			
1. Selection			
2. Introduction			
3. Maintenance			
4. Change			

FIGURE 8-14 Prutting and Kirchner's Pragmatic Protocol. (Reprinted with permission from Prutting, C., & Kirchner, D. [1983]. Applied pragmatics. In T.M. Gallagher and C.A. Prutting [Eds.], Pra*gmatic assessment and intervention issues in language* [pp. 29-64]. San Diego, CA: College-Hill Press.)

Communicative act	Appropriate	Inappropriate	No opportunity to observe
Illocutionary and perlocutionary acts—cont'd C. Turn-taking			
1. Initiation			
2. Response			
3. Repair and revision			
4. Pause time			
5. Interruption and overlap			
6. Feedback to speakers			
7. Adjacency			
8. Contingency			
9. Quantity and conciseness			

FIGURE 8-14, cont'd

TABLE 8-9   Suggestions for Assessing Pragmatics

Area Assessed	Suggested Activity
COMMUNICATIVE INTENTIONS	
Expression comprehension	Communicative temptations (see Chapters 6 and 7).
	Have client "bathe" and "dress" doll; give indirect request forms of instructions ("Why don't you wash her face?" "Could you put on her hat?"). Record client responses as compliant or noncompliant.
Presupposition	Barrier games (referential communication) in which partners cannot see each others' referents: client must encode adequate information for partner to identify referents.
	Extended discourse: Look at use of pronouns, articles, ellipsis, and conjunctions in tasks such as describing how to play a game.
	Picture description: Show client a picture and ask for description. Then show a picture that is just the same except for one obvious detail. Client's description of second picture should take into account information presupposed in first; e.g., [picture 1] "The dog is running," [picture 2] "He's eating."
Social organization of discourse	Analyze turn-taking; topic maintenance; and conversational initiation, termination, and repair in the referential communication task used to assess presupposition.
	Role-play situations in which client needs to initiate conversation (e.g., asking for directions, asking for help in a store).
	Feign misunderstanding in conversation to assess client's ability to make repairs.
	Use unclear clinician messages to assess client's ability to request clarification.

Adapted from Roth, F., & Speckman, N. (1984a). Assessing the pragmatic abilities of children: Part 1. Organizational framework and assessment parameters. (1984b); Part 2. Guidelines, considerations, and specific evaluation procedures. *Journal of Speech and Hearing Disorders, 49,* 2-11 (Part 1); 12-17 (Part 2).

Older, severely impaired clients may never complete the developmental sequence of language acquisition, even if speech is their primary mode of communication. This fact also argues for the provision of consultative or collaborative services, with the goal of meeting the communicative needs of the important environments in which these students function. Three considerations are especially important in designing assessments that work toward this goal: assessing need for augmentative and alternative communication, using chronologically age-appropriate materials, and evaluating functional communicative needs.

Our first consideration for a child with limited language should address *augmentative and alternative modalities*. We've talked already about the importance of considering AAC systems for children with severe communication disorders. For some older children still functioning at emerging language levels, AAC may not yet have been tried. If it has not, we may want to consider using some of the assessment techniques we talked about in Chapters 6 and 7 to evaluate the child's need for an AAC system. If the child is obviously frustrated with his or her current level of communicative ability, produces speech that is severely unintelligible, or spontaneously uses gestures or other means to augment speech, a trial of AAC, with assessment to identify the most appropriate system, is certainly warranted.

Second, when we do criterion-referenced or observational assessments for the older, severely impaired client, we want to use situations and props that are *chronologically age appropriate*. We would not use dolls and toys to evaluate adolescents, even if they appear to function at the preschool level of language and cognition. We would want to use materials from the clients' occupational training program or objects that they are learning to use from

TABLE 8-10 Worksheet for Pragmatic Assessment Based on Creaghead's "Peanut Butter Protocol"

Context	Expected Pragmatic Act	Child Behavior		
		No Response	Appropriate Response	Other (Transcribe or Describe)
Child enters room.	Greeting	_____	_____	_____
Have cookies and crackers in view, but out of reach.	Requests object	_____	_____	_____
Give child tightly closed jar with cookies in it.	Requests action	_____	_____	_____
Ask, "How do you think we can get the jar open?"	Hypothesizing	_____	_____	_____
Say, "Do you want (mumble)?"	Request clarification	_____	_____	_____
Ask whether child wants peanut butter or jelly on the cracker.	Makes choice	_____	_____	_____
Hand child the opposite of what he or she chose.	Denial	_____	_____	_____
Put the peanut butter and jelly on the table. Ask, "What are we going to do now?	Predicts	_____	_____	_____
Tell the child to put peanut butter or jelly on the cracker.	Request object (knife)	_____	_____	_____
Tell child to get knife, which is out of sight.	Requests information	_____	_____	_____
Put peanut butter or jelly on cracker. Eat it. Get out an extra large toothbrush and brush teeth.	Comments on object	_____	_____	_____
Converse with child. During this, pull a hidden string so that a doll falls off the table.	Comments on action	_____	_____	_____
Ask, "What happened?"	Describes event	_____	_____	_____
Ask, "Why did it fall?"	Gives reason	_____	_____	_____
During conversation, look for:	Answering	_____	_____	_____
	Expanded answer	_____	_____	_____
	Taking turns	_____	_____	_____
	Attending to speaker	_____	_____	_____
	Acknowledging	_____	_____	_____
	Initiating a topic	_____	_____	_____
	Changing a topic	_____	_____	_____
	Maintaining a topic	_____	_____	_____
Stop leading conversation and be silent.				
Look for:	Initiating conversation	_____	_____	_____
	Asking conversational questions	_____	_____	_____
Request clarification	Clarifying	_____	_____	_____
As child leaves room	Closing	_____	_____	_____

Adapted from Creaghead, N. (1984). Strategies for evaluating and targeting pragmatic behaviors in young children. *Seminars in Speech and Language, 5,* 241-252.

self-care and daily-living activities or from leisure activities in which they like to engage. We might, for example, assess use of basic subject-verb-object sentences or use of *verb + particle* by asking a client to tell what is done in each step as he or she makes the bed ("I pull up the sheet. I pull up the blanket. I pull up the spread. I put on the pillow. I tuck in the spread.").

Our third consideration is the *functional efficacy of communication.* What do our older, severely impaired clients need to get done, and how well do current communication skills enable them to do it? One way to address this problem is to develop an *ecological inventory.* An ecological inventory allows us to assess the needs of particular *environments* in which the person must function, rather than the client's communication skills. The ecological inventory

lets us ask the question, "What does this client need to be able to communicate successfully in this environment?" The assessment then identifies those needs, and the necessary communicative behaviors become the targets of our intervention. These behaviors may not be the next ones in the developmental sequence for this client. However, when clients are severely impaired and we know that they will probably never complete that sequence, the primary goal of intervention is to allow them to function as independently as possible within the world in which they live. For example, our developmental model tells us to follow the normal sequence of language acquisition as a curriculum guide for targeting goals. We know that the normal sequence suggests that we would not teach reading to a child with a mental age less than 5 years or to one who

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BOX 8-8   Examples from Skarakis-Doyle et al. (2008) Discourse Comprehension Task

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SPLISH SPLASH **STORY STIMULI (SKARAKIS-DOYLE & WOOTTON, 1995)**

One day a little girl named Sarah made very messy mud-pies in the backyard. Sarah's mom took one look at her and said, "Splish, splash, Sarah needs a bath. Mommy says you're dirty and she can't have that."

So Mom carried Sarah upstairs to the bathroom. Then she filled the bathtub with water and helped Sarah take off her dirty clothes. But Sarah said, "Mommy, I just can't have a bath. First, I must test the water."

JOINT STORY RETELL TASK STIMULI

One day a little girl named Sarah made very messy mud-pies in the back yard. Sarah's mother took one look at her, and said, "_____." (**Splish splash Sarah needs a bath, Mommy says you're dirty and she can't have that**)

So mom carried Sarah upstairs to the bathroom and filled the bathtub with water.

"I must test the water," said _____. (**Sarah**)

So she _____ (**put**) her big toe into the bathtub and said, "Oh Mommy, the water's too cold. The water must be nice and warm."

EXPECTANCY VIOLATION DETECTION TASK STIMULI

One day a little **frog** named Sarah made very messy mud-pies in the backyard. Sarah's mom took one look at her and said, "Splish, splash, Sarah needs a bath. Mommy says you're dirty and she can't have that."

So mom carried Sarah upstairs to the bathroom. Then she filled the bathtub with water and helped Sarah **put on** all her dirty clothes. But Sarah said, "Oh, Mommy I just can't have a bath. First I must test the water."

CONTENT AND GIST COMPREHENSION QUESTIONS

What did Sarah's mother say when she saw Sarah in the backyard? (**Splish Splash, Sarah needs a bath . . .**)

Who wanted to check the bath water? (**the little girl/Sarah**)

In the story, why did Sarah keep starting to leave the bathroom? (**she didn't want a bath/she wanted to play**)

Used with permission from Skarakis-Doyle, E., Dempsey, L., & Lee, C. (2008). Identifying language comprehension impairment in preschool children. *Language Speech and Hearing Services in Schools, 39(1),* 54-65.

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had not mastered Brown's stage V of language development. But suppose an adolescent client with linguistic skills in the developing language phase had an opportunity for a paying job unloading boxes from trucks at a warehouse that required him to read some words on the warehouse shelves that indicated where certain boxes were to be placed. Should we deny the client this job because he is not developmentally ready to read? Most of us would like to help enable the client to take this job. To remove barriers to our client's ability to take advantage of this opportunity, we can use focused behavioral interventions to teach the limited amount of reading the client needs, even if he or she may not appear "ready" to read with regard to developmental level.

To compile an ecological inventory, McCormick and Goldman (1984) suggested looking at the major domains in which clients function—for example, domestic, occupational, recreational, and general community—and assessing the communicative needs of each of these settings. Do clients need to ask for help in turning on the TV in the group home? Do they have to tell their supervisor they need to use the restroom at work? Do they need to ask for a locker key at the pool at the YMCA? These needs can be identified by the ecological inventory and targeted in the intervention program.

The ecological inventory can be assembled in two ways. We can "shadow" clients for a typical day, going through each of their activities with them and noting the communicative demands of the situation. Alternatively, we can interview adults familiar with each of the major domains of the client's functioning and compile a list of the communicative needs these adults identify. Parents, of course, are important sources of information in putting this inventory together.

A more structured approach to developing ecological inventories was presented by Rowland and Schweigert (1993). They devised the *Analyzing the Communication Environment (ACE)* as a tool to guide clinicians in establishing these inventories. To use the ACE, a clinician observes one activity on at least two occasions, starting when the student makes a transition from a previous activity and ending when the activity is completed. The instrument examines six aspects of communication: the activity itself, the communication system the student uses in the activity, the way adults interact with the student in the activity, group dynamics (in group activities), the materials available in the activity, and the specific opportunities for communication that the activity affords. Under each of these aspects, the clinician considers a list of behavior statements given in the ACE and decides whether the behavior is present and whether a change in the behavior is needed. A few examples of the behaviors examined in the ACE are given in Table 8-11, just to give a flavor for the instrument. The ACE also provides a video with example interactions and accompanying text discussing these examples and showing how each would be scored. Once needed changes are identified, the ACE also provides helpful suggestions for making the changes. These suggestions include both targeting the client's behavior and modifying the interactive environment to facilitate functional communicative success for the client. Other structured instruments for compiling ecological inventories also are available, such as McCarthy et al.'s (1998) *Communication Supports Checklist.*

Cascella and McNamara (2004) present an additional approach. They advocate that the clinician develop an individualized "communication profile" for each student, based on in-depth observation and interviews with caregivers and teachers, which lists the forms and functions the student currently uses for communication. These can include conventional forms, such as vocalizations and gestures, as well as idiosyncratic forms, such as body postures. An ecological inventory is then completed that assesses the environments in which the student must function and outlines typical discourse structures, communication expectations, and opportunities.

Language used in home_____

Verbal status: ☐ Nonverbal   ☐ Verbal

Highest expressive language level:

☐ Vocalizations   ☐ Single words   ☐ Phrases   ☐ Sentences

☐ Conversation   ☐ N/a

Methods of communication (Check all that apply):

☐ Sounds   ☐ Speech   ☐ Signing   ☐ Drawing

☐ Spelling   ☐ Facial expression   ☐ Gaze   ☐ Nods

☐ Gestures   ☐ Actions   ☐ Pointing   ☐ Object manipulation

☐ Manipulates others   ☐ Photo book   ☐ Picture book/board

☐ Word book/board   ☐ Computer with pictures   ☐ Computer with word prediction

Functions of communication:

☐ Basic needs   ☐ Routines   ☐ Preferences   ☐ Interests

☐ Emotions   ☐ Experiences   ☐ Concerns   ☐ Opinions

☐ Aspirations   ☐ Humor   ☐ Ideas   ☐ Current events

☐ None   ☐ Physical feelings   ☐ Social exchanges

Finally, the educational team meets to develop a support plan focused on enabling the child to use the communication strategies he or she has to meet the expectations of the classroom and other daily routines. The team's job is then to create additional communication opportunities to allow the student to use, expand, and diversify communicative acts. For example, if the team knows that a student's current communication profile includes tilting her head to the left when she needs to take a break from working, her job coach can acknowledge this communication ("I see you're tired") and encourage the student to express her need in a more conventional way that meets the expectations of the setting ("At work we need to let people know when we are stopping. Let's go to your supervisor and use our sign for 'stop.'").

The main point to remember about assessment of functional communication for students with severe-to-profound disorders is that we need not only to assess our clients' ability to communicate, but also the demands of the environment in which they function. An important part of our role for these clients is to help achieve a better match between the student's communicative ability and the expectations of their environments in order to create more opportunities for their communication to succeed in accomplishing their interpersonal goals.

Children with ASD

For preschoolers with ASD who function in the preverbal or emerging language stage, assessments described in Chapter 7 will be appropriate, but for those who are talking in multiword utterances, a few special considerations are in order. Recent evidence (e.g., Rogers et al., 2006; Rogers & Dawson, 2010) tells us that, unlike 15 or 20 years ago when many preschoolers with ASD did not produce functional spoken language, 70% to 80% of preschoolers with ASD today use speech as their primary means of communication. This is good news. Still, it is important to remember that just because a child has ASD does NOT mean he or she can't have speech or language impairments, too. In fact, quite a bit of recent research (e.g., Lindgren et al., 2009; Tager-Flusberg & Joseph, 2003) has shown that there are at least two patterns of language

TABLE 8-11 Example Items from Rowland and Schwiegert's ACE

	Check if Observed	Target for Change
A. ACTIVITY		
The instructional demands of the activity do not frustrate the student.	_____	_____
The student is receptive to engaging in some level of interaction at this time.	_____	_____
B. STUDENT COMMUNICATION		
The student has an effective and appropriate means of gaining attention in this activity.	_____	_____
The student is positioned so that he or she is aware that the teacher is present.	_____	_____
C. ADULT INTERACTION		
The teacher appears to enjoy the activity.	_____	_____
The teacher communicates to the student in a mode the student can understand.	_____	_____
D. GROUP DYNAMICS		
The group includes at least one peer who is a more competent communicator than the student.	_____	_____
The teacher switches easily from one communication system to another, if needed.	_____	_____
E. MATERIALS		
The materials are used for turn-taking. That is, the student and teacher take turns back and forth using the materials.	_____	_____
The student seems to enjoy this material.	_____	_____
F. OPPORTUNITIES FOR COMMUNICATION		
Teacher or peers offer choices of materials, tasks, or partners.	_____	_____
Teachers or peers ask yes/no questions for the student to confirm or negate.	_____	_____

Adapted from Rowland, C., & Schwiegert, P. (1993). *Analyzing the communication environment (ACE): An inventory of ways to encourage communication in functional activities*. Tucson, AZ: Communication Skill Builders.

development in children with ASD who talk: one in which language development is appropriate or superior for age, and a second in which language is delayed in a way similar to that seen in other children with developmental language disorders. So simply knowing that a child with ASD uses multiword utterances doesn't tell us all we need to know about language strengths and weaknesses (just as it doesn't for any other child!). Preschoolers with ASD who function in the developing language phase should be assessed for all aspects of their language development—comprehension, production, phonology, syntax, semantics and pragmatics—just as we would assess any child with developing language.

Although using standardized tests to determine baseline level of language performance across the domains of communication makes sense for children with ASD, as it does for other children, it is important to bear in mind that standardized measures of assessment for this population may be especially misleading. Speakers with ASD can do well in the structured context of a test, but have greater difficulty using their language to engage in social interaction. For preschoolers with ASD who talk, pragmatics are likely to be the area of communication most affected by the disorder.

Parent-report measures of pragmatic and social skills are often a useful method of assessment for this population. The *Vineland Adaptive Behavior Scales—2* (Sparrow, Cicchetti, & Balla, 2005) is a parent interview that has been shown to reveal a distinct pattern among domain scores for children with ASD (Paul et al., 2004), and can be helpful in documenting social and communicative difficulties, especially for high-functioning children who do well on

standard language tests. The *Language Use Inventory* (O'Neill, 2007) can be used in a similar way.

These parent-report measures will allow us to document a gap between the strengths in language form and weaknesses in language use that are typically seen in ASD. But it will still be helpful to observe directly the conversational skills that each client shows. Again, language sample analysis may be the most valid assessment of these skills. For children with ASD, though, the focus will be less on syntax and morphology, and more on pragmatic aspects of interaction. Table 8-12 provides some suggestions for areas of pragmatic function that are often problematic for preschoolers with ASD, which can be observed in a conversational sample. It's important to remember, too, that children with ASD often look better with adults who frequently find their oddities appealing, than they do with peers who can be less forgiving. For this reason, observing a peer interaction within a preschool setting can be particularly enlightening. Table 8-13 provides a sample form for recording observations from conversational interactions at this level. This form can be used to identify areas in greatest need of remedial attention, and to document change as the intervention targets particular pragmatic behaviors.

CONCLUSIONS

Assessing the child with a language disorder at the developing language stage sounds like a big job. It is! Of course, not every single aspect of the assessment process is necessary for every child. Every

TABLE 8-12   Areas and Methods for Assessment of Conversational Pragmatics in Preschool Speakers with ASD

Area	Description	Assessment Method
Responsiveness	Children with ASD do not respond as consistently to hearing their name called, and may show minimal understanding of the conversational responsibility to respond when spoken to.	The number of times the child responds to his name can be examined as a proportion of the number of times the name was called. Likewise, the number of adult utterances to which the child responds with speech or meaningful gestures can be compared to the total number of adult utterances offered.
Echolalia	This includes immediate or delayed imitation of what is heard, or the repetition of strings of memorized language from songs, videos, or other "scripted" sources.	The proportion of echoed to spontaneous utterances can be analyzed. Echoed utterances can be further separated into immediate and delayed echolalia. The function of the echoed language should be recorded, in order to design intervention to replace the echoed language with more conventional means of communication to achieve the given functions.
Pronoun use	Children with ASD often use the pronoun "you" in place of "me" when referring to themselves. This is thought to reflect their tendency to echo what they hear others say. For example, when a caregiver asks a child, "Are you hungry?" the child with ASD may respond with the phrase, "You hungry."	Using a speech sample, the number of inappropriate uses of pronouns can be calculated as a proportion of total pronoun use.
Vocabulary and syntax	Children with ASD sometimes attach unusual or peculiar meanings to words or phrases; but syntax is generally a relative strength. Therefore, syntactic level, often determined by MLU, can be a baseline measure against which other areas of language skill may be measured.	Vocabulary diversity can be analyzed simply by recording the number of different words in the speech sample, or more formally by calculating the Type-Token ratio (i.e., number of different words divided by total number of words spoken). SALT can automatically compute both vocabulary and MLU measures from transcripts entered into their data systems. These values can be compared to those in the SALT's database. In addition, any idiosyncratic word use observed in children with ASD may be noted.
Communicative functions	Requesting (Can I have that?) Protesting (Don't do that!) Directing others (You go there.) Commenting (That's a blue car.) Social interaction (Hi, let's play.) Self-directing (I'm gonna hide the ball.) Reporting on past and ongoing events (We played on the swings.) Reasoning (The gerbil ran away 'cause we forgot to lock the cage.) Predicting (Mom'll get mad if I play in the mud.) Empathizing (She's crying 'cause she fell down.) Imagining (I'm the mommy; I'll put the baby to bed.) Negotiating (If you give me the truck, I'll give you the ball.)	Observe peer play interaction; note the number of *initiations* of communication as well as the number of different functions expressed.

assessment will, though, be family-centered. That means being responsive to the interests and concerns of the family; being sure that they are involved in all the decisions made about assessment and intervention for the child; and respecting their culture, traditions, and personal style. Let's go back to Jerry. Taking him as an example, we can see how to use history and referral information to develop an assessment plan. As in any plan, we will be choosing tests and procedures to use in the evaluation process based on the areas we suspect may be problematic for the client and on the need to identify specific goals for the intervention program.

TABLE 8-13 Example Form for Assessing Pragmatics in Semi-Structured Conversation: Early Language Level

	Present	Absent	No opportunity
COMMUNICATIVE FUNCTIONS	——————	——————	——————
Directing others	——————	——————	——————
Self-directing	——————	——————	——————
Reporting	——————	——————	——————
Reasoning	——————	——————	——————
Predicting	——————	——————	——————
Empathizing	——————	——————	——————
Imagining	——————	——————	——————
Negotiating	——————	——————	——————
DISCOURSE MANAGEMENT			
Waits turn to speak	——————	——————	——————
Responds to speech w/speech consistently	——————	——————	——————
Responds to speech w/relevant remark	——————	——————	——————
Maintains other's topic for at least two turns	——————	——————	——————
Shifts topics appropriately	——————	——————	——————
Monitors interlocutor with gaze appropriately (looks at other when talking; looks at referents, then back at interlocutor)	——————	——————	——————
REGISTER VARIATION			
Talks appropriately to unfamiliar adult (clinician)	——————	——————	——————
Demonstrates at least one register shift (e.g., in talk to baby doll or stuffed animal)	——————	——————	——————
Uses politeness conventions in requests (please)	——————	——————	——————
Can increase politeness when told to "ask nicer"	——————	——————	——————
Uses indirect requests spontaneously and appropriately	——————	——————	——————
PRESUPPOSITION			
Uses pronouns appropriately	——————	——————	——————
Uses ellipsis appropriately	——————	——————	——————
Uses stress appropriately for emphasis and contrast	——————	——————	——————
Gives enough background information	——————	——————	——————
Can provide additional information when requested (A what?) for conversational repair	——————	——————	——————
MANNER OF COMMUNICATION			
Gives clear, relevant responses	——————	——————	——————
Talks appropriate amount	——————	——————	——————
Can relate sequence of actions clearly	——————	——————	——————

Adapted from Paul, R. & Wilson, K. (2008). Assessment of speech, language, and communication. In S. Goldstein, J. Naglieri, & S. Ozonoff (Eds.) *Assessment of autism spectrum disorders*. (pp. 171-208). N.Y.: Guilford Press.

Jerry's family brought him to the preschool assessment center of their local school district for an evaluation, as Mrs. Hamilton suggested. They met with the assessment team leader and the speech language pathologist, Ms. Warren. Ms. Warren asked the parents about Jerry's medical and feeding history; asked about how Jerry had vocalized as a baby; and wanted to know more about how, from the parents' point of view, he was communicating now. She asked them what their major concerns for Jerry were and how the assessment could help them understand his needs. The parents expressed some dismay with some of the things that Mrs. Hamilton had told them. They said they did not see Jerry's problems as serious. They were clear in their desire to have Jerry take an IQ test to "prove" to Mrs. Hamilton that he was not "retarded." They weren't sure what they would do if the assessment identified a language disorder in Jerry. They felt confused and somewhat overwhelmed. They said they had never had a child with a problem before. They wanted to know what Ms. Warren thought. Was Jerry behind? Would he catch up? Did he need special help?

After this discussion, Ms. Warren explained that she would like to have Jerry's hearing tested before proceeding any further. She also said she would like to have a look at how Jerry was able to use his oral structures for speech and nonspeech functions. She explained that she doubted that Jerry was intellectually impaired and explained that if there were any question

of intellectual disability she would talk with them further and discuss a referral to a psychologist with them before taking any action. The parents agreed to this plan. When Jerry passed a hearing screening and did not appear to have any serious oral-motor problems, Ms. Warren asked whether the parents would be willing to bring Jerry back again for a more in-depth evaluation in a week or two. She explained that language learning is an extremely complex process and that many children run into obstacles along the way. She told them that even without intervention most children like Jerry eventually outgrew many of their difficulties. But she explained that, in her experience, many preschoolers were helped by the extra boost that focused intervention during the preschool period provided. She asked them not to make up their minds yet, but to consider the possibility of some short-term intervention to jump-start Jerry's language development, if the assessment indicated that it might be helpful. Jerry's parents agreed to reserve judgment until the assessment was completed.

After reviewing the referral information from Mrs. Hamilton and her notes from the preassessment interview, Ms. Warren devised the assessment plan.

Area to Be Assessed	Assessment Tool
Expressive vocabulary	*Expressive One-Word Picture Vocabulary Test—Revised* (Brownell, 2000)
Receptive vocabulary and syntax, expressive syntax, phonological skills	*Test of Language Development—Primary*: 4 (Newcomer & Hammill, 2004)

FOLLOW-UP CRITERION-REFERENCED PROCEDURES TO BE USED, IF JERRY SCORES BELOW THE NORMAL RANGE IN RECEPTION, EXPRESSION, OR PHONOLOGY

Expressive language	Language sample analysis, using IPSyn procedure. If needed, use elicited production tasks to look at structures that did not appear in spontaneous speech.
Phonology	Intelligibility in short conversational sample; phonetic inventory and phonological analysis, if needed, using same sample used for IPSyn.
Pragmatics	"Peanut butter protocol"

Ms. Warren conducted the formal portion of the assessment and shared the results with the parents. She explained that Jerry's receptive vocabulary and sentence structures were age-appropriate, so further testing in these areas was not needed. However, the tests suggested that his expressive syntax and his speech skills were below age level. She asked the parents whether they would be willing to return and allow her to audio-record one of them playing with Jerry so she could collect a sample of his speech and to allow her to play with him for a while to get a picture of the way he participated in communicative situations. She explained that the information she got from these assessments would be helpful in determining the specific

targets of an intervention program, if the parents decided Jerry could benefit from one.

The results of the criterion-referenced assessment revealed the following:

1. Jerry's speech-sample analysis, according to the IPSyn, showed that his score was significantly depressed. His noun phrase performance was adequate, but his use of verb phrases showed no structures above the level of simple copulas (V5). Questions and negatives also were limited in complexity. He produced no questions or negatives with auxiliaries (scored "0" on Q6, Q7, and Q8); no "why" questions; and no tag questions. On the sentence structure scale, he produced forms up to the conjoined phrase and simple infinitive level (S5 and S6), but none higher. Jerry's use of syntax showed deficits in the areas of verb phrase elaboration, use of negative and question forms, and use of advanced sentence structures.

2. The sounds that were absent from Jerry's inventory are all in the middle or late groups, according to Shriberg's (1993) scheme. This suggested that Jerry's speech sound development was delayed rather than deviant. Some of the sounds on which Jerry made errors, such as /k/, /g/, /s/, /f/, and /r/, do appear in the inventory, suggesting that he knows "how" to say these sounds. The phonological analysis showed that most of Jerry's error patterns were used inconsistently. This suggested that he can sometimes "tune up" his pronunciation to make it more accurate. Only /f/ and /v/ were dropped consistently at the ends of words, and only /θ/ was consistently stopped. Only initial clusters were consistently simplified; at least one final cluster appeared in correct form. Jerry did produce some multisyllabic words, with better accuracy in two syllables than in three. The patterns he used were all typical in development; no unusual patterns were noted. These findings suggested delayed speech sound development.

3. Jerry's performance on the "peanut butter protocol" showed that he performed adequately in terms of expressing communicative intentions and using conversational devices to engage in social interaction.

Ms. Warren suggested to the parents that Jerry could benefit from some intervention to improve his expressive language and articulation. She suggested that he be enrolled in the district's preschool language classroom, a language-focused preschool group taught by an SLP. However, the language classroom met at the same time as Jerry's mainstream preschool program, and the parents were reluctant to withdraw Jerry from that. Ms. Warren suggested that perhaps the parents would be willing to work with her on a consultative basis. She would talk to Mrs. Hamilton about some special activities to be done with Jerry within the mainstream preschool program and would give the parents activities to do with Jerry at home. She would make a home visit once a month to see how things were going, assess Jerry's progress, and suggest additional activities. She proposed that they try this plan for 6 months and see how things went. At that point everyone could re-evaluate the situation. The parents agreed to this plan and were very eager to do what they could to help Jerry at home. They agreed to meet again with Ms. Warren and Mrs. Hamilton to set up the ongoing consultative program.

STUDY GUIDE

I. The Developing Language Stage
 A. What is meant by "developing language" in terms of identification and assessment of language disorders?
 B. What language characteristics are seen in children at this level of language development?
II. Family-Centered Assessment
 A. What does IDEA legislation require in terms of family participation?
 B. How can parents be involved in the assessment of their child with developing language?
 C. What are the family's rights if conflicts arise between them and the assessment team about recommendations for services for their child?
III. Assessing Collateral Areas
 A. How would a speech-language pathologist working in a transdisciplinary team assess areas collateral to language development? How would a clinician in private practice do so?
 B. List collateral areas to consider when assessing a preschooler suspected of speech/language delay.
IV. Screening for Language Disorders in the Period of Developing Language
 A. Discuss the important properties to look for when choosing a screening instrument for children with developing language.
 B. Why is it important to read the statistical information provided when choosing a screening instrument?
V. Using Standardized Tests in Assessing Developing Language
 A. What is the purpose of using standardized tests in assessment of developing language?
 B. Why do standardized tests often not provide enough information for intervention planning?
VI. Criterion-Referenced Assessment and Behavioral Observation for Children with Developing Language
 A. How is criterion-referenced assessment used to supplement standardized testing?
 B. What is the role of intelligibility assessment in speech sound evaluation?
 C. Discuss methods of criterion-referenced speech sound assessment.
 D. What are some of the difficulties and dangers of assessing the unintelligible child?
 E. How does the concept of "fast mapping" affect the assessment of vocabulary skills?
 F. How can word retrieval skills be assessed in a child with developing language?
 G. Describe a general strategy for assessing vocabulary skills in children with developing language.

H. Why must receptive and expressive syntax be assessed separately?
 I. Discuss the assessment of contextualized and decontextualized comprehension skills.
 J. Describe two methods for nonstandardized assessment of decontextualized comprehension; of contextualized comprehension.
 K. Why and how do we assess comprehension strategies?
 L. What is the role of speech-sample analysis in assessing productive syntax and morphology?
 M. What situations, partners, and materials are best for collecting a speech sample from a child with developing language?
 N. How is MLU computed, and for what purposes is it used? What are its advantages and disadvantages?
 O. Discuss how the efficiency of speech sampling can be increased.
 P. Compare and contrast the Assigning Structural Stage Procedure, IPSyn, and DSS procedures.
 Q. What is the purpose of using elicited production procedures in criterion-referenced assessment? Give two examples of elicited production activities.
 R. What is the goal of pragmatic assessment for a child with developing language? Discuss four methods of pragmatic assessment.
 S. How can the results of a pragmatic assessment be used in intervention planning?
 T. What is the difference between phonological processing and phonological processes?
 U. Describe two methods of informal assessment of phonological processing for preschool children.
VII. Considerations for Assessing Older Clients with Severe Impairment and Speakers with ASD at the Developing Language Level
 A. What is meant by providing *access* and *opportunity* for older students with severe language disorders?
 B. Discuss the use of an ecological inventory to assess the communicative needs of an older, severely impaired client.
 C. What areas of interaction can be examined in an ecological inventory?
 D. Describe the way in which an SLP develops a communication profile for a severely affected client, and how the profile can be used in supporting the students' communication in everyday settings.
 E. List two parent report measures that can be used to assess pragmatic skills in preschoolers with ASD.
 F. What is the role of language sampling for preschool speakers with ASD?

A Sample of Articulation Screening Tools for the Developing Language Level

Test (Name, Author[s], Date, Publisher)	Developmental Range	Comments
Arizona Articulation Proficiency Scale—Third Edition (Fudala, 2001)	1:6–18 yr	Identifies misarticulations and total articulatory proficiency Provides intelligibility descriptions Administration time: 10 min
Hodson Assessment of Phonological Patterns—Preschool Phonological Screening (HAPP-3; Hodson, 2004)	Preschool	See HAPP-3 in Table 8-3 Yields pass/fail score Uses objects rather than pictures Administration time: 2–5 min
Denver Articulation Screening Exam (DASE; Drumwright, 1973)	2:6–7 yr	Administration time: 5 min
Fluharty Preschool Speech and Language Screening Test—Second Edition (Fluharty, 2000)	3–6:11 yr	Standardized on multiracial, multiethnic group of 705 standard English-speaking children Uses common objects for naming Administration time: 10 min
Kaufman Speech Praxis Test for Children (KSPT; Kaufman, 1995)	2–5:11 yr	Identifies the level of breakdown in a child's ability to speak Assists in assessment of dyspraxia of speech in preschool children Administration time: 5–15 min
Photo Articulation Test—Third Edition (PAT-3; Lippke, Dickey, Selmar, & Soder, 1997)	3–8:11	See Table 8-3 Can be adapted for screening Administration time: 20 min
Preschool Language Scale (Fourth Edition) Screening Test Kit (PLS-4 Screening Test; Zimmerman, Steiner, & Pond, 2011)	3–6:11 yr	Screens a variety of skills including articulation and language Administration time: 5–10 min
Screening Test for Developmental Apraxia of Speech—Second Edition (Blakely, 2000)	4–12 yr	A screening instrument to assist in the differential diagnosis of developmental apraxia of speech Areas assessed include expressive language discrepancy, vowels and diphthongs, oral-motor skills, verbal sequencing, and articulation
Slosson Articulation, Language Test with Phonology (SALT-P; Wade & Slosson, 1986)	3–5:11 yr	Incorporates screening of articulation, phonology, and language into a single score that shows a child's communicative competence Administration time: 7–10 min
Templin-Darley Tests of Articulation (Templin & Darley, 1969)	3–8 yr	See Table 8-3 Has a 50-item screening test

A Sample of Language Screening Tools at the Developing Language Level

Test (Name, Author[s], Date, Publisher)	Developmental Range	Areas Assessed	Comments

Bankson Language Screening Test—Second Edition (Bankson, 1990)	4–7 yr	Receptive and expressive: semantics, morphology, syntax, auditory and visual perception	Lists 38 of the most discriminating items as appropriate for quick screen, but gives no norms for this screen
			Standardized on 637 children, all socioeconomic levels
			Test-retest reliability = 0.94
			Concurrent validity:
			  with PPVT = 0.54
			  with Boehm = 0.62
			  with TACL = 0.64
			Administration time: 30 min

Battelle Development Inventory Screening Test—Second Edition (BDI-2; Newborg, 2004)	Birth–8 yr	Communication, cognitive, personal-social, adaptive-motor	See Table 8-4 Standardized on 800 children nationwide Administration time: 10–30 min
Denver II (Frankenburg et al., 1990)	2 wk–6 yr	Language, expressive-receptive vocabulary, concepts, personal-social, fine and gross motor	Gives age range for percentage of children who pass each item Standardized on 1032 children in Denver who varied socioeconomically and racially Interrater reliability = 0.62–0.79 Administration time: 15–20 min
Early Screening Profiles (ESP; Harrison et al., 1990)	2–6:11 yr	Profiles cognitive, language, self-help and social, motor; surveys articulation, home health behavior	ESP claims link with K-ABC, Vineland, and Bruininks-Osteretsky Test of Motor Proficiency Nationally standardized on more than 1100 children Yields standard, age-equivalent, and percentile scores Administration time: 15–30 min
Fluharty Preschool Speech and Language Screening Test—Second Edition (Fluharty, 2000)	3–6:11 yr	Articulation, receptive and expressive language, composite language	Allows assessment of Black English Dialect Provides standard scores and age equivalents Standardized on 705 children from varied racial, ethnic, and socioeconomic status (SES) and from 21 states Administration time: 5–10 min
Joliet 3-Minute Speech and Language Screen—Revised (Kinzler & Johnson, 1993)	K, 2nd, and 5th grades	Expressive syntax, receptive vocabulary, articulation, voice and fluency	Has computer program for record-keeping Provides pass/fail, cutoff score for each grade Standardized on 2587 children from three different SES and ethnic backgrounds Administration time: 3 min
Kindergarten Language Screening Test—Second Edition (KLST–2; Gauthier & Madison, 1998)	3:6–6:11 yr	School readiness	Identifies children who need further diagnostic testing to determine whether they have deficits that will impede academic achievement Administration time: 5 min

A Sample of Articulation Assessment Tools at the Developing Language Level

Test (Name, Author[s], Date, Publisher)	Developmental Range	Comments
Arizona Articulation Proficiency Scale— Third Edition (Fudala, 2001)	1:6–18 yr	Standardized on 5500 children from nationwide sample Reliability (interrater) = 0.68–0.99 (test-retest) = 0.96 Internal consistency = 0.77–0.94 Concurrent validity = 0.82–0.89 (with Photo Articulation Test, Goldman-Fristoe Test of Articulation, Templin-Darley Tests of Articulation) Administration time: 2–10 min
Articulation Testing for Use with Children with Cerebral Palsy (Irwin, 1961)	3–16 yr	Scores: percentile, T-score, standard score Administration time: 5–10 min
Assessment Link Between Phonology and Articulation—Revised (ALPHA-R; Lowe, 2009)	3–8:11 yr	Assesses phonetic repertoire through sound-in-position analysis, and assesses deviant use of phonological processes Scores: standard, percentile Administration time: 15 min
Hodson Assessment of Phonological Patterns—Third Edition (HAPP-3; Hodson, 2004)	Preschool	Normative data for 3–8 yr Uses objects and some pictures Administration time: 15–20 min
Bankson-Bernthal Test of Phonology (BBTOP; Bankson, 1990)	3–9 yr	Tests 23 consonants, clusters Scores by phonological process or phoneme Provides consonant inventory, phonological process inventory Yields percentile ranks and standard scores Normed on a sample of 1000 children similar to national average in ethnic composition High reliability (0.95 internal consistency, 0.89 test-retest) Administration time: 15 min
Bzoch Error Pattern Diagnostic Articulation Test (BEPDAT; Bzoch, 1971)	3–6 yr	Useful for clients with structural abnormalities of the oral mechanism
Central Institute for the Deaf Phonetic Inventory (Moog, 1988)	3–15 yr	Evaluates phonetic aspects of speech, primarily in the context of syllables, typically elicited through imitation of spoken model Phonetic Skills Profile summarizes scores Useful for establishing objectives and documenting progress Administration time: 30 min
Compton Phonological Assessment (Compton & Hutton, 1978)	3 yr–adult	Uses sentence completion Administration time: 90 min
Deep Test of Articulation (McDonald, 1968)	3–12 yr	Tests articulation of sounds in various phonetic contexts to determine contexts that will facilitate correct production
Fisher-Logemann Test of Articulation Competence (FLTOAC; Fisher & Logemann, 1971)	3 yr–adult	Has screening form available Sentence portion for 3rd grade and above Provides distinctive feature analysis Administration time: 45 min
Goldman-Fristoe Test of Articulation— Second Edition (GFTA-2; Goldman & Fristoe, 1999)	2–21 yr	Can be used with Khan-Lewis Phonological Analysis Yields percentile rank by age score Administration time: 10–15 min for single-word portion

Test (Name, Author[s], Date, Publisher)	Developmental Range	Comments
Iowa Pressure Articulation Test (IPAT; Morris, Spriestersbach, & Darley, 1961)	3–8 yr	Consists of 43 items from Templin-Darley Tests of Articulation; assesses velopharyngeal closure
Kaufman Speech Praxis Test for Children (KSPT; Kaufman, 1995)	2–5:11 yr	Assists in the developmental diagnosis and treatment of apraxia of speech in preschool children Identifies the level of breakdown in a child's speech Administration time: 5–15 min
Khan-Lewis Phonological Analysis - Second Edition (KLPA-2; Khan & Lewis, 2002)	2–21 yr	Use with Goldman-Fristoe Test of Articulation Yields percentile ranks, age equivalent; percentage occurrence of processes Standardized on 1175 males + 1175 females at 11 age groups; groups contain mix of genders, races, ethnic and geographical distributions Test-retest reliability; 0.94 across all phonological processes Administration time: 10–30 min
Natural Process Analysis (NPA; Shriberg & Kwiatkowski, 1980)	All ages	Requires 90 words from spontaneous speech sample Yields phonetic inventory; data on use of eight phonological processes Administration time: 15 min
Phonological Process Analysis (PPA; Weiner, 1979)	2–5 yr	Uses spontaneous and elicited production Looks at words in sentence context
Photo Articulation Test—Third Edition (PAT-3; Lippke, Dickey, Selmar, & Soder, 1997)	3–12 yr	Can be adapted for screening Provides means and standard deviations for age Normed on 684 children 3–12 yr Concurrent validity = 0.82 with Templin Darley Tests of Articulation Administration time: 25–30 min
Structured Photographic Articulation Test II Featuring Dudsberry (SPAT-DII; Dawson & Tattersall, 2001)	3–9 yr	Uses 48 photographs to assess 59 consonant singletons and 21 consonant blends Identifies phonological processes used by preschool and school-age children Administration time: 10–15 min
Templin-Darley Tests of Articulation (Templin & Darley, 1969)	3–8 yr	Has 50-item screening test plus Iowa Pressure Articulation Test for assessment of velopharyngeal closure Uses words, sentences, and sentence completion Provides means and standard deviations for age Test-retest reliability = 0.93–0.99
Test of Articulation in Context (TAC; Lamphere & Menard, 1998)	Preschool–elementary	Based on the premise that articulation skills are most accurately represented in spontaneous speech; uses pictures to elicit all common consonants, consonant clusters, and vowels Administration time: 20–30 min
Test of Minimal Articulation Competence (TMAC; Secord, 1981)	3 yr–adult	Has 24-item quick screen Yields developmental articulation index Test-retest reliability = 0.94 Administration time: 10–20 min
The Apraxia Profile (Hickman, 1997)	2–12 yr	Helps identify the presence of oral apraxia, diagnose developmental verbal apraxia, and determine oral motor movement and sequence disorders Administration time: 25–35 min
Weiss Comprehensive Articulation Test (WCAT; Weiss, 1980)	Preschool–adult	Based on studies by Prather, Hendrick, & Kera (1975); Pendergast et al. (1966); and Templin (1957) Yields age-equivalent, intelligibility, stimulability score Standardized on 4000 children (ages 3–8) Test-retest reliability = 0.96 Administration time: 20 min

A Sample of Language Assessment Tools at the Developing Language Level

Test (Name, Author[s], Date, Publisher)	Developmental Range	Areas Assessed	Comments
Assessment, Evaluation, and Programming System for Infants and Children—Second Edition (AEPS; Bricker, 2002)	Birth–6 yr	Assesses the skills and abilities of children who are at risk or who are functioning at a developmental age of birth–6 yr	Curriculum-based assessment/evaluation system that provides a framework for developing goals and objectives in intervention Measures functional skills and abilities, gathers data by observing in familiar environments, refers to IFSP/IEP goals
Batelle Developmental Inventory—Second Edition (Newborg, Stock, & Wnek, 2004)	Birth–8 yr	Speech and language, social/emotional, cognitive, motoric skills, learning, and hearing	Normative data gathered from over 2500 children Includes optional scoring software so data can be input to a Web-based program or on a smart phone. Scoring includes standard scores, age equivalents, and cut-off scores Administration time: 1–2 hr
Boehm 3—Preschool (Boehm, 2001)	3–5:11 yr	Receptive concepts: space, time, quantity	Yields age equivalent, percentile, T-scores Standardized on 433 children in 17 states; stratified by sex, race, region, SES Test-retest reliability = 0.87–0.94 Internal consistency = 0.88 Administration time: 20–30 min
Clinical Evaluation of Language Fundamentals—Preschool—Second Edition (CELF; Wiig, Secord, & Semel, 2004)	3–6 yr	Concepts, syntax, semantics, morphology	Downward extension of *Clinical Evaluation of Language Fundamentals—Revised* Yields standard, percentile scores, receptive and expressive composites Standardized on 1,500 children Administration time: less than 1 hr
Communication Abilities Diagnostic Test (CADeT; Johnston & Johnston, 1990)	3–9 yr	Syntax, semantics, pragmatics	Normed on 1000 nationwide
Coordinating Assessment and Programming for Preschoolers (CAPP; Karnes, & Johnson, 1991)	3–5 yr	6 domains: language, social, general knowledge, school readiness, fine and gross motor	Includes classroom and home activities program
Detroit Test of Learning Aptitude-Primary—Third Edition (DTLA-P:3; Hammill & Bryant, 2005)	3–9:11 yr	Domains: linguistic, cognitive, attentional, motoric	Has software available for scoring Has articulation measure Includes items measuring conceptual matching, design reproduction, digit sequences, following directions, word opposites, motor directions, visual discrimination, and other skills Yields standard score, percentile, developmental quotient (DQ), age equivalent Normed on 1976 children Construct validity and reliability date available Administration time: 15–45 min

Test (Name, Author[s], Date, Publisher)	Developmental Range	Areas Assessed	Comments
Developmental Sentence Score (DSS; Lee, 1974)	2–7 yr	Expressive language: indefinite pronouns, personal pronouns, main verbs, secondary verbs, negatives, conjunctions, interrogative reversals, *wh-* questions	Speech-sample analysis Use for Standard American dialect only Yields developmental sentence score and scores for 10th, 25th, 75th, 90th percentiles for each age Standardized on 200 children in Illinois; mostly middle-class; 10 each at 3-mo intervals, ages 2 yr–6:11 yr
Evaluating Acquired Skills in Communication—Third Edition (EASIC-3; Riley, 2008)	3 mon–6:3 yr	Semantics, syntax, morphology, pragmatics	For evaluation of severely language impaired Administration time: 15–30 min
Expressive One-Word Picture Vocabulary Test—2000 Edition (EOWPVT [2000]; Brownell, 2000)	2–18 yr	Expressive vocabulary	Spanish version available Norming sample related to ROWPVT Yields standard, percentile, age-equivalent scores Administration time: 10–15 min
Expressive Vocabulary Test—Second Edition (EVT-2; Williams, 2007)	2:6–adult	Naming, synonyms	Normed on same children as PPVT Designed as a companion expressive assessment to PPVT Administration time: 10–20 min
Grammatical Analysis of Elicited Language (Moog & Geers, 1985)	2:6–5 yr	Syntax: articles, adjectives, possessives, demonstratives, conjunctions, *wh-* questions, copula, prepositions, negatives	Video available for training administrator Yields profile, not standard scores Standardized on 200 hearing-impaired and 200 normal-hearing children
Illinois Test of Psycholinguistic Abilities—Third Edition (ITPA-3; Hammill, Mather, & Roberts, 2001)	5–13 yr	The Global Composites scores are: General Language, Spoken Language and Written Language Specific Composites scores include: Semantics, Grammar, Phonology, Comprehension, Spelling, Sight-Symbol Processing, and Sound-Symbol Processing	Standard scores, percentiles, age and grade equivalents The ITPA-3 Scoring Software and Report System, sold separately, automatically converts raw scores into standard scores, percentile ranks, and age equivalents. Administration time: 45–60 min
Miller-Yoder Language Comprehension Test (MY; Miller & Yoder, 1984)	4–8 yr	Receptive grammar and morphology	Normed on 120 preschool and kindergarten children Scores yield developmental profile Yields percentage correct with pass/fail criteria Administration time: 15–30 min
Peabody Picture Vocabulary Test—Fourth Edition (PPVT-4; Dunn & Dunn, 2006)	2:6 yr–adult	Receptive vocabulary	Spanish version available Yields standard score, percentile, age equivalent, stanine, standard error of measurement Standardized on 4012 children ages 2–18 years Administration time: 10–20 min
Porch Index of Communicative Ability in Children (PICA; Porch, 1981)	3–12 yr	Verbal, gestural, graphic abilities	Scores responses qualitatively Yields percentile score, gives means for age Standardized on several hundred children representative of U.S. population Administration time: 30–60 min
Preschool Language Assessment Instrument—Second Edition (PLAI-2; Blank, Rose, & Berlin, 2003)	3–6 yr	Matching perception, analysis of perception, reasoning about perception	Assesses ability to use and understand the "language of learning" at varying levels of abstraction Available in Spanish Provides numerical and qualitative scores Gives reliability and validity data Administration time: 30 min

Continued

Test (Name, Author[s], Date, Publisher)	Developmental Range	Areas Assessed	Comments
Preschool Language Scale—Fifth Edition (PLS-5; Zimmerman, Steiner, & Pond, 2011)	Birth–7:11 yr	Language precursors; expressive and receptive semantics, syntax, morphology, integrative thinking, auditory comprehension	Includes family information form Spanish version available Articulation screening included (see Table 8-1) Can be used as criterion-referenced test for older child Yields standard scores, percentile, age equivalent Standardized on 1500 children nationwide Administration time: 20–45 min
Receptive One-Word Picture Vocabulary Test—2000 Edition (Brownell, 2000)	2:11–12 yr	Receptive vocabulary	Spanish version available Yields standard, percentile, age-equivalent score Similar to norming population for Expressive One-Word Picture Vocabulary Test Administration time: 20 min
Rice-Wexler Test of Early Grammatical Impairment (TEGI; Rice & Wexler, 2001)	3.0–8.0	Grammatical morphology	Criterion-referenced measure
Sequenced Inventory of Communication Development—Revised (SICD-R; Hedrick, Prather, & Tobin, 1984)	4 mon–4 yr	Receptive language (speech and sound awareness and understanding); expressive language (imitating, initiating, responding)	Incorporates speech sample Age norms for receptive and expressive scales Has adapted version for older clients with physical disabilities Standardized on 252 white children from varied socioeconomic backgrounds Administration time: 30–45 min, longer to score
Structured Photographic Expressive Language Test—Preschool-2 (SPELT-P2; Dawson et al., 2004)	3–5:11 yr	Syntax and morphology	Spanish version available Yields standard scores, confidence intervals, percentile ranks, percentile bands, and test-age equivalents Administration time:10–15 min
Structured Photographic Expressive Language Test-3 (SPELT-3; Dawson & Stout, 2003)	4–9:11 yr	Syntax and morphology	Has guidelines for scoring Black English dialect. Standardized on more than 1800 children nationwide. Administration time: 15–20 min Spanish version available (second edition). Yields standard, percentile, age-equivalent scores.
Test for Auditory Comprehension of Language—Third Edition (TACL-3; Carrow-Woolfolk, 1999a)	3–9:11 yr	Receptive language: word classes and relations, grammatical morphemes, elaborated sentence constructions	Spanish version available Yields percentile standard score, age equivalent Normed on 1003 children Administration time: 15–25 min
Test of Early Language Development—Third Edition (TELD-3; Hresko, Redi, & Hammill, 1999)	2:7–11 yr	Receptive and expressive syntax, semantics	Yields standard scores, percentile, age equivalent Normed on 1184 children in 30 states Administration time: 15–20 min
Test for Examining Expressive Morphology (TEEM; Shipley, Stone, & Sue, 1983)	3–7:11 yr	Present progressive plurals, possessives, past tenses, third-person singular, derived adjectives	Uses sentence completion Has companion program—Teaching Expressive English Morphology Yields age equivalent, means, and standard deviation for 6-month intervals Normed on 540 children Construct validity = 0.87 Intrarater and interrater reliability = 0.94 Administration time: 7 min
Test of Language Development—Fourth Edition: Primary (TOLD-4:P; Newcomer & Hammill, 2008)	4–8:11 yr	Receptive and expressive semantics and syntax	Has graph for visual representation of scores Uses imitation, sentence completion, picture pointing Yields standard scores, percentile, and equivalent quotients Nationally standardized on more than 2000 children in 28 states and Canada Administration time: 30–60 min

Test (Name, Author[s], Date, Publisher)	Developmental Range	Areas Assessed	Comments
Test of Relational Concepts (Edmonston & Thane, 1993)	3–8 yr	Receptive semantics	Normed on 1000 children
Test of Pragmatic Skills— Revised (Shulman, 1986)	3–8 yr	Pragmatics: verbal, and nonverbal, naming and labeling, reasoning, denying	Uses structured elicitation format
Test of Pragmatic Language— Second Edition (TOPL-2; Phelps-Terasaki & Phelps-Gunn, 2007)	6–18 yr	Comprehensive assessment of student's abilities to use pragmatic language effectively	TOPL test items provide information within six core subcomponents of pragmatic language: physical setting, audience, topic, purpose (speech acts), visual-gestural cues, and abstraction Administration time: 45–60 min
Test of Semantic Skills— Primary (TOSS-P; Bowers, Huisingh, LoGiudice, & Orman, 2002)	4–8 yr	Receptive and expressive semantics: labels, categories, attributes, functions, definitions; has 6 themes: learning and playing, shopping, household, working, meals and health, and fitness	Yields standard, percentile, age-equivalent scores Standardized on 1500 students nationwide Previously called *Assessing Semantic Skills Through Everyday Themes* (ASSET) Administration time: 25–30 min
Token Test for Children— Second Edition (TFFC-2; McGhee, Ehrler, & DiSimoni, 2007)	3–12 yr	Auditory comprehension, temporal and spatial concepts	Yields age- and grade-equivalent score. Standardized on 1300 children (urban and rural) Administration time: 10–15 min
Utah Test of Language Development—Fourth Edition (Mecham, 2003)	3–9:11 yr	Receptive and expressive language, auditory comprehension	Yields standard scores and language quotient. Administration time: 30–45 min
Wiig Criterion-Referenced Inventory of Language (Wiig, 1990a)	4–13 yr	Semantics, pragmatics, syntax, morphology	No norm-referenced scores; use as criterion-referenced procedure
Woodcock Language Proficiency Battery— Revised (Woodcock, 1991)	2–95 yr	Oral language, vocabulary, antonyms and synonyms, reading and writing	Compuscore software for scoring Spanish form available Yields standard, age- and grade-equivalent scores Nationally standardized on 6300 students Reliability coefficients = 0.95 Administration time: 20–60 min

Grammatical Morpheme Analysis of Transcript in Box 8-5

Brown's stage

II

-ing	
obligatory context	realization
3	+
4	+

100 %

in	
oc	r
8	+
9	+

100 %

plural	
oc	r
7	+
8	+
9	+

100 %

III

on	
oc	r
3	+
7	+

100 %

possessive	
oc	r
5	+
6	+
7	+

100 %

articles	
oc	r
5	+
9	-
10	-
14	-
15	-
20	+
21	+

43 %

copula *be*	
oc	r
1	-
5	-
6	-

0 %

V

regular past	
oc	r
21	+

100 %

irregular past	
oc	r
11	+
12	+
17	-
19	- overgeneralized
20	- overgeneralized

40 %

regular 3rd sing.	
oc	r
13	-
16	-

0 %

V+

auxiliary *be*	
oc	r
3	-
4	-

0 %

irregular 3rd sing.	
oc	r
7	-
15	-

0 %

Sentence Structure Analysis of Transcript in Box 8-5

Name_____ Developmental Level_____ Age _____ Date_____

Stage	NP	S*	A⁺	VP	S*	A⁺	Negative	S*	A⁺	Question	S	A	Complex	S*	A⁺
I	NP alone (not in sentence context) with modifier Pronouns: *I, me*	C2 C3 C4 C10 C18		Unmarked V Absent copula Absent auxiliary	C3, C4 C9 C13 C15 C16 C17		*No* or *not* + *NP* or *VP*			Routines: *What . . .?* *What .. . doing?* *What .. . going?*	C1				
II	Noun modified in object position Pronouns: *my, it*	C5		Main V marked occasionally *-ing* w/o *be* Catenative alone w/o NP Copula appears occasionally	C11 C12 C21	C13 C15 C16 C17 C9	*NP* + {*No, not, can't,* or *don't* } + *VP*	C6 C7		*What* or *Where* + (N) + V					
III	Modified NP may appear in subject position Demonstratives *(this, that, these, those)* and articles *(a, an, the)* appear Pronouns: *you, your, she, them, he, we, her*	C20 C21	C9 C10 C14	Auxiliaries: *can, will* Overgeneralized past tense	C2 C18 C19 C20		*Won't*			Aux. Vs appear in Wh-Qs, W/o inversion Yes-no Qs produced w/ rising intonation only Q words: *why, who, how, whose*	C2 C3 C4 C5 C8				

Stage	NP	S*	A⁺	VP	S*	A⁺	Negative	S*	A⁺	Question	S	A	Complex	S*	A⁺
EIV	Subject NP is obligatory; appears in all sentences	C6 C8 C9 C10 C11 C13 C15 C16 C17 C18 C19 C20 C21		Past modals: *could, should, would, must, might* Catenative + NP			*Isn't, aren't, didn't, doesn't*		C6	Auxiliary Vs and "dummy do" forms appear in wh- and yes/no Qs and are inverted Q words: *when*		C2 C3 C4 C5 C8	*Let's, Let me* Simple infinitive Full proposition Simple wh- Conjoining Conj.:*and*		
LIV-EV	NP can contain three elements Pronouns: *his, him, us, they, our, its*	C16 C8 C19					*Wasn't, weren't, couldn't, wouldn't, shouldn't*						Double embedding Conjoining and embedding w/in one S		
LV	Pronouns: *myself, yourself, their*			have +*en*									Infin. w / diff.subj. Relative clause Conj.: *if*		
V+	Pronouns: *herself, himself, themselves, ourselves*												Gerund Wh- infinitive *Help, make, watch, let* Conj.:*because*		
V++													Conj.: *when, so*		

*Successful use.
†Attempt; incorrect use.

Sentence Structure Analysis of Transcript in Box 8-7

Name: _____

Birth Date: _____

Recording Date: _____

CA:_____

$DSS =$ Total score $\div$ Number of Utterances (50)

Sen-Tence #	Indef. Pro.	Pers. Pro.	Main Verb	Sec. Verb	Neg.	Conj.	Inter. Rev.	Wh- Q	Sent. Pt.	Total
C1	3	1,1	—						0	5
C3		1	4		4				1	10
C8	1		1						1	3
C9	—	1	—		—				0	9
C11		1	2						1	4
C12		1	1	2					1	5
C13	1	1	2	2					1	7
C17		—,1	4		4				0	9
C22		1	—						0	1
C23	3	1	1						0	5
C26	1		1						1	3
C28			1				—		0	1
C29	1	1	1	2					1	6

Sen-Tence #	Indef. Pro.	Pers. Pro.	Main Verb	Sec. Verb	Neg.	Conj.	Inter. Rev.	Wh- Q	Sent. Pt.	Total
C30		1	2						1	4
C31	1		1						1	3
C32	1		1						1	3
C33	1		1						1	3
C34	1		1						1	3
C35	1	1,6	—,1				—		0	9
C37	1	3	1						1	6
C39	1	1	2						1	5
C40	1		2						1	4
C41	1		2					2	1	6
C42	3	1	—	2					0	6
C43	1		1				1	2	1	6
C45	1	1	2						1	5
C47		1,3	1						1	6
C48		2	1						1	4
C49		2	1						1	4
C50		2,2	1,2			3			1	11

Intervention for Developing Language

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. Discuss intervention policy issues at the developing language level.
2. Describe intervention goals appropriate for developing language.
3. List a range of intervention procedures with an evidence base in the developing language period.
4. Discuss the SLP's role in developing emergent literacy skills.
5. Describe various contexts and models of service provision at the developing language level.
6. Discuss intervention issues and strategies for older clients with severe impairment who function at the developing language level.
7. Describe interventions aimed at improving communication and social integration for children with autism spectrum disorder (ASD) at the developing language level.

Rachel was a friendly, likable little girl who loved to talk even though people sometimes had trouble understanding what she said. She was born with Down syndrome and has been enrolled in early intervention since she was an infant, first in a home program and later in a mainstream preschool, with special services in speech-language and special education provided by the local school district. Now she was close to 7 years old. Her parents were very committed to continuing mainstream education for Rachel, and her preschool teacher, special educator, and speech-language pathologist (SLP) thought Rachel could function in a mainstream kindergarten class, with some support services. Her school district and the kindergarten teacher were somewhat hesitant to go along with this plan. The kindergarten teacher was afraid Rachel would "hold her class back." The school district felt it would be more manageable logistically to provide services in a self-contained program for children with intellectual disabilities (ID), which was housed on the other side of town from Rachel's home. The school district developed an Individualized Educational Plan (IEP) for Rachel that included the self-contained class placement. At the IEP meeting, the parents rejected that plan, insisting that Rachel be allowed to try the kindergarten class in the neighborhood school. Reluctantly, the school-district team agreed to the plan and devised a range of special services that Rachel would receive within the classroom setting, including special education, speech-language pathology, and occupational therapy.

Ms. Snyder was to deliver the SLP services for Rachel. The IEP team had done a thorough assessment in several areas, including speech and language. The assessment report stated that Rachel's cognitive skills were close to a 5-year level, and her receptive language scores were between 42 and 54 months in most areas assessed. Her expressive skills, including vocabulary, phonology, expressive syntax, and morphology, were uniformly lower, though. She used a variety of substitution processes and was moderately unintelligible. Her sentences were primarily two or three words long with absent verb marking and grammatical morphemes and frequent errors in pronoun use. She was a good communicator, though, eager to initiate conversation, responsive to others' speech, and able to express a variety of communicative functions with the language she had at her disposal. Ms. Snyder met with the kindergarten teacher to begin to develop a program that would address Rachel's needs for language intervention and help her to succeed in the classroom.

Rachel is a child who, although older than preschool age, functions in the developing language (DL) period, the time at which words are combined in sentences but fully grammatical forms and a full range of meanings have not yet been acquired. Like children who are chronologically of preschool age, children Rachel's age or even older who have not yet mastered all the basic structures and functions of language typically acquired during the preschool years can be candidates for interventions that follow some of the principles and methods discussed in this chapter. Before looking in detail at the goals, procedures, and contexts of intervention for children with DL, though, let's look at some of the legislation and social policy issues we need to be aware of when designing intervention programs for children at this level.

INTERVENTION POLICY ISSUES AT THE DEVELOPING LANGUAGE LEVEL

Individualized Educational Plans

We talked in Chapters 6 and 7 about the reauthorized Individuals with Disabilities Education Act (IDEA) of 2004, the federal law that mandates free, appropriate public education (FAPE) to all children with handicaps. Part B of IDEA is concerned with school-age children, but its mandate extends to 3- to 5-year-olds as well. We talked about using the Individual Family Service Plan (IFSP) mandated under IDEA to plan intervention services for infants, toddlers, and their families. Educational plans for preschoolers and for older children with disabilities who function at DL levels, however, may be written in a somewhat different format. This format is the Individual Educational Program (IEP). IEPs differ from

IFSPs in several ways. The content and format are somewhat dissimilar. The biggest difference is that the focus of the IEP is on the child, rather than on the family. IEPs do not by any means leave the family out of the picture, though. IDEA has some very specific requirements about how families participate in the process of developing an IEP. The family is considered central members of the IEP team. They must be notified of an IEP meeting with sufficient time for them to arrange to attend. The meeting must be at a time that is convenient for both educational staff and parents. The parents have the right to accept or reject the IEP and to request that modifications be made to it. They also must approve the plan being proposed for the child before any program is initiated. A sample IEP format is provided in Appendix 12-1.

Intervention Settings

The other big difference between intervention for toddlers and for preschoolers is where the intervention takes place. In most states birth-to-3 services are provided in the child's home or care setting, by interventionists who travel from child to child to provide individual intervention and care-giver training. When children turn 3, however, responsibility for their education moves from the birth-to-3 system to the local educational authority (LEA), where it stays until they graduate from high school or turn 21. This generally means that many children with disabilities "start school" at age three, when the location of their intervention moves from their home or local care setting to a school classroom, where a group of children receive instruction. For many children and families, this is a big change that can cause anxiety and stress. Most birth-to-3 services work with local school personnel to provide some form of transitional planning to make this move smoother.

Family-Centered Practice

The best practice for all our clients is family-centered; this is especially true for young children. Does this mean that family members must deliver the intervention? Not necessarily. As we discussed in Chapter 7 when we talked about intervention for emerging language, we need to remember that every family is different. For some families, having parents be primary agents of intervention makes sense. In these families, parents may feel they want to be centrally involved in their child's program, that they have the time and energy to devote to delivering the intervention, and that they are comfortable with the shift in role from parent to teacher.

Other families may not feel able or eager to take on that role but will want to have some supplementary part to play. They may want to do small amounts of "homework" to follow up on what is being done in the intervention setting. They may want to observe the intervention without participating directly. Other families may feel more comfortable having the large majority of the intervention done by "the pros." They may just want periodic updates on the child's progress. Family-centered intervention means respecting the family's wishes on the extent to which they want to be involved. Although we always want to encourage families to be as involved as possible and set up the intervention situation so that they can achieve this level of involvement, we never want to make families feel inadequate about the level of contribution they can make.

A second issue in family-centered intervention involves the extent to which families are involved in the choice of intervention goals and methods. As we discussed in Chapter 3, for most clients there are more potential goals than there is intervention time to achieve them. This means we must pick and choose among the potential targets. In Chapter 3, we talked about some criteria to use in making this selection, such as teachability, functionality, and so on. Another factor to be considered, though, is family preference. Families are very likely to have feelings and opinions about areas in which they would like their child to show improvement. This information is an important part of the intervention planning process. We have an obligation, in family-centered practice, both to elicit this information from parents and to take it seriously in devising the intervention program.

Take Rachel as our example again. Suppose her parents felt that an important communicative goal was to get her to use "good sentences" such as "I'm hungry" and "He's a friend" instead of "Me hungry" and "Him friend," as she currently does. They feel these kinds of usages make Rachel sound babyish and will cause her problems among her peers in the kindergarten class. Perhaps the language clinician feels that such sentences containing copula verbs that agree in person and number with nominative pronouns are not the most appropriate goal, since Rachel is still lacking developmentally earlier forms. Who's right? In family-centered intervention, being right is not necessarily the issue. Perhaps the more important question is, how can this disagreement be resolved so that Rachel's development is the foremost consideration? The clinician can communicate, in a clear, respectful, and nonthreatening way, her opinion that Rachel is not yet ready to meet the standard of these "good sentences" and needs to learn other areas of language to serve as a basis for these later acquisitions. But suppose Rachel's family continues to assert a strong desire to have Rachel work toward this goal? Family-centered practice dictates that we concede the parents' right to determine what is important for their child to learn. Even if we do not entirely agree with the family's choice of communicative goals for their child, we have an obligation to honor the family's wishes if at all possible and to use family priorities in selecting and sequencing intervention goals.

Family-centered practice for the child with DL, just as for the child at other stages of language acquisition, means actively involving the family in all levels of decision-making about the child's program. It means having meaningful discussions about the assessment findings and sincerely soliciting the parents' input as we design the intervention program. It means deciding with the family how much direct involvement with the intervention program they feel able to manage and how much professional input they want. Finally, it means remembering that even our best clinical judgment must occasionally take a back seat to the parents' desires for their children.

INTERVENTION FOR DEVELOPING LANGUAGE: PRODUCTS, PROCESSES, AND CONTEXTS

In Chapter 3, we talked about three aspects of intervention that McLean (1989) suggested we consider when designing a management plan for a child with a language disorder: the *products,* or intended goals of the intervention; the *processes,* or methods used to achieve these goals; and the *context,* or physical and social milieu in which the intervention takes place. Let's look at each of these aspects of the intervention program and see how they apply to children in the DL phase.

Intervention Products: Goals for Children with Developing Language

For many children who, like Rachel, are within or only a few years beyond the preschool period chronologically, goals of intervention include some of the forms and functions acquired by typical children between 3 and 5 years of age. Some special considerations are involved in planning intervention programs for older, severely impaired clients still in the DL phase, which we will discuss later. In general, though, the goals for language intervention in this phase are to help the child acquire intelligible, grammatical, flexible forms of expression for the ideas and concepts the child has in mind, to enable the child to understand others, to give the child the tools to make communication effective, efficient, and rewarding so that social interaction proceeds as normally as possible, and to strengthen the oral language basis for success in literacy. As we discussed in the previous chapter, the preschool years are normally a period of exponential language growth, when children with typical development move from mean lengths of utterance of less than two words to more than five. Another way to describe this period is to say it is the interval between Brown's (1973) stages II and V+, the period of the acquisition of basic structures, functions, and meanings of the language. Table 9-1 reviews some of the major changes that take place in the language of normally developing children during the preschool years. These milestones provide a basis for establishing the goals of intervention at the DL level.

One thing you will probably notice right away about the list in Table 9-1: it's long. Not every child with DL will achieve everything on this list during the intervention period. As always, we will have to choose intervention goals judiciously. Knowing the normal sequence of acquisition is necessary to make these decisions, but it is not enough. Other considerations, such as those discussed in Chapter 3 and those we just talked about in terms of family involvement, must come into play. Later we'll talk more about the issue of choosing intervention goals for the older, severely impaired client. Let's look now at each of the major areas of intervention goals for children with DL and discuss some of the considerations necessary to establish individual targets in each one.

Phonology

We talked in the previous chapter about how to decide when and how to assess phonological production. In general, children at developing levels of language are not candidates for speech sound intervention unless their intelligibility is significantly impaired. Because so much phonological growth is going on in the DL period, intervention for particular sounds can usually be deferred until school age, since many speech sound problems resolve on their own by then (Shriberg & Kwiatkowski, 1994). However, if a child is seriously unintelligible, intervention is warranted. Social disvalue and even social isolation, as well as frustration and behavioral and emotional reactions, can occur in children who have difficulty in getting messages across, even if they would eventually outgrow the unintelligibility. Although the specific targets of the intervention in this area will be the acquisition of particular sounds or the suppression of particular simplification processes, we need to remember that the important long-term goal is to increase the client's overall intelligibility. All the issues we discussed in Chapter 3 about being careful to ensure that behaviors learned in intervention generalize to real conversation must be addressed to ensure that phonological production improvement leads to real gains in intelligibility. Kent, Miolo, and Bloedel (1994);

Gordon-Brannan and Hodson (2000); and Morris, Wilcox, and Schooling (1995); discussed a variety of instruments that can be used to evaluate changes in intelligibility in the course of an intervention program.

Although the range of approaches to speech sound intervention is beyond the scope of this text, Williams, McLeod, and McCauley (2010) provide a comprehensive description and evaluation of the bases in evidence of a large number of interventions in this area, categorizing them into three major groups: interventions that focus specifically on speech sound production but assume that errors stem from phonological, rather than motoric sources; interventions that place speech sound production in the broader context of speech perception, language, literacy, and communication; or those that focus primarily on the motor acts involved in speech production.

We need to remember, too, that speech sound and language disorders often co-exist in the same child (Pennington & Bishop, 2009). So assessing syntactic and semantic skills in unintelligible children is always important in order to avoid missing deficits in these areas that are masked by the difficulty in understanding what the client says. When assessment of an unintelligible child indicates that syntactic and semantic deficits are present, it makes sense to address those targets early in the intervention program, rather than waiting until the child is fully intelligible. One way to address them is through input, providing indirect language stimulation, focused stimulation, or auditory bombardment (see Comprehension versus Production Targets, later in the chapter) of the forms we want the child to begin learning. These activities can be supplemented with more direct production activities that control for pronounceability of target words. In general, in accordance with our principle of requiring the client to do only one new thing at a time, we will want to address phonological and semantic/syntactic targets *separately,* not within the same activity. However, Tyler, Lewis, Haskill, and Tolbert (2002, 2003) showed that, when children have both phonological and morphosyntactic deficits, working on morphosyntax leads to changes in both areas. This research suggests that, for children with both speech and language problems, morphosyntactic deficits should be addressed first, followed by work on whatever phonological targets have not resolved in the course of the first segment of intervention.

One further consideration in planning phonological intervention at the preschool level concerns the connection between phonology and metaphonology. *Metaphonology,* or phonological awareness (PA), is the ability to detect rhyme and alliteration; to segment words into smaller units, such as syllables and phonemes; to synthesize separated phonemes into words; and to understand that words are made up of sounds that can be represented by written symbols or letters. These PA skills develop sequentially through the late preschool period (Hodson, 1994; Swank, 1999; Schuele & Boudreau, 2008). Several of these abilities have been shown to be closely related to success in learning to read (Hogan, Catts, & Little, 2005; Scarborough, 2003; Swank, 1994, 1999) and spell (Bourassa & Treiman, 2001; Clarke-Klein & Hodson, 1995; Gillon, 2002; Kirk & Gillon, 2007). Bird et al. (1995), Larrivee and Catts (1999), Pennington and Bishop (2009), and Rvachew et al. (2003) have shown that children with productive phonological problems during the DL period sometimes have trouble acquiring PA and are at risk for developing reading problems. This information suggests that when working with preschoolers who have phonological production problems, incorporating PA activities within the speech therapy may be helpful in preventing literacy difficulties. A few studies have shown that doing so does improve

TABLE 9-1   Milestones of Normal Communicative Development: Preschool Years

Area	Goals
Phonology	Increase consonant repertoire.
	Increase production of closed syllables.
	Decrease use of phonological processes.
	Increase production of multisyllabic words.
	Increase accuracy of sound production.
	Increase intelligibility.
Semantics	Increase vocabulary size.
	Increase use of verbs for specific actions (sweep, slide, bend, fold, etc.).
	Increase appropriate pronoun use.
	Increase understanding and use of basic concept vocabulary (spatial terms, temporal terms, diectic terms, kinship terms, color terms, etc.).
	Increase range of semantic relations expressed within sentences (possession, recurrence, location, etc.).
	Increase range of semantic relations expressed between clauses (sequential, causal, conditional, etc.).
	Increase use of appropriate conjunctions (*but, so,* etc.).
Syntax	Increase sentence length.
	Increase sentence complexity (use of prepositional phrases, noun modifiers, verb marking, etc.).
	Increase use of a variety of sentence types (questions, negatives, conjoined and embedded, passives, etc.).
	Increase use of appropriate auxiliary verbs (*can, will, must, have, is, are,* etc.).
	Increase use of copula verbs (*is, am, was, were,* etc.).
	Increase understanding of word order in sentences.
Morphology	Increase use of simple morphemes on nouns (plural, possessives, etc.).
	Increase use of verb markers (tense, number, aspect, etc.).
	Increase use of higher-level morphemes (*-er, -est,* etc.).
	Increase appropriate use of articles (*a, an, the*).
Pragmatics	Increase use of verbal forms of communication.
	Increase use of language to achieve communicative goals.
	Increase flexibility of language forms for various contexts.
	Increase ability to initiate communication with appropriate forms.
	Expand range of communicative intentions expressed with a variety of language forms.
	Increase ability to maintain conversational topics.
	Increase ability to manage conversational turn-taking, topic-shifting.
	Begin to use various genres of language (e.g., narration).
	Increase ability to make and request conversational repair.
Play and thinking	Increase ability to use objects to represent others.
	Increase use of pretend and imaginative play.
	Increase play that involves social role-playing.
	Increase ability to use language to foster abstract thought.
	Increase ability to use language to negotiate peer interactions.
	Increase ability to use language to self-monitor and inhibit aggressive behavior.
Preliteracy	Listen to stories; talk about pictures and events in books.
	Look at books independently; orient book properly, turn pages.
	Recognize parts of books: pages, title, orientation of print.
	Recognize words in print (e.g., find first word on a page, count words on a page).
	Begin to develop metalinguistic and phonological awareness:
	Develop awareness of rhyme.
	Count syllables in words.
	Sing alphabet song; identify letters.
	Begin to be able to segment words into syllable and sound units.
	Know what a *word* is.
	Identify words that start/end with the same sound.
	Count sounds in words.
	Match sounds and letters.

both speech and PA in children with speech delays (e.g., Hesketh, Adams, Nightingale, & Hall, 2000; Kirk & Gillon, 2007; Van Kleeck, Gillam, & McFadden, 1998). Hesketh (2010) summarizes this literature, concluding that children as young as 4 can be taught PA, that PA instruction improves literacy performance especially when alphabet letters are taught as well, and that including PA in a speech program leads to as much improvement in speech as is seen when the focus is speech only. Since incorporating PA activities in speech therapy may help shore up preliteracy weakness in children with speech sound disorders, clinicians can consider including PA activities in speech intervention for preschool children with reduced intelligibility. Some suggestions for doing this appear in Box 9-1. Kiewel and Claeys (1999) and Noble-Sanderson (1993) also provided phonology programs built around storybook activities that integrate speech sound remediation with the development of PA for children at the DL level.

BOX 9-1	Phonological Awareness Activities for Use in a Phonological Production Program at the Developing Language Level

DEVELOPING RHYMING SKILLS

1. Using a "pocket chart," present a card with a picture of a word containing one of the client's target sounds in one pocket in each row. Have the client find a picture, from a set the clinician provides, for a word that rhymes with each, and place it in the pocket next to its "rhyming buddy."
2. Prepare a set of cards with pictures whose names contain the client's target sounds. Have some rhyming and some non-rhyming pairs in the set. Present a pair of pictures. Name each picture, and then ask the client whether the two rhyme.
3. Make up rhymes for words targeted in the speech sound program.
4. Use rhyming words to work on sounds in final position. Point out the rhymes to clients. Encourage clients to make up new words with the same ending. Accept nonsense words.
5. Use written forms of target rhyming words as cues, along with pictures. Point out that the rhyming words have the same letters at the end in the written form.
6. Write "word family" stories with clients. Choose a rhyming-word family containing a target sound in final position (such as the *us* family for work on final /s/). Have clients make a list of words in that family, and write the list on the board (e.g., *us, bus, Gus, fuss*). Encourage clients to make up a silly story with these words (e.g., "Gus got on the bus with us. He made a big fuss. The bus driver put us off the bus.").
7. Write down the story, and have clients illustrate it. Point out the letter for the target sound at the end of the word. Have the clients "read" the story to each other, to the clinician, and to parents.

DEVELOP AWARENESS OF SYLLABLES

1. Have students tap or clap out the number of syllables contained in words targeted in the speech-remediation program.
2. Play "how many parts" with target words. Include both one- and two-syllable words with target sounds. Have cards containing pictures or cues for each target word. Have clients pick out all the cards for words with only one "part" and pronounce those. Then have clients pick all the cards for words with two "parts."

DEVELOP AWARENESS OF FIRST/LAST SOUNDS IN WORDS

1. Create cards containing pictures of words that start (or end) with two or more of the child's target sounds. Have the child sort the cards into piles that match in terms of first (or last) sound. Remind the child of the first (or last) sound in the first pile of cards; then have him or her say each word in the pile. Repeat for the other piles. (This activity works well when the child confuses two sounds or says two different sounds the same way; sorting can be done for just the two sounds that are interchanged). Ready-made cards can be found at www.rockingham.k12.va.us/sound_sorting/sound_sorting_menu.htm.
2. Prepare a set of cards with pictures whose names contain the client's target sounds. Have some pairs that begin with the same sound and some that do not in the set. Present a pair of pictures. Name each picture, and then ask the client whether the two begin with the same sound.
3. A puppet is introduced and named (for example his name could be Sam, if /s/ is one of the client's target sounds). The client is told the puppet likes words that begin with the same sound as his name. The client is asked to say as many words as he or she can that begin with this sound.
4. Use the target sound in initial position. Play an "I spy" game in which clinician and client must "spy" words that begin with the target sound (some may be "planted" around the room) and say them.
5. Display a large card with the alphabet letter or letters representing the target sound (e.g., *S* or *SH*). Have the client look through old magazines for pictures of words that begin with the target sound. Give them a bright marker to use to write the letters that represent the target sound on a magazine picture, as they say the word for the picture.
6. Use storybooks that include multiple examples of the client's target sound (e.g., *Hop on Pop* [Geisel & Geisel, 1963] for final /p/, or *The Very Busy Spider* [Carle, 1984] for initial /sp/, which appears on every page in the word *spin*). Read the book to the clients. Then read it again, stopping when a word with a target sound appears, allowing the client to say the target word. Point to the printed word as the client "reads" it. Later, have clients search for these "magic" words with their target sounds themselves, and have them point to the words in the book as they say them. Examples can be found at http://crokebeck.tripod.com/articbks.htm/homepage.html.
7. Have clients make up silly words that begin or end with target sounds. Let them use invented spelling to write the words, or the clinician can write the target sound for them and let them "guess and go" to spell the rest. Clients can draw pictures of their silly words and put the pictures together in a book that they can "read" to their family to practice their target sounds.

DEVELOP PHONOLOGICAL SYNTHESIS SKILLS

1. Use continuent consonants (/m,n,s,r,f,h,l,v,w,z/) first for synthesis work, since they can be prolonged more naturally. Choose a word family (e.g., *am*). Write the family on a card. Then write several continuent consonants on separate cards, including ones the client is targeting in the intervention program. Place a consonant card by the word family and illustrate blending the consonant with the family to form a word or nonsense word (e.g., s-*am*). Help the client to form various words and nonsense words by combining the consonants with the word family. Let the client write the words formed, and draw pictures to illustrate them. Silly creatures can be used to illustrate the nonsense words.
2. Using several word families worked on in this way, the clinician can say a word and ask the client to find the two cards (consonant and word family) that spell the word being said. Clients can take turns saying words and having the clinician or other client spell out the word with the cards.

Semantics

Children with developmental language disorders (DLD) appear to acquire words in comprehension much the way typically developing children do, but may need to hear a new word twice as many times as other children before comprehending and independently using the new word (Gray, 2003; Rice, Buhr, & Oetting, 1992). Children with language impairments also have particular difficulty in the acquisition of words to talk about cognitive states, like thinking (Lee & Rescorla, 2008), with verb vocabulary (Loeb, Pye, Redmond, & Richardson, 1996) as well as the use of verb particles (pick *up,* put *down,* etc.) (Watkins, 1994). In addition, children with DLD are less able to identify semantic features than their peers with normal language. These findings suggest that children with DLD have broader difficulties with receptive vocabulary than simply a reduced ability to acquire labels; they may need enriched input with repeated opportunities to see connections between words and their referents in order to learn new lexical items. Gray (2005) found that providing both semantic and phonological cues aided learning new words by preschoolers with DLD. This suggests that as we introduce new vocabulary, it makes sense to highlight both semantic ("*triangle* is the name of this <u>shape</u>; it's a <u>shape</u> that has three sides; a piece of pizza is <u>shaped</u> like a *triangle*") and phonological ("*triangle*s have three sides and *tri an gle* has three parts; *triangle* starts with the same sound as *toy*) aspects of the word.

Owens (2004) provided a list of likely vocabulary targets for the DL period. These appear in Appendix 9-1. But Neuman and Dwyer (2009) point out that, because of the known relationship between complexity of vocabulary in preschool and reading achievement as much as 2 years later, it is important not only to teach basic words, but to expose students to rare words, as well. Ruston & Schwanenflugel (2010) showed that conversational input from an adult emphasizing use of rare words, linguistic recasts,and open-ended questions increased expressive vocabulary in children with low levels of vocabulary development. Paul (2011) gives guidelines for providing this kind of enriched input. These techniques can be important not only for preschoolers with DLD, but also for children who have impoverished vocabularies for other reasons, such as limited English proficiency, as well.

You'll notice from the list in Table 9-1 that this area contains targets not only in vocabulary, which is, of course, important, but

Both speech and language skills are often targeted at the developing language level.

also in the kinds of semantic relations conveyed within and between clauses of sentences. In the early DL phase, an important goal of intervention is helping children broaden the range of ideas they can talk about. Toward the end of this phase, we want to help clients make their sentences more efficient by combining ideas, or *propositions,* within a sentence to convey specific semantic relations between clauses. Assessment information collected during the standardized and informal portions of the evaluation should guide us toward the level of semantic complexity to target within the client's language.

Remember that, when we're planning targets and methods of intervention for language, we artificially segment language into components such as semantics and syntax. But really, when we target a particular sentence type, that sentence is, of course, conveying a meaning. Similarly, when we target a particular meaning for expression, that expression takes a syntactic form. So in practice it is hard to separate the semantic and syntactic components of sentences. When we plan intervention targets and activities involving semantic and syntactic expression in sentences, the main thing to remember is the principle we talked about in Chapter 3: only one new thing at a time. When asking a child to produce a more complex sentence form, we want to be sure it encodes a meaning that the child has already expressed in a simpler way. When asking the child to talk about a new meaning or combine new meanings in sentences, we need to control for syntactic complexity, making sure that the form we want the client to use in producing this new meaning is already within the production repertoire.

Syntax and Morphology

Syntactic and morphological targets of intervention are perhaps the most obvious goals of the DL period. Working on production of grammatical forms is among the most traditional aims of language intervention and one most speech-language pathologists feel comfortable targeting. We ought to be aware of two points in selecting our grammatical intervention goals for children in the DL period, though. First, although grammatical goals are virtually always appropriate for children in this period, the need to improve syntax should not lead us to ignore the other areas of intervention that also are important. Many children with grammatical deficits also have unintelligible speech, small vocabularies, word-finding problems, limited preliteracy skills, or difficulties in using language in the service of play, thinking, and conceptual development. These needs ought to be addressed, too.

A second thing we need to bear in mind is that there are some typical patterns of grammatical deficits in children with language impairments (that is, some aspects of syntax and morphology are more likely to show deficits than others). Knowing what these are can help us to zero in on these areas in the assessment process. Let's look at what these typical grammatical problems are for children in the DL period.

Bound morphemes are particularly difficult for children with language problems of a variety of etiologies (Goffman & Leonard, 2000; Leonard, 1997; Rice, Warren, & Betz, 2005; Rice & Wexler, 1996). Auxiliary verbs and small, closed-class morphemes, such as articles (*a, an, the*) and pronouns (e.g., *I, you, he, she, we they*), also seem to cause particular difficulties for children with language impairments (Bates, 2003; Beverly & Williams, 2004; Eisenberg, 2005; Rice, Warren, & Betz, 2005). Irregular past morphemes and use of *-ing* endings seem to be a relative strength (Redmond & Rice, 2001; Rice, Warren, & Betz, 2005). Studies of children with slow expressive-language development as toddlers who show chronic delays through the preschool years (Paul & Riback, 1993;

Rescorla & Roberts, 2002) substantiate this pattern. Difficulties with the elaboration of sentences through complex sentence production have also been reported (Eisenberg, 2005; Thordardottir & Weismer, 2001). It would appear, then, that verb marking with auxiliaries and inflections, closed-class morphemes, pronoun use, and the acquisition of complex sentences are areas in which children with language disorders can be expected to show particular difficulties during the DL period. These areas would be especially appropriate targets for intervention, when, of course, these deficits are documented by the assessment process. Fey, Long, and Finestack (2003) discuss some guiding principles for selecting goals for syntax and morphology during the DL phase. These are summarized in Table 9-2.

Comprehension versus Production Targets

We talked in Chapter 3 about the issue of targeting comprehension as opposed to production in the intervention program. There we said that, when assessment indicates a form or meaning is comprehended but not produced, production training is indicated. Lahey (1988) emphasized the fact that equivalent comprehension and production responses are often not present in normal language learners. She argued that a child should be exposed, through multiple meaningful exemplars in the input language, to forms and meanings that are not in the comprehension repertoire. But she concluded that comprehension responses, such as pointing to contrastive stimuli, do not need to be trained before production of the forms is targeted. Guided production activities appear to facilitate both comprehension and production of new meanings and forms in children.

Recall, too, that Chapter 3 included some suggestions about targeting comprehension versus production performance in the intervention program. Production training should be a high priority for forms and meanings for which the child demonstrates comprehension. For forms and meanings that the child does not yet appear to comprehend but that are chosen as intervention targets on the basis of other considerations we've discussed, an input component should be part of the intervention plan. This might include focused stimulation or indirect language stimulation activities that provide multiple opportunities for the clinician to demonstrate use of the structure in context.

TABLE 9-2 Principles of Goal Selection for Grammatical Targets in the Developing Language Period

Principle	Example
1. Main goal of grammatical intervention: help the child understand and use syntax in the service of communication.	When *is (verb)-ing* is used 80% correctly in clinician-directed formats, begin using focused stimulation or indirect language stimulation to generalize the form to more natural contexts; evaluate production in these contexts before considering goal met.
2. Goal attainment must be measured in real communication contexts (conversation or narration).	
3. Producing a target at 90% correct in a clinician directed activity is not enough; form must be used in real communication.	
4. Grammar is rarely the only aspect of language that needs to be targeted in an intervention program for DL children, who often have small vocabularies, social problems, and often grow to be children with reading disorders.	For work on auxiliary verbs, use *Green Eggs and Ham* (Seuss, 1956) as one practice context. After multiple readings, allow the child to fill in verb phrases. Point to the words as the child says them. Ask him or her to identify words that rhyme.
5. Children with most obvious errors in sentence structure are likely to need support in other areas of communication: • Preliteracy • Pragmatic skills • Vocabulary	
6. Contexts such as guided play, mediated conversation, and storybook sharing should be considered.	
7. Select goals that trigger changes both within and outside the therapy context: • Look for, not just single goals, but ways to change patterns of language.	If a child says me/I, rather than working on just "I," target the distinction between subjective and objective pronouns more generally. This way, the child can learn about a broad range of forms rather than just one.
8. Base goals on "functional readiness" and the communicative need for targeted forms. Target grammatical forms: • That the child uses correctly on occasion • For which obligatory contexts appear in the child's language. These are more likely to show change than are forms the child does not have any experience with.	If a language sample shows several obligatory contexts but no correct question reversals, production of occasional *be* verbs, and no contexts for *can* or *will*, target *be* and question reversals first.
9. Children with language disorders need more experience than others to master grammatical forms: • Focus on emerging forms to help move them toward mastery more efficiently. • Provide frequent and intensive exposure and practice of these forms.	

Adapted from Fey, M., Long, S., & Finestack, L. (2003). Ten principles of grammar facilitation for children with specific language impairments. *American Journal of Speech-Language Pathology, 12,* 3-15.

Auditory bombardment is another viable input option. Hodson and Paden (1991) advocated using this approach to facilitate phonological development. They argued that phonological skills are acquired, at least in part, by listening. This implies that children need to listen carefully and often to the sounds they are being asked to produce. Kouri (2005) showed that, in a vocabulary training program, auditory bombardment had effects comparable to an elicited imitation program on the use of target words in real communication. Hodson and Paden suggested having children listen to a list of target words. It is worth noting that Flexer and Savage (1993) showed that both children with language impairments and those with normal hearing showed improved attention when assistive listening devices were used to improve signal-to-noise ratios during a testing situation. There is, then, some evidence that these devices might be useful in auditory bombardment activities for children with language needs. In auditory bombardment activities, the child simply sits and plays quietly with nondistracting material such as Play-Doh as the clinician reads the list of words. Although traditional auditory bombardment uses simply a list, it might, alternatively, consist of listening to a story that contains numerous examples of target forms. Hoffman, Schuckers, and Daniloff (1989) provided poems and stories that are weighted with examples of phonological targets. Cleave and Fey (1997) discussed the development of "syntax stories" created to provide auditory bombardment of particular target forms within a story context. Box 9-2 gives an example of an excerpt from one of their "syntax stories." Regardless of whether a list or a story is read, the auditory bombardment segment generally makes up about 5 minutes of the intervention session. The child is not required to perform any discrimination activities, only to listen. Such activities also make excellent "homework" assignments for families interested in working on targets at home. They can easily be substituted for the child's usual bedtime story and don't require the parents to judge or correct the child's communication. If follow-up activities, such as illustrating the clinician's "syntax story" and rereading it with cloze procedures, are added, as Cleave and Fey suggest, even more benefit can be derived from the auditory bombardment.

Approaches that facilitate comprehension, such as focused stimulation, indirect language stimulation, and auditory bombardment, should be presented along with activities that elicit production of target forms and meanings. Such a combination of approaches can help to ensure that clients can both understand and use the forms and meanings being taught. It is *not* necessary,

Assistive listening devices can improve signal-to-noise ratios in speech-language intervention.

though, to wait until the child demonstrates comprehension in pointing or discrimination activities before trying to solicit the use of target forms and meanings.

Pragmatics

Before we discuss intervention approaches for pragmatics, we want to clarify our view of the role of pragmatics in the intervention program for children with DL. Contemporary thought about language acquisition emphasizes the central place of pragmatic functions. That's because we see language not as a set of rules to be learned, but as a tool for communication. Learning language is not just learning sounds, words, and sentence structures; it's also learning how to get things done in the real world with those sounds, words, and sentences. The study of how language is used in the context of communication is what is meant by *pragmatics*.

Pragmatics is just as important for thinking about language intervention as it is for acquisition. There are two ways to add pragmatics to our practice. The first is to generate a set of pragmatic targets or objectives for intervention. We could categorize children according to their pragmatic skills, identify their pragmatic deficits, and teach them to use whatever pragmatic behaviors they are lacking. Targets might include skills such as turn-taking, topic maintenance, and register variation. The problem with this approach is that we can't really isolate these pragmatic skills from the syntax and semantics on which they rely. Unless we are teaching the earliest preverbal communication skills to a nonspeaking child, a client must use sounds, words, and sentences to achieve pragmatic targets.

A better way to incorporate pragmatics in the intervention program, in our view, is the method advocated by Craig (1983) and Marton (2005). They argued that, rather than defining pragmatics as an additional set of rules that the child needs to learn, we are wiser to see pragmatics as the context in which intervention takes place, and to make sure that each new form learned is practiced in a variety of pragmatic contexts. That is, rather than teaching turn-taking as a separate skill, we would develop activities in which the client could take turns with the clinician using a linguistic form that was a target of intervention. Or, instead of teaching topic maintenance as a separate skill, we would give the client an opportunity to talk about a topic of interest for an extended number of turns, using newly acquired forms. We could, for example, ask a client who is working on past-tense forms to describe each step used to, make the pudding now being shared with a parent who was not

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BOX 9-2   An Excerpt from "Dad's Bad Joke"

TARGET: ARE

Neil and Warren liked to play in the attic. It was fun up there, but it was a little scary, too. They always turned on the light so they could see. One day Neil and Warren started to go upstairs.
"Where *are* you going?" asked Dad.
"*Are* you going to the attic?"
"Yes, we *are*!" shouted Warren.
"Neil and I *are* going up now.
We *are* going to play up there."
"Oh you *are*, *are* you," thought Dad.

Reprinted with permission from Cleave, P., & Fey, M. (1997). Two approaches to the facilitation of grammar in children with language impairments: Rationale and description. *American Journal of Speech-Language Pathology, 6,* 31.

present during its preparation. If the child strays from the topic, the clinician could provide a prompt to return to describing the sequence, such as, "Wait a minute, weren't you saying how we made the pudding? 'We stirred the milk,' you said. Then what happened?"

Must these pragmatic contexts be present in every intervention activity? We don't think so. In fact, in our view they should not be, because that would lead us to violate Slobin's (1973) principle of one new thing at a time. If past-tense forms are just being elicited, we won't want to ask the child to use these new forms to fulfill a new function such as maintaining a topic—not until the new form has been somewhat stabilized. A more reasonable approach, to our way of thinking, is to incorporate pragmatic contexts into the intervention plan for every objective, but not for every activity. Some activities should be devoid of pragmatic context, to allow the child to focus attention on the linguistic objectives. Other activities can be designed to help clients use the new structures in real pragmatic contexts.

The real communicative contexts chosen should be based on the pragmatic assessment data. Suppose Rachel, for example, had been evaluated with Prutting and Kirchner's (1983) Pragmatic Protocol and had been found to have deficits in conversational repair. Once appropriate question forms had been added to her repertoire by means of semantic and syntactic intervention, these forms might be put to use in the context of conversational repair. The clinician might feign misunderstanding of something Rachel said, model asking a clarification question, and encourage Rachel to answer it to repair the breakdown. The clinician might then give a mumbled or otherwise unclear message and encourage Rachel to ask a question to get clarification. In this way the client can be helped to use new semantic and syntactic forms in pragmatic contexts identified as problem areas as a result of the pragmatic assessment. Brinton and Fujiki (1989, 1995) provided detailed procedures for this aspect of intervention.

Play and Thinking

A variety of studies (summarized by DeKroon, Kyte, & Johnson, 2002; Johnston, 1994; Leonard, 1997; Mainela-Arnold, Evans, & Alibali, 2006; Rescorla & Goossens, 1992) have shown that children with language problems perform less well than normally speaking peers on a variety of cognitive tasks, including symbolic play, even when they score within the normal range on nonverbal intelligence tests. During the preschool period in normal development, as Vygotsky (1962) pointed out, language begins to help to structure thought, and thought is carried out primarily in the modality of language. One of the major accomplishments of normally developing children in the preschool period is the beginning of the integration of language and cognitive processes, each feeding off and growing out of the accomplishments of the other. Much learning about concepts, categories, and the physical world during the preschool years goes on through the medium of language, instead of through direct perception and experience, as it did in the sensorimotor period. Children structure symbolic play through language both when they play alone (often talking out loud to pretend playthings) and when they play with peers (often negotiating the roles and rules of the play by talking about them: "I'll be the baby and you be the mommy, but be a nice mommy and don't scold me when I spill my bottle."). It should not be surprising, then, that children with language problems would begin to lag behind in some of these skills that are so intertwined with language.

When working with children at DL levels, we want to incorporate activities that encourage the child to use the language being learned to structure pretend play, solve problems, and explore new ideas. Moreover, play is an important context in which such problem solving and exploration can take place. As children develop more elaborated and flexible forms of language, these can be used for more mature and imaginative play. Again, play and thinking may not be direct targets of the intervention. Like the social skills in the pragmatics area, we can use play and problem solving as contexts in which the child can practice using new forms and meanings. By providing contexts in which the child can use recently acquired forms for new purposes, we accomplish two things. First, we help the child to generalize the intervention targets to meaningful situations. Second, we move the child into the zone of proximal development, providing a scaffold that helps the child to use language to achieve new levels of symbolic and conceptual development with our models and support. Play and problem-solving are important contexts for extending the child's use of newly emerging forms and meanings. As we proceed through the intervention program, we will want to build in some of these rich contexts, in addition to the more constrained settings in which forms and meanings may be elicited initially.

Preliteracy

Many preschoolers with language delays develop problems in learning to read and write, even when their oral language problems appear to resolve (Skibbe et al., 2008; Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998). Research reviewed in the National Joint Committee on Learning Disabilities (2007) Technical Report 12, *Learning Disabilities and Young Children: Identification and Intervention*, has shown that deficits in phonological processing can be a major obstacle in learning to read. This research suggests that strong oral language, phonological awareness, understanding about print, alphabet knowledge, invented spelling, rapid naming, and a child's ability to write his or her own name prior to kindergarten are all indicators of literacy success in school (National Early Literacy Panel, 2005). And research has shown that the most effective interventions for children at risk for later reading problems focus on oral language instruction in preschool and kindergarten, and include explicit teaching of phonemic awareness, letter-sound relationships, vocabulary, and language comprehension (Dickinson, McCabe, & Essex, 2006; Lyon, 1999).

Increasingly, and for good reason, speech-language pathologists are being expected to address these areas of instruction in preschool programs for children at risk, and to promote preliteracy development in these children (American Speech-Language-Hearing Association [ASHA], 2000b; Justice & Ezell, 2004; National Joint Committee on Learning Disabilities, 2007; Wallach, Charlton, & Christie, 2009). That's because SLPs are usually the professionals with the deepest understanding of phonological processing and the broadest knowledge about the connections between reading and oral language (Spencer, Schuele, Guillot, & Lee, 2008) and have much to offer others who work with young children when designing pre-literacy programs not only for those at risk, but for all children in the preschool classroom. When working with children in the DL phase, incorporating pre-literacy goals and contexts is an important part of our direct work with clients, and can also serve as a fruitful basis for collaboration with classroom teachers and care-providers. Kaderavek and Justice (2004) outlined the major goals of pre-literacy development during the DL period. These appear in Table 9-3. The goals can be divided into three

TABLE 9-3 Domains for Preliteracy Intervention

Domain	Instructional Goals	Example Activities
Phonological awareness	Segment words in sentences.	Teacher has children in group clap for each word in a poem.
	Segment syllables in words.	Teacher has children stamp once for each syllable in words.
	Produce rhymes.	Teacher rereads familiar rhyming book, and has children fill in blanks ("Stop, you must not hop on ____!").
	Synthesize words from syllables.	Teacher introduces "robot" puppet who only speaks syllable by syllable ("mo tor cy cle"). Children must guess word he means.
	Synthesize words from sounds.	Teacher introduces "alien" puppet who only speaks sound by sound ("/d/ /a/ /g/"). Children must guess word he means.
	Identify words with same beginning/end sound.	Teacher has children stand up, clap, or wave each time they hear a word with a target beginning/ending sound in a story or poem being read.
Print concepts	Book reading conventions.	Teacher occasionally holds book upside down or backwards; children demonstrate correct orientation.
	Understand metalinguistic terms (word, letter, sound).	Adult demonstrates elements from storybooks ("Here's a long word; Do you see this letter?")
	Link text to experience.	Teacher encourages children to make personal connections to storybook themes ("Sam-I-Am doesn't like Green Eggs and Ham. How many of you like eggs? Ham? How many don't?")
	Recognize environmental print.	Teacher shows photographs of print in the environment or from field trips; asks children to find the word that says "Stop," etc.
Alphabet knowledge	Alphabet song.	Teacher begins each day w/choral singing of alphabet song, pointing out each letter on a chart as children sing. Eventually, children are given turns to do the pointing.
	Recognize own name in print, and the letters in it.	Children's names are used as labels throughout the classroom; they are encouraged to identify their name on their cup, coat hook, etc., and point out the letters of their name.
	Recognize letters in environmental print.	Children are given a card with a letter and encouraged to find words on a field trip or in photos of street scenes that start with their letter.
	Sort upper and lower case letters.	Toys are labeled with letters; children are encouraged to place toys in boxes with matching letters.
	Write own name.	Children are given multiple opportunities to form their names with plastic letters, tiles, letter cards, as well as to trace and write their names.
Narrative and literate language	Retell stories heard.	Children reenact stories heard, with simple costumes and props.
	Use causal conjunctions in story retells.	Children are asked to respond to questions about why events in the story took place and are prompted to use causal language, such as "because."
	Use mental and linguistic verbs in story retells.	Teacher encourages students to talk about what characters are saying and thinking in stories they have heard.

Adapted from Kaderavek, J., & Justice, L. (2004). Embedded-explicit emergent literacy intervention II: Goal selection and implementation in the early childhood classroom. *Language, Speech, and Hearing Services in Schools, 35,* 212-228.

major categories: *phonological awareness, print and alphabet knowledge,* and *literate language*.

Phonological awareness goals should be familiar by now: they include the ability to count syllables and sounds, to identify rhymes and words that start/end with the same sounds, and to manipulate sounds in words ("What's *fun* without the /f/?"). We talked already about ways to build emerging literacy skills by incorporating PA activities within the speech sound program for children at the DL level. But PA is important for children with other language delays, as well as for children at risk for reading failure due to vulnerabilities such as limited English proficiency, cultural differences, or poverty. SLPs have important roles to play in getting preschoolers ready to read, both as clinicians for children with documented language disorders, and as consultants for improving pre-literacy instruction for all children in the preschool classroom.

In addition to PA, however, Kaderavek and Justice (2004) argue that skills related to print and alphabet knowledge are also crucial to emergent literacy development. These skills are sometimes called *literacy socialization* (Serpell, Sonnenschein, Baker, &

Ganapathy, 2002; Snow, 1999), and involve understanding how books work and how print represents speech through written language units like letters, words, and punctuation. Activities that provide instruction and practice in literacy socialization are also important aspects of a pre-literacy program.

Finally, the third aspect of pre-literacy instruction has to do with the development of literate language. Literate language is the style used in written communication and is typically more complex and less related to the physical context than the language of ordinary conversation. We'll say a lot more about literate language in Chapter 10, but for now, we need to be aware that the ability to understand literate language is the "third leg" of a comprehensive pre-literacy program. As we work with children in clinical sessions, with teachers as consultants, or in classrooms as collaborative interventionists, we can introduce literate language forms to preschool children by exposing them to stories, poems, plays, and other texts that exemplify this more elaborate language style, and giving them the opportunity to interact with these texts by hearing them, acting them out, retelling them, and relating them to personal experiences.

SLPs often work on pre-literacy instruction in preschool and kindergarten classrooms.

Kaderavek and Justice (2004) review research that demonstrates that both for children with language impairments, and for those at risk for reading problems due to poverty or language differences, explicit pre-literacy instruction in these areas, which is embedded in preschool classroom routines and activities, has positive effects on children's readiness for learning to read. Preschool programs that provide direct instruction and practice in name recognition and writing, alphabet recitation and recognition, awareness of book and print conventions, and PA games have been shown to lead to significantly greater growth in emergent literacy skills than programs that merely expose children to books and print (Justice, Chow, Capellini, Flanigan, & Colton, 2003; Justice & Ezell, 2004). In addition to incorporating PA within speech intervention for children with speech delays, SLPs can also consult with teachers on how to address emergent literacy for all children in the preschool classroom. SLPs can identify the relevant areas of pre-literacy to address, using guidelines like those in Table 9-3; assist in designing lessons to provide instruction and practice of these skills in high interest activities tied to classroom themes; work alongside the classroom teacher to present the instruction and provide extra support to children who are having difficulty; and carefully monitor children's participation and progress in the classroom activities to identify those who might need more intensive intervention in these areas (Gillam & Justice, 2010; Kaderavek & Justice, 2004).

Intervention Procedures for Children with Developing Language

In Chapter 3, we discussed three major methods of intervention identified by Fey (1986): clinician-directed (CD), child-centered (CC), and hybrid. As we discussed in Chapter 3, the goal for us as clinicians is not to choose one method and use it consistently, but to have a repertoire of methods available that we can match to the needs of individual clients and the particular goals being addressed. In this way we can maximize the efficiency of our intervention and have the greatest chance that it will generalize to the client's everyday communication. Let's look at each of these methods to see how they might be applied to the child with DL.

Clinician-Directed Methods

In Chapter 3, we looked at a variety of clinician-directed approaches geared for the DL period. These included drill; drill play; Leonard's (1975a) CD modeling; and Lee, Koenigsknecht, and Mulhern's (1975) *Interactive Language Development Teaching.* There also are a variety of commercially available intervention packages, including some computer software, that use a CD approach to intervention for targets within the DL phase. Remember that CD approaches are highly effective in eliciting forms in production that the child has not used before or has used very infrequently. When initial elicitation of new forms is the goal, CD approaches make good sense for clients who can tolerate them. The weakness of CD approaches is their failure to generalize to real communication and their tendency to place the child in a passive respondent role. There are two ways to address these problems. One is to follow Fey's (1986) advice and use the techniques outlined in Chapter 3 to increase the naturalness of CD activities. The second is to supplement CD approaches with other methods that give the client an opportunity to practice newly acquired forms in assertive roles and in the service of genuine communication. Let's look at some examples of CD approaches that might be used for several of the typical goals of intervention at the level of DL.

Phonology
Speech Sounds

One issue that often arises in phonological training is the question of whether to provide discrimination drills in which the child must identify pictures of words containing contrasting sounds (toe/sew) before production practice begins. This practice has been controversial, but recent research (Rvachew & Grawburg, 2006; Wolfe et al., 2003) suggests that discrimination training is helpful *only* if the child fails to discriminate sounds on which production errors appear, prior to therapy. For these sounds, active discrimination drills worked better than auditory bombardment in increasing discrimination ability. But for sounds the child could discriminate at the beginning of training, additional discrimination training showed no positive effects. These findings suggest that assessing discrimination of sounds in error should be part of the assessment for speech delays and the use of discrimination drills should be reserved for only those sounds the child has been shown to have difficulty differentiating.

Articulation drills are a standard part of traditional intervention for speech disorders. Shriberg and Kwiatkowski (1982a) showed that drill was effective for improving phonological production in children in the DL period (even though neither clinicians nor preschool children liked it very much). *Contrastive drills* are one particular kind of drill often used in phonological intervention for children with DL. Contrastive drills involve developing lists of pairs of words in which the two words in each pair differ in specific ways. In a *minimal pairs* approach, two words that differ by only one feature of the target phoneme are presented for contrast (Baker, 2010; Saben & Ingham, 1991; Weiner, 1981). For example, if stopping of fricatives is a pattern being targeted, a list of pairs of words would be developed in which one word contained a fricative and a contrasting word contained the corresponding stop. Examples would be *sew/toe, zoo/do, fat/pat,* and *nice/night.* The client is asked to say each pair of words. The hope is that having the contrasting words in the same context will encourage the client to differentiate between them, preferably by suppressing the phonological pattern that would make them homonymous. The *maximal opposition* (Gierut, 1990) or multiple oppositions (Williams, 2010)

approach also opposes pairs of words, but this approach contrasts words that differ maximally on the target phoneme, so that the contrasting words differ not just on one feature of the target phoneme but on several. Using stopping of fricatives as our example target pattern again, a maximal opposition approach would contrast pairs such as *sew/no, zoo/moo, fat/cat,* and *nice/nine.* Lists of words for use in contrastive drills for various phonological process targets have been published by Elbert, Rockman, and Saltzman (1980) and Godar, Fields, and Schreiber (2004). Kuster (2010) provides additional internet resources for finding these lists. Additional CD approaches for speech sound treatment can be found in Williams et al. (2010).

Drill play is often a preferred form of CD intervention at this level. The production practice segment of the Cycles approach, discussed by Prezas and Hodson (2010), uses a drill play format. These authors offered several possible drill play activities that can be incorporated into the production practice phase of phonological intervention. All the activities involve the use of small cards, each with a picture drawn by the client that represents one of the words containing the target phoneme or sequence that is used in the practice session. Some example activities from Hodson & Paden (1991) include the following:

1. *Hide and seek.* The clinician hides the cards in obvious places around the room; the client says each word as he or she finds the card.
2. *Safari.* Each card is clipped to a picture of an animal. The client uses binoculars (which may be made from two toilet-paper tubes taped together) to find each animal and says each word on the card attached to it.
3. *Sack ball.* Large, open shopping bags, each with one of the client's cards taped to it, are placed around the room. The client throws a softball into a bag and then names the card on that bag. The game is continued until the client has thrown at least once into each bag.
4. *Buried.* The client's cards are buried in sand or foam peanuts. The client names each card as it is unearthed.

Drill play activities like these can, of course, be used for intervention on targets in other areas as well. "Safari" might be used to work on color words, for example. The client could be required to name the color of each animal or a piece of construction paper it holds in its mouth as the animal is sighted through the binoculars. "Sack ball" could be used to drill the client on *is (verb)-ing* or copula sentences by attaching a picture to each sack that depicts an *is (verb)-ing* ("A boy is jumping") or copula ("It is a dog") sentence. The client would be required to say the target sentence as the ball is thrown into each sack.

One important point to consider in developing articulation drills for children in the DL period was raised by Storkel and Morrisett (2002). They summarize research showing that, like younger children, children of preschool age and older show strong relationships between lexical and phonological development. This means that when working on phonological targets, the words in which those targets appear are important to consider. Storkel and Morrisett's review suggests that words used frequently in the language facilitate phonological acquisition. Clinicians can use sources such as Kučera and Francis (1967) or Wiktionary's lists of 100, 200, and 1,000 most common English words (http://en.wiktionary.org/wiki/Category:1000_English_basic_words) to find words with target sounds that are used frequently in everyday speech.

Shriberg, Kwiatkowski, and Snyder (1990) presented a computer-assisted format for drilling articulation performance. They showed

that, although computer-assisted modes of intervention were engaging to most children, they were neither more effective nor more efficient than traditional forms of CD intervention. They suggested that computer-assisted methods are probably most useful in keeping children engaged in later phases of the intervention process when newly acquired forms are being practiced and stabilized, but that they are less effective at initial stages when new forms are first elicited. Other examples of computerized articulation programs include *The Articulation I, II, III* (San Luis Obispo, CA: LocuTour Multimedia), *Artic Games & More* (San Luis Obispo, CA: LocuTour Multimedia), *Speech Sounds on Cue* (Blacksburg, VA: Bungalow Software); *Acorn's Gold Mine*: An Interactive CD-ROM Game for Articulation and Phonological Skills (DeKalb, IL: Janelle Publications), *Say-N-Play* from Advance Games, LLC, and *SATPAC* (Systematic Articulation Training Program Accessing Computers) (Fresno, CA: SATPAC Speech, LLC). Even at the late phases, though, the computer-assisted modes were only as good as the traditional ones, not any better. Schery and O'Connor (1995) discussed similar findings in the areas of semantics and syntax. If children like computer-assisted drill, we should by all means use it if it is available. But if intervention software is not available or if financial considerations force us to make a choice between a software package and some other useful intervention material, we should not despair. Many equally effective and engaging methods of intervention are available to us.

Phonological Awareness

As Gillon (2007) highlights, PA is a crucial element in children's development of reading, writing, and spelling skill; and instruction in PA significantly improves achievement in children at risk for reading problems and those with reading disorders. There are many ways to provide PA instruction to young children, but drill play activities that focus attention on the sound structure of words are some of the most common approaches. There are a variety of commercially available approaches, including complete curricula (e.g., Adams et al., 1998; Blachman et al., 2000; Gillon, 2000a), as well as handbooks of classroom activities (e.g., Fitzgerald & Yuh, 1997; Spector, 2009). SLPs who work in preschool classrooms can provide this intervention in a variety of formats, including teaching collaborative "guest" phonological awareness lessons to the whole group, doing small group work within the classroom for students on IEPs or those identified as having difficulty with PA in an RTI framework, as part of individualized language intervention for children on IEPs, or as consultative suggestions to classroom teachers. Example drill play activities that focus on phonological awareness at the preschool level appear in Box 9-3.

Semantics

Many CD programs for working on vocabulary and concepts are commercially available, such as the *Bracken Concept Development Program* (Bracken, 1986), the *Boehm Resource Guide for Basic Concept Teaching* (Boehm, 1989), Levine's (1988) *Great Beginnings for Early Language Learning: Nouns 1, Nouns 2, Concepts, Associations, Prepositions* (Pro-Ed, Inc), and *Vocabulary with EASE* (AGS Publishing, 2005), to name just a few. Most computer software designed for developing vocabulary, such as the *First Words I and II* and *First Verbs, Sterling Editions* programs (Wilson & Fox, 1982-2005), *The Deciders Take On Concepts* (Interactive software. Eau Claire, WI: Thinking Publications), *Exploring Early Vocabulary Series* (Burlington, VT: Laureate Learning Systems, Wilson, M., & Fox, B.), *Words and Concepts Series* (Burlington, VT: Laureate Learning Systems), and *Basic Words for*

BOX 9-3 Example Drill Play Phonological Awareness Activities

GO WISH FOR FISH
Awareness Goal:
Rhyming
Materials:
Pairs of cards with pictures that rhyme (cat/hat, feet/beet, etc.). Shuffle and distribute six cards to each a group of 2 to 6 players. Put the remaining cards in the "fish pond" at the center of the table.
Instructions.
We're going to play "Go Wish for Fish" with these cards. First, find the cards you have that rhyme with another card in your hand, and put them in a pile on the table. Jessica, you go first. (Require each child to name all his or her cards, and identify the pairs of cards in his or her hand that rhyme. Have him or her check with others in group that each pair rhymes).

Now we'll take turns asking the person next to you for a card that rhymes with one you have. Jason, tell us the name of one of the cards in your hand that you would like a rhyme for. You could ask Malik if he has a card that rhymes with pig. If he does, he'll give it to you, you say the two words to be sure they rhyme, and you'll have another pair for your pile. Malik, if you don't have one that rhymes with pig, say "Go Wish for Fish" and Jason will pick a new card from the fish pond. (Guide the students to ask for and receive rhyming words for cards in their hand. Require both the asker and receiver to say the names of the two cards to show they rhyme. If the receiver has no rhyming card, have each think of a word that would rhyme with the card named. Continue playing until one child has no cards left.)

WE'VE GOT RHYTHM
Awareness Goal:
Syllable counting
Materials:
Rhythm band instruments; or "rain sticks" the students make by putting beans or rice inside a paper towel tube and sealing each end with tape.
Instructions.
Have students sit in a circle. Give each a rhythm instrument. Start by going around the circle, asking each child to say his or her name. After he or she does, ask students to listen for how many parts it has. Model shaking a rain stick once for each syllable, invite students to shake their instrument once for each syllable. Continue counting the syllables for the name of each student in the group. Then present other words, such as names of objects in the vicinity. Guide students to count the syllables and shake their instrument once for each syllable. Invite students to volunteer other words for the group to try.

Children CD-ROM: Version 2 (San Luis Obispo, CA: LocuTour Multimedia), use a drill or drill play format. As we've said before, many children enjoy pushing the buttons and seeing the pictures and animations on the computer screen, and so computer-assisted intervention is often successful in motivating clients to persist with the drills the software programs contain. Schery and O'Connor (1995) discussed the *Programs for Early Acquisition of Language* (PEAL; Meyers, 1985) and the *ALPHA* programs, both designed to teach basic vocabulary to children with a variety of disabilities at early stages of language development. These programs were both found to have positive effects on word learning but did not show dramatically different results from those seen in more traditional intervention.

Computers may be particularly good contexts for teaching action verbs. Since we know these forms are difficult for children with language disorders (Loeb, Pye, Redmond, & Richardson, 1996), finding effective intervention formats is especially important. Because computer animations can display action more compellingly than a static picture, they may be particularly facilitative for these forms. Still, Schery and O'Connor (1995) emphasize that, while computer-based language programs can offer an additional tool and provide motivating contexts for language activities, they do not appear to be a replacement for an interactive environment with a responsive adult.

Syntax and Morphology
Many CD approaches to teaching syntax and morphology were developed during the 1970s, in the heyday of enthusiasm for behaviorist approaches in our field. Fey (1986) discussed several available in the research literature. Some CD approaches to syntactic and morphological development also have been made available as commercial packages, such as the *Fokes Sentence Builder* (Fokes, 1976), the *Communication Training Program* (Waryas & Stremel-Campbell, 1983), the *Monterey Language Program* (Gray & Ryan, 1971), *Teach Me Language* (Freeman & Dakes, 1996), and *Verbal Behavior* (Carbone, 2003). An alternative to employing these operant grammar training programs is to follow the suggestions of Fey, Long, and Finestack (2003). They argue that supplementing other, more naturalistic methods with drill and drill-play activities that elicit imitation of target forms makes sense, especially when the elicited imitation activities *contrast* related forms. One such approach from the literature is presented here, both to exemplify what these kinds of programs look like and also because this particular approach has been found to be highly successful in improving grammatical production (Cleave & Fey, 1997). Procedures for using Connell's (1982) CD procedure for training syntactic rules with the help of contrasts, using the form, "NP is (verb)-ing," are summarized in Table 9-4.

Again, any CD approach, whether commercially packaged, derived from the literature, or designed by the clinician, can be modified according to Fey's (1986) guidelines to increase its naturalness. Let's look at some of the ways in which we might modify Connell's (1982) approach as an example of how this might be done. Remember that in Chapter 3 we talked about several ways to increase the naturalness of CD activities. These include making the client's contribution informative, creating intervention contexts in which there is a real motivation to communicate, providing

TABLE 9-4 Training Procedures for Teaching the Syntactic Rule "NP is (verb)-ing" through Contrasts

Target behavior: Spontaneous production of "NP is (verb)-ing" in response to questions.
Materials: 20 pictures of assorted agents doing various actions.

Step	Clinician Stimulus	Client Response	Criterion for Moving to Next Step in Program
1	What is the NP doing? Say, "NP is (verb)-ing."	NP is (verb)-ing.	90% correct
2	NP is (verb)-ing. Now the NP is done. What did the NP do? (Show picture, then take it away.) Say, "NP (verb)-ed."	NP (verb)-ed.	90% correct
3	What is the NP doing? (Show picture.)	NP is (verb)-ing.	90% correct
4	NP is (verb)-ing. Now the NP is done. What did the NP do? (Show picture, then take it away.)	NP (verb)-ed.	90% correct
5	What is the NP doing? (Show picture) What did the NP do? (Take it away.)	NP is (verb)-ing and NP (verb)-ed.	90% correct
Generalization training: Repeat Step 5 with different pictures, clinicians, and environments.			

Adapted from Connell, P. (1982). On training language rules. *Language, Speech, and Hearing Services in Schools, 13*, 231-248.

distracter items, and presenting stimuli within cohesive texts. Try to think of several ways that Connell's approach could be modified to achieve these ends. Our suggestions, which are only a sample of the many possible ways this could be done, are listed in Box 9-4.

A variety of computer software also is available for training syntactic and morphological goals using drill and drill play. The vast majority of this software targets receptive performance, however. As we've seen, receptive training is probably not necessary for most clients and does not necessarily generalize to use of the same forms in production. Production skills, on the other hand, do tend to generalize more readily to comprehension. For these reasons we would not put a great deal of time or money into the use of syntactic intervention programs that focus exclusively on receptive language. If such programs are available and clients like to use the computer, they might be used as follow-up to production training, as extra practice, and to ensure that production targets have generalized to reception. Schery and O'Connor (1997), for example, showed that special needs preschoolers who received an additional hour per week of computer training for 10 weeks, over and above what they received during normal classroom instruction, showed greater gains than peers who did not receive the extra training. Computerized language instruction, then, can be a helpful adjunct to more traditional intervention. And Owens (2009) suggests that computer-assisted training works best when the child and the clinician participate together in the program. Especially at the DL level, sitting children alone in front of a computer screen may not be best practice.

Child-Centered Approaches to Intervention for the Child with Developing Language

We talked earlier about child-centered (CC) intervention methods and discussed their use with children in the emerging language phase, when no specific targets of intervention are identified and the goal is simply improved communication. Let's look at how some of these methods can be used for children in the DL phase.

Indirect Language Stimulation

The major characteristics of indirect language stimulation (ILS), as defined by Junker and Stockman (2002), include the following:

- Contingent feedback (saying something that relates to what the child said/did; e.g., child picks up toy car; Clinician remarks, "Oh, nice car! You have the car!").
- Balanced turn-taking (letting the child lead and then responding, rather than using extensive questions and initiations to get the child to talk; e.g., child is playing silently, clinician plays

BOX 9-4 Naturalistic Modifications of Connell's (1982) CD Procedure

1. **Use a cohesive text.** Instead of a series of unrelated pictures, use a picture book or set of sequence pictures that depicts a series of related actions, such as those involved in dressing or in preparing food. Go through all the steps in Connell's procedure in exactly the same way, using these pictures that form a cohesive unit as the stimuli.
2. **Make the contribution informative.** Using either unrelated picture cards or pictures that form a cohesive unit as suggested in 1, sit with the client and the pictures at a table. Place a favorite doll, action figure, or photo of someone the client knows across the table from the two of you, with its back toward you so it cannot "see" the pictures. Tell the client the doll wants to know what's going on in the pictures, so the client must "tell" the doll what's going on by answering your questions. Both to increase the communicative aspect of the activity and to provide distracter items, occasionally have the doll respond to the client's utterance by talking for it in a funny voice. Express surprise or interest in what the client is saying, and make a comment not directly related to the picture descriptions. Then tell the client the doll is so interested it wants to know more, and resume the activity.
3. **Increase motivation to communicate.** Use a cohesive set of pictures, and audio record each of the client's responses to the imitative set of items in Step 1 of Connell's procedure (see Table 9-4). Tell the client he or she can take the audio home and play the "story" for his or her parents, so the parents can hear how well the child tells the story. Do the same for Step 3 of Connell's procedure (see Table 9-4).

silently alongside, when child turns toward clinician, she remarks: "Oh, I see what you have! You have the blue car; I have the red one!").

- Extension of the child's topic (saying something that gives more information about what the child just said/did; e.g., child holds up car for clinician to see, clinician remarks, "You have the blue car! That's neat! Your blue car has big, black wheels!").

ILS can take place in a variety of contexts, including play with toys or role-plays, during outdoor play, shared book reading, cooking, crafts, or other common preschool activities. In Chapter 3, we suggested that ILS in its pure form, when no specific goals are identified, is most appropriate for children with mean lengths of utterance (MLUs) less than 3.0, when first sentences are emerging. A modified form of ILS might be used at later stages, if we incorporate some specific goals and use it as a way to provide multiple meaningful models of target forms. Instead of using primarily self-talk and parallel talk in an unstructured play setting, we can provide a more contrived play setting, one in which materials have been selected for the child, activities are suggested by the clinician, and play behaviors are modeled to make it highly probable that the need for target forms and meanings will arise. For example, suppose we are working on the use of irregular past-tense verb forms and want to provide some ILS as an introduction to these forms, to allow the client to see how they are used. We might give the child a set of toys such as a dollhouse, garage, or play house with matching people and accoutrements. As the child manipulates the toys, we might narrate, "Oh, he *went* in the house. Uh-huh. Then he *found* a little dog. How nice. Then he *said* 'hi' to it. The dog *came* closer to him, didn't he? Then he *saw* a doghouse." We also might model talking for one of the toys—the dog, for example: "Arf, arf, I *found* a bone. I *saw* it in the yard." Although an opportunity to model irregular past-tense forms might not arise in every remark the clinician makes, each opportunity for providing these models could be capitalized on. If the child began to model the clinician's narration and role-taking, using some irregular past forms correctly or incorrectly, the expansion, extension, recast, and buildup and breakdown forms of ILS feedback could be provided. Camarata and Nelson (2006), Hancock and Kaiser (2006), and Leonard and Fey (1991) provided additional detailed examples of using modified ILS techniques to elicit grammatical forms in the DL phase. Shriberg and Kwiatkowski (1982a) also discussed this approach as a means of facilitating phonological development.

Fey (2000) advocated using recast sentences as a particularly effective form of ILS for children in the DL period. Taking a client's utterance and immediately recasting it in a different syntactic form that retains the child's meaning is thought to provide a particularly useful kind of feedback. Recasting is thought to help children see how language rules work to provide several different ways of expressing similar semantic relations. For example, if a child remarks, "Big doggy mad," the clinician might recast, "He is? Is the big doggy mad?" Research on children with a variety of disabilities has demonstrated positive effects of this kind of recasting on language growth (Nelson, Camarata, Welsh, Butkovsky, & Camarata, 1996; Yoder, Davies, Bishop, & Munson, 1994). Nelson et al. found that recast treatment was superior to a clinician-directed imitative approach. Leonard et al. (2008) showed that recasting that focused on specific forms was more effective than a general ILS approach. Fey and Loeb (2002), however, suggest that these techniques work best when children are producing a few of the target forms in their own speech, so careful analysis of the child's current productions is important when choosing targets for recasts.

Some additional techniques for eliciting a variety of language forms within the modified ILS approach are suggested by Fey et al. (2003) and Owens (2009). Examples are given in Table 9-5.

ILS can also be taught to parents, daycare providers, and other caregivers, as a way to expand the child's opportunities for language stimulation. Law, Garrett, and Nye (2004) concluded in their literature review of intervention programs for preschoolers that intervention that was administered by trained parents was, in general, as effective as intervention that was administered by SLPs. Kohnert et al. (2005) identified several components shared by successful parent training programs:

- Focus on specific language facilitation strategies (e.g., modeling, expansion, recasts, imitation, responsive feedback).
- Using multiple instructional methods (e.g., demonstration, coaching, role plays, mediated parent-child interactions, video recorded examples, written materials, and specific instructive feedback).
- Teaching a progression of skills and strategies embedded in specific activities.

Girolametto, Weitzman, and Greenberg (2003) also showed that day care providers could be trained to provide ILS to children in small groups. The training was aimed at helping the workers be more responsive to children's initiations, engage children in interactions, model simplified language, and encourage peer interactions. Their study showed that trained caregivers were superior to untrained staff in waiting for children to initiate, engaging them in turn-taking, using face to face interaction, and including uninvolved children. The children assigned to trained caregivers talked more, produced more word combinations, and talked to peers more often than the children in control groups. Further research by this group (DeRivera, Girolametto, Greenberg, & Weitzman, 2005) suggests that the use of questions in interactions is another important target of in-service training. Open-ended questions, those that continue the child's topic, and questions followed by a pause to allow the child's response were found to result in increases in the complexity of preschool children's responses. These strategies, too, would be helpful skills for training parents and caregivers in ILS. Pence, Justice, & Wiggins (2008), though, suggested that preschool teachers will need ongoing support from SLPs in this endeavor.

Facilitated Play
An added advantage in using modified ILS in this way with children in the DL period is that, in addition to providing language models, we can provide models of more elaborated forms of play. As we discussed earlier, play skills often lag behind in children with language disorders, and a modified ILS approach gives us the opportunity to model forms of play appropriate for this developmental period, such as role-playing and using objects symbolically. Culatta (1994) discussed the advantages of play as a format for language intervention. She argued that play is an especially appropriate context for language learning because it is highly motivating; it permits the integration of content, form, and function; and it encourages the child to bring knowledge of "scripts" for everyday events to the foreground where this knowledge can support language use. In turn, play provides opportunities for elaborating existing scripts through enacting a wider set of roles and possibilities than are present in "reality." In a doctor play scene, for example, the child can be the patient but also can play the doctor, getting a chance to use language appropriate to that role. Culatta suggested using child-centered play contexts, not only for indirect language

TABLE 9-5　Language Elicitation Techniques

Technique	Target	Example
Violate routines	Protest, request, negative sentence	During snack, neglect to give client a cup and begin to pour juice.
Violate expectations	Comment, protest, negative sentence	Clinician: "Here's your sandwich." Child: "Nothing in it." Clinician; "Oh? What should I do?"
Withhold objects or turns	Protest, request, negative sentence	Give each other child a turn to operate a toy and skip client when moving to next child.
Misuse objects	Comment, verbs	Use a hairbrush to "brush teeth."
Misname objects	Comment, negative sentence, labels	Clinician: "How do you like my new hat?" (while pointing to shoes)
Misplace objects	Comment, negative sentence, spatial terms	Put paper plate on head.
Provide inappropriate objects for activity	Comment, labels, negatives, word combinations	Provide noodles and cheese when activity is making a sandwich.
"Pass it on"	Request for information	Clinician: "Do you know where the juice is?" Child: "No." Clinician: "Go see if Jamie does." Child: "Do you know where the juice is?"
"Strong, silent type"	Request for information	Clinician (placing interesting object before client): "This is neat." Child: "What is it?" Clinician: "A barometer." (Say nothing else until child asks for more information).
"Guess what"	Request for information, past tense	Clinician: "Guess what I did yesterday?"
Expansion invitation	Infinitive	Child: "I want crayon." Clinician: "You want a crayon to eat?" Client: "No, to color with." Clinician: "What?" Client: "I want a crayon to color with."

Adapted from Fey, M., Long, S., & Finestack, L. (2003). Ten principles of grammar facilitation for children with specific language impairments. *American Journal of Speech-Language Pathology, 12,* 3-15; Owens, R. (2009). *Language disorders: A functional approach to assessment and intervention* (5th ed.). Boston, MA: Allyn & Bacon.

stimulation, but also to develop a variety of language skills, such as the following:
- *Enhancing narrative ability* by engaging the child in direct metalinguistic planning of the roles, plans, attempts, and outcomes to be acted out in the play.
- *Facilitating turn-taking* by contriving reasons to communicate within the play. The clinician can require the child to communicate to multiple characters. If birthday party play is going on, the clinician can have the client tell each stuffed animal "guest" what to bring to the party.
- *Increasing opportunities for decontextualized language.* The clinician can use increasingly abstract props in the play, starting with real objects and moving to replicas, constructions, toys, and finally to imaginary props. The clinician also can include some discussion of events remote in space and time within the context of the play.
- *Enhancing the expression of communicative intentions.* The clinician can structure opportunities within the play for the child to negotiate roles and plans; project events; state rules and goals; and express the feelings, intentions, and desires of characters. The clinician can begin by modeling these functions and move to asking the child to express the functions following the model.
- *Increasing vocabulary.* Words specific to particular scripts can be used by the clinician multiple times within a play episode. If a shopping script is being used, the words *cashier, customer, groceries,* and *cart* might be used. Generic words important for play negotiation and enactment also can be modeled, such as *cooperate, prepare,* and *character.*

- *Developing emergent literacy.* Play provides many opportunities for children to pretend to write and read and to see why written forms are used. The clinician can encourage clients to make real or pretend lists, signs, and labels and to write or pretend to write notes and instructions to other characters within the play.

Patterson and Westby (1998) provided some guidelines for the kinds of play to model for children in the DL phase. These are summarized in Table 9-6. Culatta (1994) gave an extensive list of themes and events that can be used as a basis for play scenes for children with DL. Examples are given in Table 9-7.

Hybrid Approaches to Intervention for the Child with Developing Language

Hybrid methods of intervention supply a valuable middle ground for planning language programs. More naturalistic and child-centered than CD approaches, but more structured, sequenced, and clinician-controlled than ILS or facilitated play, these techniques provide a range of alternatives for clinicians to use in improving communicative function. We talked in Chapter 3 about several hybrid techniques. Some that were discussed in detail, including *incidental* and *milieu* teaching, are extremely well suited to addressing semantic and syntactic goals of the DL period. Focused stimulation and script therapy, also outlined in Chapter 3, are likewise very useful during this phase. Let's look at some forms of focused stimulation and some extensions of the script therapy approach, as well as a few other hybrid methods that can be added to the ones we've already discussed.

TABLE 9-6   Guidelines for Modeling Pretend Play

Developmental Level	Props to Use in Play	Event Description Types to Use in Play	Roles to Take and Give to Toys and Others
3–3½ yr	Replica toys (dollhouse, barn, etc.); use objects to represent others (block for phone); use blocks as enclosures; use sandbox, water table for imaginative play.	Salient, memorable events in which the child has taken part (e.g., visit to doctor, losing a favorite toy).	Use doll as participant in play; talk for doll; play parent to doll.
3½–4 yr	Use language to set scene and invent some props; build city with blocks.	Familiar, observed events in which the child has not taken part (e.g., firehouse, police car, superhero from TV show).	Use dolls to act out scenes; take multiple roles in play.
4–5 yr	Use language exclusively to set action and roles.	Novel events and imaginative activities that child has not participated in or observed (e.g., pretend to be cowpunchers on the range; ride horses, set up camp, cook meal, sing around the campfire).	Use language to take roles, using different voices, etc.

Adapted from Patterson, J., & Westby, C. (1998). The development of play. In W. Haynes & B. Shulman (Eds.), *Communication development: Foundations, processes, and clinical applications* (pp. 135-164). Englewood Cliffs, NJ: Prentice-Hall.

TABLE 9-7   Themes and Events to Use as Play Contexts in Language Intervention

Script	Events	Potential Problems
Getting ready for school	Get dressed, brush teeth, pack lunch, do chores, eat breakfast, get on bus.	Can't wake children, burn toast, can't find lunch box, child is sick, out of milk, miss bus.
Going on a trip	Plan and pack, load car, leave, drive to destination, arrive at hotel, go to pool.	Child doesn't want to go, no room for favorite blanket, car out of gas, child is carsick, no rooms, forgot swimsuit.
Taking care of sick baby	Take temperature, rock baby, call doctor, take in car to doctor, doctor gives baby medicine, take baby home, give juice, put to bed.	Baby still cries, line is busy, car won't start, baby throws up medicine, baby spills juice.

Adapted from Culatta, B. (1994). Representational play and story enactments: Formats for language intervention. In J. Duchan, L. Hewitt, & R. Sonnenmeier (Eds.), *Pragmatics: From theory to practice* (pp. 105-119). Englewood Cliffs, NJ: Prentice-Hall.

Hybrid Approaches in Phonology

Prezas and Hodson (2010) provided a description of a hybrid approach to intervention with unintelligible children. Their approach uses detailed assessment of phonological production to target sounds and processes. It is based on the principles of (1) the need to develop strong auditory models for target sounds, (2) developing kinesthetic patterns to match these auditory images, (3) the use of a phonetic environment to facilitate correct sound production, and (4) the child's active involvement in phonological acquisition. A cycling method of goal attack is used. Each intervention session has several components, including the following:

- Reviewing the targets from the previous session.
- Providing auditory bombardment for target sounds using amplification, such as an auditory training unit.
- Practicing production of a small number of words containing target sounds or syllable shapes in drill play activities.
- Identifying new words for the next session's or cycle's production practice by identifying two to five target words in which the child can pronounce the target sound or syllable shape correctly.
- Repeating the auditory bombardment segment.
- Giving parents the list of words for auditory bombardment to read to the child at home between sessions.

Notice that this approach is considered hybrid even though it contains a drill play phase during the production practice segment. Hybrid programs such as this one can take advantage of several approaches and even include some CD activities within their overall plan.

Focused Stimulation

Weismer and Robertson (2006) presented a detailed description of a program designed to facilitate grammar acquisition in language-impaired preschoolers. They refer to this program as a "focused stimulation" approach, because it focuses on specific forms and uses multiple models with a variety of forms of clinician feedback to stimulate language goals. The overall program maintains a hybrid orientation with the context of natural conversation between a client and an adult. Targets for the intervention are selected from language sample data, but Weismer and Robertson emphasize that focused stimulation can be used for a variety of targets including syntax, morphology, vocabulary, pragmatics, and phonology. Forms that the client used less than half the time correctly in obligatory contexts are considered high-priority target forms. Table 9-8 summarizes some of the techniques used in this approach. Lederer (2001) showed that focused stimulation was effective for increasing vocabulary in preschool children.

TABLE 9-8   Focused Stimulation Procedures

Targets	Explanation	Example
Demonstrating use of targets	Targets are moved to sentence initial or final position, where they are most salient.	Child: I need a red block. Adult: *Will* you get it? Child: OK Adult: You *will?* Good, then I *will* get a blue one.
Expansion	Errors in the child's utterance are corrected.	Child: Her my dolly. Adult: Yes, *she* is yours.
Recast	Keeps child's meaning but changes the form of the sentence.	Child: This easy! Adult: *Is* it? *Is* it easy for you? It *isn't* easy for me!
Buildups and break-downs	Demonstrate how to manipulate the elements in a sentence.	Child: I make a mess! Adult: You did! You made a big mess! A big mess! You certainly did make a mess. You made a mess, all right. Didn't you?
False assertions	Clinician makes a false remark as a prompt for the client to deny it.	Adult: This piece fits here. Child: No it not. Adult: Yes it *does*. Child: No! Adult: I guess you're right. It *doesn't* fit here.
Feigned misunderstandings	Clinician pretends not to get the message sent by client.	Child: Me need that. Adult: *He* needs it? Child: No, me need it. Adult: No, *I* do (pointing to self).
Forced choices	Provide a model of correct use of the target.	Adult: Do you want some snack? You can say "yes, please," or "no, thank you."
Other contingent queries	Used to encourage client to provide missing information.	Child: I want that one. Adult: What will you do with it? Child: Color. Adult: Oh, you want the red crayon so you can color with it.
Violating routines	Omitting or incorrectly performing a step in an established routine to encourage the child to comment.	When offering cookies, forget to provide a napkin. Child: Us need napkin. Adult: *We* do! You're right! *We* do need napkins.
Withholding objects and turns	Used to encourage requests.	Clinician skips a client's turn in a board game. Child: My turn! Adult: It *is!* Is it your turn? I guess it *is!*
Violating object function	Used to encourage use of negative forms.	Adult uses demitasse spoon to stir large bowl of pudding mix. Child: No that one! Adult: No? You *don't* want me to use this spoon? You *don't?* We *don't* use this spoon to stir?
"Syntax stories"	Clinicians and parents create stories, similar to "Dad's Bad Joke," (see Box 9-3) that give multiple exemplars of target forms.	Excerpt from "Dad's Bad Joke": Dad had a big grin on his face. Warren and Neil started to play. They were having lots of fun. Then something happened. The light went out. We*'re* in the dark! said Neil. We sure *are*, said Warren. *Are* you afraid? *Are* you afraid of the dark? No, I*'m* not, said Neil. I *am* not afraid. *Are* you?

Adapted from Cleave, P., & Fey, M. (1997). Two approaches to the facilitation of grammar in children with language impairments: Rationale and description. *American Journal of Speech-Language Pathology, 6,* 23-32.

Script Therapy

Remember that Olswang and Bain (1991) described script therapy as a way to reduce the cognitive load of language training by embedding it in the context of a familiar routine. One way to use scripts is to develop some verbal routines with the child in the intervention context. We might, for example, have some stock phrases related to the client's targets that we say at the beginning of each session. To a client working on use of *I* and copula verbs, we could say, "I *am* glad to see you. I *am* happy you came today. I *am* ready for you. How about you?" We also talked in Chapter 3 about establishing the script and then violating it, encouraging the client to comment on or correct the violation. In addition, we discussed "playing" with the script, getting clients to ring changes on it as a way to broaden their use of the forms in the routine.

Event Structures

Script therapy also can be used in conjunction with event structures that are familiar to the client. Carrow-Woolfolk (1988) described event structures as holistic, goal-directed, sequentially organized sets of activities that have prototypic features but some internal variation. Ordering food in a restaurant would be one example; going grocery shopping is another. We can choose event structures from the "real world" that are well-known to our clients and use these as contexts for developing verbal routines. The clients and clinician can then use props to act out the event structure, with the clinician first modeling the entire verbal script. Later, cloze procedures can be used to elicit increasingly large parts of the verbal script from the clients. Eventually the clients can act out and recite the entire event structure. The clients can repeat the enactment of the event structure numerous times, trading roles so that each gets a chance to produce all the parts of the verbal script. A client who is the shopper one day may be the clerk the next. After a while, variations on the event structure and its verbal script can be imposed. Children who used a script for going grocery shopping might be asked to pretend they are shopping for pet food in a pet store. Finally, the clinician can play a role in the event structure and violate the expected events or verbal formulae that are familiar to the clients.

These scripts can serve as frames for developing vocabulary, morphosyntax, and pragmatics. An event script for vocabulary development might involve shopping in a clothing store. The clinician can model using a sentence frame to request items whose names the child needs to learn ("I need socks, I need a *blouse*, I need a *vest*."). Morphosyntactic targets can also be addressed ("I need socks, my baby need*s* socks"). Pragmatic practice in taking turns and maintaining topics, and adding new information to established topics can also be included.

Using event structures in a script-based intervention program differs somewhat from using event scripts in more child-centered play. Child-centered play, as we discussed earlier, is more open-ended. The clinician can provide guidance and scaffolding but generally follows the child's lead; the focus of the activity is the play. In script therapy using event structures, the play provides a background, but the focus is using the target language forms and functions. The clinician takes a stronger leadership role in the activity, modeling what the child is to say and requesting that the child say the target forms. We might use the same play scripts for each of these two types of approaches. We might, for example, use a scripted, hybrid version of "shopping" to work on specific linguistic goals, such as food vocabulary and sentences of the form, "I need X." We might use the same shopping context another time for more child-centered play, focusing on developing turn-taking skills and increasing the range of communicative intentions expressed. This time, instead of letting the child simply ask for a series of products ("I need apples, I need grapes"), as we did in the hybrid form of the activity, we could introduce some problems ("We're out of grapes") and provide opportunities and scaffolding for the child to use language to overcome these obstacles in the play.

We would want to select event structures that are familiar to our clients but that also lend themselves to the goals being targeted. If spatial prepositions are intervention goals, for example, the restaurant might not be the best structure to choose. Going to a birthday party could be better (for example, "Put your gift *beside* the table; pin the tail *on* the donkey; put the candle *in* the cake; your treat bag is *under* your hat."). Script-based activities have been shown to be effective in teaching semantic relations (Kim, Yang, & Hwang, 2001) and improving social uses of language (Neeley, Neeley, Justen, & Tipton-Sumner, 2001) in preschoolers with disabilities.

Literature-Based Scripts

Bedrosian (1997), Cole, Maddox, and Lim (2006), Snow and Goldfield (1983), as well as Wasik and Bond (2001) have discussed the advantages of joint book reading as an ideal context for language learning. Picture books are of interest to children and are a natural, familiar format for adult-child interaction. They use repetitive language closely tied to the nonlinguistic, pictured context. In addition, Kirchner (1991) pointed out that joint book reading provides an excellent opportunity for adults to scaffold the child's contribution to the interaction. With the stable, repetitive form of the text of the book, adults can encourage the child to operate in the zone of proximal development, asking the child to make a contribution to the reading that is slightly above what he or she is able to do in spontaneous speech. As the child acquires the script, the adult can "up the ante," requiring a higher level of contribution later. Ratner, Parker, and Gardner (1993) suggested further that joint book reading is an ideal context for establishing the joint attention so necessary for effective discourse and for providing a framework for semantic contingency, as the book anchors the child's and adult's remarks to a reliable, meaningful, and engaging base. Carrow-Woolfolk (1988) pointed out that both book reading and recitation of story passages provide ideal opportunities for practicing and stabilizing specific language skills. In short, much language learning normally goes on in the context of the pleasant and familiar activity of joint book reading. Research has demonstrated that shared book reading can promote vocabulary acquisition (e.g., Arnold, Lonigan, Whitehurst, & Epstein, 1994; Kotaman, 2008; Wasik & Bond, 2001), grammatical development (Bradshaw et al., 1998; Whitehurst et al., 1988; Yoder et al., 1995), social communication (Crain-Thoreson & Dale, 1999; Stanton-Chapman, Kaiser, & Wolery, 2006), and preliteracy (Justice, McGinty, Piasta, Kaderavek, & Fan, 2010; Munro & Lee, 2008). In fact, Justice et al. (2009) and Lovelace and Stewart (2007) showed that having teachers simply add some explicit references to print during story reading resulted in significant gains in print knowledge for preschoolers who were at risk as well as for those with language impairments. We can make use of this ideal context in language intervention as well. Cole, Maddox, and Lim (2006) add that the practice appears culturally appropriate for families from a range of backgrounds.

Clinicians can choose books for literature-based intervention that provide frequent examples of intervention targets.

Of course, just reading books to children with language impairments does not constitute intervention. If all they needed were to be read to, most would have learned language by now and would not be in an intervention program. We need to structure the joint book reading experience in the following three important ways:

- By the use of carefully planned, scaffolded language input. For example, if spatial terms are a vocabulary category to be targeted, we would choose books that provide many examples of these terms, such as *Inside, Outside, Upside Down* (Berenstain & Berenstain, 1968), reading the book repeatedly, using emphatic stress on the spatial terms, and asking the child to comment or answer questions after hearing each page ("Where is the bear now? He's . . ."). Eventually, cloze techniques can be used to "up the ante" on the child's contribution.
- By the selection of books that provide opportunities for the client to practice forms and meanings being targeted in the intervention. For example, if we are working on auxiliary verbs, we can select a book such as *Green Eggs and Ham* (Suess, 1956) and after several rereadings, ask the child to play the role of Sam-I-Am.
- By using these carefully selected books as an opportunity for language production practice. Using spatial vocabulary as our example again, we can, after several readings using questions and cloze techniques, ask the child to "read" *Inside, Outside,*

Upside Down to the clinician and to several puppets, so the child must show each page to each "listener" and read the page over again to each.

McGee and Schickedanz (2007) also suggest that multiple readings of the same book can be useful opportunities to focus children's attention on different aspects of the book, some relating to print awareness (Justice et al., 2009; 2010), others to vocabulary and language structure, and still others to literal and inferential comprehension (van Kleeck, Vander Woude, & Hammett, 2006). Skakaris-Doyle and Dempsey (2008) suggest additional techniques for challenging children to enhance their interaction with stories. Some examples of techniques that can be used in rereading activities appear in Box 9-5.

In addition to carefully structuring these activities, though, we need to be aware, as Kaderavek and Justice (2002) caution us, that some children just don't like listening to books; in fact, unwillingness to listen to books is associated with language disorder. To use book reading as an intervention context, it is crucial that we make sure children are engaged and interested in the activity and that targets addressed in book reading are also practiced and generalized in other contexts. Kaderavek and Justice advocate using strategies like allowing children to choose a book from several that contain target forms, asking children to describe their feelings about the book being used, allowing the child to hold and control

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BOX 9-5   Activities for Enhancing Interactions with Preschool Storybooks

Questions: After reading a story, ask questions about the literal events, as well as about inferences that can be drawn (Ex.: What did Goldilocks do first when she went into the Bears' house? How did the bears feel when they came home and saw what Goldilocks had done?)

Joint Story Retell: After reading a story, use cloze questions to help the child recall and reconstruct the story (e.g., When Goldilocks saw the Bears' house was empty, she went inside and sat down at the _____. She saw three _____. First she tasted _____ . . .)

Expectancy Violation Detection: Retell the story, making errors. Pause after each, allowing the child to detect and correct them. If he or she does not detect them, call attention to them and ask, "Is that right?" (e.g., Goldilocks tasted the Papa Bear's porridge and said, "This porridge is just right!")

Picture Walk: Before reading the book, hand it to the child, and ask him or her to look through it and tell about what he or she sees in the pictures, and what the story may be about.

Print Referencing Activities: Call attention to print during reading by focusing on:

Print Organization
Page Order: "I'm going to read this page first, then I'll read that page next to it."
Author: the author of this book, Bill Martin, Jr., wrote all the words I'm going to read in it.
Page Organization: "I'm going to start reading here at the top of this page."
Title: "Let's look at this book; here's the title. That's the name of the book. It's called . . ."
Print Direction: "I'm going to start reading here and read across the page this way."

Print Meaning
Print Function: This writing here on the page says, "Brown Bear, Brown Bear . . ."
Environmental Print: "Oh, look at this new truck we got. It says "Ambulance" on it!
Concepts of Print: "These words written here will tell us what the bear said."

Letters
Upper and Lower Case: You can see 2 letters on this page of the alphabet book. The big one is the capital *S,* the little one is a small *s.*
Letter Names: There's a letter on this page that you see a lot, at the beginning of *bear* and *brown*. Which letter is it?
Concept of Letters: Can you find a letter on this page that is at the beginning of Malik's name?

Words
Word Identification: This word here is the word *see*. It's on almost every page of this book. Let's see if we can find it on each page, before I read the page.
Short versus Long Words: This word is *yellow*. It looks longer than the word *red*. Let's count the letters in *yellow* and *red* to be sure.
Letters versus Words: Can you find a *B* on this page? *B* is at the beginning of two different words on this page, *brown* and *bear*.
Concept of Word: Let's count how many words are written on this page. Can you help me?

Adapted from Justice, L., Kaderavek, J., Fan, X., Sofka, A., & Hunt, A. (2009). Accelerating preschoolers' early literacy development through classroom-based teacher-child storybook reading and explicit print referencing. *Language, Speech, and Hearing Services in Schools, 40,* 67-85; and Skarakis-Doyle, E., & Dempsey, L. (2008). Assessing story comprehension in preschool children. *Topics in Language Disorders, 28(2),* 131-148.

the book (by turning pages, etc.), incorporating activity and movement (such as acting out characters' antics) in the book reading, and responding to the child's interests and attentional shifts during reading. When encouraging parents and teachers to use book reading for language enrichment and literacy development, it is equally important to alert them to these issues.

We looked at one approach to scaffolding language input in joint book reading in Chapter 7: that of Whitehurst et al. (1991). Kirchner (1991) provided another approach that is more naturalistic in its discourse structure and is suited to children in both the emerging language and DL stages. She advocated using children's books as the routine, predictable language base from which the child can learn to segment longer and more complex utterances into their constituent parts. Because children with language impairments appear to rely on using unanalyzed language forms learned through imitation, rather than generating novel utterances, more than normally developing children do (Wetherby, Schuler, & Prizant, 1997), the joint book reading situation provides an opportunity to exploit this tendency and use it to scaffold the child to higher levels of production. The fixed text of the storybook provides an ideal substrate for the child's emerging linguistic analysis. Kirchner (1991) provided a sequence of activities to be used with individuals or groups in conjunction with joint book reading. These are summarized in Box 9-6. Books for language intervention are chosen on the basis of the forms used within their text. Not just any good children's book will do, but you may be surprised at how many classics of children's literature use repetitive semantic and syntactic forms that are commonly the targets of intervention in the DL period. Ratner, Parker, and Gardner (1993) and Owens (2009) assembled a list of classic children's books that contain repetitive use of grammatical patterns commonly targeted in language intervention. Their lists form the basis for the suggestions for books to use in literature-based script therapy that can be found in Appendix 9-2. Additional resources for using children's literature in language intervention include Gebers (1990), Kaderavek and Justice (2002), Lockhart (1992), and Owens and Robinson (1997).

In addition to classic children's books, other forms of children's literature also are very useful adjuncts to script therapy. Songs and nursery rhymes can be used in exactly the same way as books to highlight semantic and syntactic forms in reliable, repetitive formats, following Kirchner's (1991) procedures. Zoller (1991)

presented some suggestions along these lines. Finger plays or songs and rhymes that lend themselves to acting out are especially helpful, as they engage clients in multimodal experience with the text. What's more, they give clients a way to participate in the activity as the clinician sings or recites, until the text has been internalized enough for them to participate through the verbal medium. Box 9-7 provides some well-known songs and nursery rhymes that contain repetitive use of forms often targeted in intervention at the DL phase. Once we have script therapy applications for children's literature in mind, it will be easy to add to these lists by visiting a children's library or bookstore to examine additional children's books and compilations of songs, rhymes, and finger plays. A clinician interested in script therapy can soon assemble an impressive array of texts to be used for any language form that a client might need to improve. Many such lists are already commercially available. Beall and Nip (2005), Gebers (2003), Prelutshy (1986), Sillberg, Schiller, Berry, & Oshiver, (2006), and Sterling-Orth (2005) are some examples. There are also a range of free sources of rhymes, songs, and fingerplays on the internet, including preschoolrainbow.org, songsforteaching.com, and preschoolexpress.com, to name just a few.

An additional plus for literature-based script therapy is that it provides an ideal "homework" activity for families interested in following up on intervention activities. Having parents read children books used in intervention is a simple and accessible activity that most parents will find enjoyable rather than taxing. Parents can be encouraged to ask the children to fill in words or phrases they leave out as they read. If songs and nursery rhymes are used, parents can ask the child to "teach" them the actions that go along with the rhymes and sing or recite them together as the parent "learns" the routine. In this way children can be made to feel that they are making an important contribution to the interaction. When encouraging parents to use literature-based scripts, whether from books or other oral texts, it will be important to be sensitive to the cultural aspects of these kinds of interactions and help parents find ways to engage their children actively and playfully around these scripts. Parents from low income or non-European backgrounds may not use the kinds of interactive strategies that clinicians expect. Family and cultural practices that are appropriate for script-based language activities should be explored with these families.

BOX 9-6 Suggestions for Using Joint Book Reading in Language Intervention

Step 1: Read the book to the client several times over the course of a few sessions. Use prosodic cues to segment and highlight target semantic and syntactic patterns.

Step 2: After adequate exposure to the text, pause at points containing the target forms, creating a cloze condition. Let the client produce the next word, phrase, or line (in choral fashion for groups of clients). Insert pauses in linguistically specific ways to mark and select the portion of the text the client will produce. This facilitates the client's segmentation of the linguistic material for analysis.

Step 3: Read the book often enough that the client memorizes it. At each reading, segment the text in variable but explicit ways to facilitate linguistic analysis.

Step 4: Segment the text so that the client must produce increasingly long portions, until eventually the client can recite the whole book.

Step 5: Once clients have memorized the text, have them take turns "reading" it and having the clinician or other clients fill in parts left out by the "reader."

Step 6: Make up a new book using a similar linguistic pattern to encourage the child to use the learned forms in new ways. Write down each client's version, and let the clients illustrate their "books" to take home to read to family members.

Adapted from Kirchner, D. (1991). Reciprocal book reading: A discourse-based intervention strategy for the child with atypical language development. In T. Gallagher (Ed.), *Pragmatics of language: Clinical practice issues* (pp. 307-332). San Diego, CA: Singular Publishing Group.

Examples of Songs, Rhymes, and Finger Play Routines for Targeting Language Forms

Subject-Verb-Object Sentences
One, Two, Buckle My Shoe
All Around the Mulberry Bush
Old McDonald
Prepositions
In and Out the Window
Hickory, Dickory, Dock
Skidamarink-a-Dink-a-Dink
Over the River and Through the Woods
Copula
Where is Thumbkin?
Little Boy Blue
(Be)(Verb)ing
She'll Be Coming Round the Mountain
Modal Auxiliary
Mother, May I?
Jack Sprat
Third-Person Singular
The Farmer in the Dell
One He Loves, Two He Loves, Three He Loves, They Say
Past Tense
Jack and Jill
There Was an Old Woman Who Lived in a Shoe
Eensy Weensy Spider
This Little Piggy
Questions
Where is Thumbkin?
Way Down Yonder in the Pawpaw Patch
***Have* Auxiliary**
Little Bo Peep
I've Been Working on the Railroad
He's Got the Whole World in His Hands
Relative Clauses
The House that Jack Built
There Was an Old Lady Who Swallowed a Fly
Conjunctions
Old Mother Hubbard
If You're Happy and You Know It

Literature-based script intervention develops cultural literacy in children with language disorders.

Like auditory bombardment, literature-based script therapy will probably make up a relatively small portion of the intervention session, perhaps 5 to 10 minutes. Other activities will, no doubt, use the bulk of the intervention time, but the benefits of those few minutes can be disproportionate. Not only will they contribute to the children's ability to use sophisticated language forms, they also will add to the clients' "cultural literacy," or familiarity with the classic texts of mainstream Western children's literature. Many children with language impairments have a weaker base of general information and cultural reference than normally developing children because they have limited access as a result of their language deficits. Literature-based script therapy can help fill this gap. In addition, literature-based script therapy provides excellent focused opportunities for "literacy socialization," the development of a familiarity with books and literary language style that will give the client a solid foundation for learning to read. As we use these approaches, though, we need to recall the cautions raised by Kaderavak and Justice (2002) to ensure we are maximizing children's attention and engagement with books and other literature

scripts. And we must remember to provide opportunities for children to practice the forms learned within the script in a wider variety of linguistic contexts. For example, if children have learned several spatial terms from *Inside, Outside, Upside Down*, these terms should be used in other activities. The child and clinician might, for example, take turns "hiding" a raisin and giving clues that contain spatial terms so the other can "find" it ("it's *inside* the drawer; it's *outside* the doll house").

Structured Play
Shriberg and Kwiatkowski (1982a) also discussed using play organized by the clinician as a hybrid approach to phonological intervention. They suggested, for example, having cards with pictures representing the client's target words to be sent as letters. Each picture is named by the client as it is placed in an envelope, "stamped," and "addressed" to someone the client thinks would like to get that picture. The "letters" are then mailed in a toy mailbox. The clinician does not correct the child's pronunciation but can offer production cues if the child is receptive to them. The focus of the activity is on the fun of sending the letters, rather than on responding to the clinician's prompts to say the words. Still, the naming of the words on the cards provides opportunities for client practice and clinician feedback.

Using Conversation and Narrative in Hybrid Intervention
We talked before about the fact that we do not generally want to add pragmatic targets to our list of intervention goals. Instead, we try to set up pragmatic contexts in which clients can use the semantic, syntactic, and phonological skills being developed. As we saw in Table 9-1, the pragmatic skills that we expect to show the greatest degree of growth during the DL stage are conversational skills and the emergence of the ability to tell and understand stories or use narrative discourse. Let's look briefly at how we might incorporate conversational and narrative contexts into hybrid intervention activities.

Conversation.   Brinton and Fujiki (1994, 1995) have presented example programs for using conversation as a context for intervention. The clinician ensures that guided conversation supports the skills being targeted. Brinton and Fujiki (1994) focused on two types of conversational behaviors identified by Fey (1986)—*assertive* and *responsive* skills—and suggested techniques for developing each set of skills in clients with language impairment.

Children with poor *assertive* skills are quiet in conversation. They take their conversational turns reluctantly or not at all and rarely initiate topics. For clients with this difficulty, Brinton and Fujiki suggested first engaging the children in entertaining interactive activities in which they must do something to sustain the interaction, although at first a child's contribution can be minimal. For example, a simple game such as "Go Fish" can be used. Here a client working on question forms might use the form "Do you have (X)?" in the game format. The game requires the client to initiate the question. If the client does not ask spontaneously, the clinician can simply wait, providing a cue only after a relatively long (10- to 15-second) pause in which the client does not initiate. As the game progresses, the clinician can use more and more truncated cues, going from "Say, 'Do you have (X)?'" to "Ask me," to simply an expectant look. Later the demands of the game can be "upped" so that more is expected of the client. For example, the rules of the game can be changed so that the client must ask a more elaborate question ("Do you have a green fish with white fins?") or a more polite form of the question ("May I please have an (X)?").

Brinton and Fujiki emphasized that the format should soon become less structured. They advocated manipulating the context so that clients are highly motivated to initiate. If questions were the structural target, again, a clinician might set up a situation in which a puppet told the clinician a "secret." Clients who wanted to hear the secret would have to *ask* to be told. When initiations such as these, using forms targeted in the intervention program, become frequent in conversations guided by the clinician, Brinton and Fujiki suggested having the client participate in peer conversations. Here the clinician would be present as a conversational "coach," offering advice, cues, and prompts as the client engages in conversation with first one peer, then with several. The clinician can encourage the client to be persistent about getting a turn, give hints about appropriate topic-maintaining comments the client can make, supply cues as to when it is appropriate for the client to take a turn, and help the client handle interruptions. In the context of these peer conversations, the clinician also can remind the client to use the forms learned in the intervention program to accomplish the conversational goals. Using questions as the example target again, the clinician can, for instance, remind the client to use a target form to initiate role negotiation in pretend play with peers. The clinician can coach the client to use question forms to ask who wants to play the mommy in a game of "house," who wants to be the baby, and so on.

Fujiki and Brinton (1991) showed that children who have trouble with *responsiveness* in conversation are less likely to find conversational partners responsive to them. Both peers and adults find conversations with such children difficult and unrewarding. In using conversational contexts for language intervention with unresponsive children, Brinton and Fujiki (1994) suggested some interactive games that help the child become sensitive to signals in conversation that a turn is available. They advocated setting up turn exchanges in fairly structured situations so that turn exchange points are, at first, explicitly marked. Using walkie-talkies or pretend radios or cell phones, for example, the client and clinician can talk to each other and signal that their turn has ended by saying "over." The turns themselves can consist of structured talk in which forms targeted in the interaction program are used. If, for example, *[be]-[verb]-ing* sentences are intervention targets, the client and clinician can talk over their radios about what they are doing as they roam the hallway (Clinician: "I am going around the corner. Over." Client: "I am walking past our room. Over.").

Brinton and Fujiki advocated moving from these activities to more collaborative games in which the client needs to obtain and attend to information provided by the partner. They suggested that children (or puppets, if additional children are not involved in the session) can each be given different pieces of a puzzle or toy that needs to be assembled and told to hide their piece. The client can then approach each one and ask what each had and where to find it. The client would need to listen to each response before assembling the whole. The client also might "take orders" from a catalogue or fast-food menu and be required to "check back" with the customer to be sure the order was taken correctly before filling it. These games can go on at first between the client and clinician. Later, additional peers can be added, with the clinician serving again as coach, reminding clients to signal that others can take a turn and to pay attention and respond to the talk of other participants. Brinton and Fujiki (1995) also advocate training parents, teachers, and peers to use conversational contexts to address semantic and syntactic targets, such as referring to events outside the immediate context and increasing the production of complex sentence forms. Brinton and Fujiki (2006) also point out that children with DLD need repeated support, scaffolding, and practice opportunities to acquire the social and language knowledge required to engage in successful conversational exchanges. They advocate focusing on social communication early in the intervention program, and maintaining this focus throughout the child's treatment.

Research is emerging that suggests that peers are especially effective agents of intervention for social and conversational skills (Paul, 2003a). We'll talk later about how to involve preschool peers in mediating social interactions for children with disabilities, in order to take advantage of the special salience that conversations with peers have for young children. DeKroon, Kyte, and Johnson (2002) showed that social pretend play, in which children played with peers using toys or objects around pretend or fantasy themes, elicited the highest levels of conversational behavior in dyads containing a child with language impairment and a typical peer. These play settings, then, would be ideal ones for the clinician to orchestrate when coaching clients in conversational contexts. Beilinson and Olswang (2003) showed that coaching preschoolers to use interesting props in order to gain entry into peer group play activities was especially helpful in increasing the opportunities for social interactions for young children with communication difficulties. Part of our conversational coaching agenda, then, could be to arm children with interesting objects in order to smooth their way into peer interactions.

Narrative.   When we talk about language in the school-age period, we'll see in more detail that narrative skills—which begin to emerge during the DL period and reach their full flower during the school years—are closely related to academic success. Fey, Catts, Proctor-Williams, Tomblin, and Zhang (2004) and Paul and Smith (1993) showed that children with language disorders in the DL period were less skilled than typical peers at producing narratives. We talked just a while ago about how work on metaphonology develops emerging literacy skills and provides preventive intervention for averting later problems in learning to read. Targeting narrative skills during the DL phase can also build toward emerging literacy and effect preventive intervention. That's because narrative, too, is highly correlated with success in literacy (Bishop & Edmundson, 1987; Gillam, McFadden, & van Kleeck, 1995). Petersen, Gillam, Spencer, & Gillan (2010), for example, showed that narrative intervention, in which preschoolers at risk

were read stories, then asked to retell them with picture and verbal scaffolding, was useful for improving children's functional use of narrative macrostructure and microstructure, and their production of literate language forms.

In addition, narrative contexts provide fertile ground for addressing a variety of other aspects of communication, including vocabulary, syntax, morphology, and verbal memory, in addition to narrative structure (Spencer & Slocum, 2010; Swanson, Fey, Mills, & Hood, 2005). Culatta (1994) presented some suggestions for integrating narrative contexts into language intervention at this level, using story re-enactments. These involve, first, having clients listen to simple stories. The stories can be read from classic children's books, such as those used in literature-based script activities. Familiar folktales or fairy tales also can be told orally. Before the clients listen to the story for the first time, the clinician can provide a preparatory set to focus their attention on the basic elements of the story. These include its setting, its central character, its basic problem, the characters' plans and goals, and the consequences of the characters' actions. If the story chosen is a familiar tale, clients can be asked to recall the setting, characters, and so on before it is told. If it is a new story, they can be told to listen for these elements so they can answer questions about them later. After hearing the story the first time, clients can be asked to focus on these elements by answering questions about where the story happens, who is in the story, what the character's problem is in the story, how the character tries to solve it, and what happens when the character acts on the plan. If clients hear and enact several different stories over the course of an intervention period, we can ask the same questions about each one. In this way clients can begin to internalize the story grammar structure (see Box 10-3) that these questions imply.

Clients can then assume roles to act out the story, using simple props and costumes. The language of the story can be chosen specifically to emphasize forms being targeted in the intervention. If clients are working on auxiliary *will,* for example, the "Three Little Pigs" story might be used. The client can play the wolf, who says, "I *will* huff, and I *will* puff, and I *will* blow your house in." The clinician can act as "narrator," again pointing out the critical elements in the story. The next time, the client can act as both narrator and actor, using the target language and embedding it in the narrative frame. The clinician can "coach" the client in the retelling, encouraging both the use of correct forms and attention to critical story grammar elements in the narration. Later re-enactments can use paper cutouts instead of live actors, which the client can manipulate as the story is narrated. The story also can be retold with slightly different characters or by changing the language slightly to broaden the target language forms used (after using the uncontracted, "I *will* huff . . .," for example, the dialogue can be changed to the contracted, "I'*ll* huff . . ."). Swanson, Fey, Mills, and Hood (2005) provide additional suggestions for using narratives in language intervention at the DL stage.

Intervention Contexts for Children with Developing Language

When deciding about the contexts for intervention for children in the DL phase, we need to answer two primary questions:

1. Who should deliver the intervention?
2. What service delivery model will be used?

Let's look at some of the options available for answering these questions in the DL period.

Agents of Intervention for Children with Developing Language

Three types of intervention agents, apart from certified SLPs, are typically considered for children in the DL period: paraprofessionals, parents, and peers.

Paraprofessionals

Paraprofessionals are individuals who deliver services to children and their families but serve under the supervision of a professional who is ultimately responsible for the intervention program. Generally, paraprofessionals provide one-to-one instruction, using methods and procedures developed by the supervising clinician. Coufal, Steckelberg, and Vasa (1991) reported that paraprofessionals are effective in modifying both articulatory and language behavior in children. ASHA (2004e) has provided guidelines for the training and supervision of paraprofessionals in speech-language pathology; an explication of these guidelines is provided by Paul-Brown and Goldberg (2001). These documents tell us that there are several roles for paraprofessionals to assume with children in the DL period. They can be trained to use the same kind of indirect language stimulation we might teach parents to provide, for the purpose of practice and generalization, following procedures outlined in research such as Girolametto, Weitzman, and Greenberg (2003). For children in classroom-based intervention settings, the paraprofessional can supply intensive one-to-one language stimulation. This can include modeling appropriate uses of communication that the client can use to interact with peers and engage in developmentally appropriate play, and "coaching" the client within these interactions.

They can also provide structured CD or hybrid intervention to individuals or small groups, as directed by the clinician. Here the clinician designs a lesson plan in detail, including the linguistic stimuli, materials, and activities to be used; the responses to be targeted; and the reinforcement or corrective feedback to be given. Alternatively, the clinician might provide a commercially available lesson plan to address a goal that is part of the child's program. In either case, the paraprofessional follows the clinician's instructions, records the client's responses, and presents the data to the clinician for evaluation and subsequent treatment planning. Use of paraprofessionals can provide helpful expansion of the amount of intervention time available to clients with language disorders. We need to remember, though, that in working with these assistants, the design and evaluation of the program remains our job, not theirs. We can make best use of paraprofessionals by training them in a small set of tasks and providing clear and explicit instruction as to what they are to do with the client, while maintaining responsibility ourselves for the bulk of the decision making and accountability in the intervention program.

There's one more issue in working with paraprofessionals. In the case of children with severe disabilities, a paraprofessional is sometimes assigned full-time to one child in order to allow him or her to function within the classroom. But training is especially important for paraprofessionals in this role, since without it they may serve to isolate rather than integrate the child (Causton-Theoharis & Malmgren, 2005; Ghere, York-Barr, & Sommerness, 2002). SLPs should work closely with these paraprofessionals to help them develop strategies for mediating social interactions and communication between the child and peers. Methods such as those used by Causton-Theoharis and Malmgren (2005); Ghere et al. (2002); Girolametto, Weitzman, and Greenberg (2003); Leblanc, Ricciardi, & Luiselli, 2005; and Odom et al. (1999) can be used to develop this kind of training.

Parents

We've talked before about the considerations that ought to go into a decision to use parents as agents of intervention. We've heard the argument that parents make better intervention agents because they are with the child all the time and can, theoretically, do nonstop intervention. We know, too, that it may not be to the child's advantage to be in intervention all the time and that children may need the acceptance and uncritical approval that parents can offer. In the DL period, the goal of intervention moves from simply eliciting language to eliciting and elaborating specific forms. This kind of elaboration can include corrective forms of feedback that, at times, may conflict with the normal communicative patterns between parents and children, in which errors of form are accepted and only errors of meaning corrected (Brown & Hanlon, 1970).

Tannock and Girolametto (1992) and Fey, Cleave, Long, and Hughes (1993) presented evidence questioning the efficacy of intervention approaches that rely solely on parents as agents of intervention. Fey et al. showed that the effects of clinician-delivered intervention were larger, more consistent, and more likely to continue over time than were the effects of intervention delivered by parents. Tannock and Girolametto argued that parent-delivered intervention, using techniques such as ILS, is good for giving children opportunities to practice or to generalize recently learned skills but is less effective in imparting the new skills themselves. Still Law, Garret, and Nye (2004) found in a meta-analysis that parent-delivered intervention was equal in efficacy to clinician-delivered programs for preschoolers, and some studies (e.g., Kashinath, Woods, & Goldstein; 2006; McConachie et al., 2005) have shown positive child outcomes subsequent to parent training. Although parents may be effective agents of intervention, many will prefer to have a professional involved, whenever cost does not prohibit it. Fey et al. (2006), for example, showed that training parents to provide responsive interactions in addition to clinician-delivered prelinguistic milieu training (PMT) resulted in increases in child communicative acts (although no comparison of PMT without parent training was provided).

Peers

A third alternative for intervention agent for children in the DL period is a normally speaking peer. For example, Weiss and Nakamura (1992) reported on the use of typical peers as communication models for children with language impairments in a preschool classroom setting. The idea behind this approach is that normally speaking peers provide models that are slightly above the language of the client but not too far above, because of the typical peer's own still-developing stage. Presumably, conversation with a peer will be more natural and engaging to a developmentally young child than will interaction with an adult, since topics of conversation and activities of interest are more likely to be shared between two speakers of similar developmental level. Moreover, the typically developing (TD) peer is likely to provide models of appropriate behavior and speech that can be imitated by the child with language impairment.

Weiss and Nakamura emphasized that, if normally speaking peers are introduced into an intervention setting such as a special education, reverse-mainstream classroom, or small group therapy setting, children who act as models need to be carefully selected. Not all preschoolers are equally willing or able to interact with disabled peers. Weiss and Nakamura suggested selecting peers as models who not only demonstrate normal language competence but also show interest in peers with disorders, willingness to engage in play with them for extended periods, and responsiveness

to their conversational bids. This selection could be accomplished by inviting several TD peers to visit the language classroom or group and providing some especially engaging activities, such as water or sand play, to serve as an incentive for their participation. The visitors can be observed and models chosen from those who appear most responsive to the children with language disorders. These special visitors can be invited to return on a regular basis.

Still, simply putting a child with a disorder in a playroom with a typical peer does not constitute intervention. Peers must be supported and encouraged to provide appropriate models and opportunities for the client. Hadley and Schuele (1998) showed that adults can support the development of talk between children with communication impairments and their typically speaking peers by demonstrating how to prolong interactions, respond to unclear messages, give time for the client to produce a conversational turn, and so on. Venn et al. (1993) showed that TD preschoolers could be trained to provide very specific linguistic stimuli, using the mand-model procedure discussed in Chapter 3. Their study showed that TD preschoolers could, with some practice as well as online modeling by the teacher, use scripted language models to elicit appropriate requests from peers with language disorders. Peers who model appropriate language usage, then, can be useful adjuncts to the intervention program (Mashburn et al., 2009). Like parents, though, peer language models will probably be most useful for providing opportunities for practice and generalization, rather than for eliciting new communicative behaviors.

One additional role for peer-mediated intervention is in the area of play and social skills. For preschoolers with communication deficits that include pragmatic and social disabilities, peers are an especially effective source of intervention (Paul, 2003a). Peer-mediated interventions involve teaching peers to use strategies to facilitate interaction with children with developmental disabilities (Goldstein, Schneider, & Thiemann, 2007). Research has shown that training peers to engage with children with disabilities has positive effects on their social skills that generalize beyond the training period and include higher rates of initiation by typical peers and higher rates of responding by clients (Timler, Vogler-Elias, and McGill, 2007).

Peer training usually involves a series of phases. First, peers are introduced to the idea of playing with new friends and given strategies to use, each introduced one at a time. Peers rehearse the strategies by saying what they are expected to do. Then, they practice using the strategies with an adult whose responses become increasingly like a child with a disability (Goldstein et al., 2007).

Several approaches to peer-mediated social communication training have appeared in the literature. One approach (Odom et al., 1999) uses "play organizers" in which typical peers are taught to cue the target child during play sessions to share, help, give affection, and praise others. Results of programs like this indicate positive changes in social behavior, but they do require that adults spend some time in training, modeling, and role-playing for the peer partners. English, Goldstein, Shafer, and Kaczmarek (1997) developed a peer-mediated social skills program for preschool classrooms that involves less prior training for peers and has been shown to lead to improvements in the frequency of social communication between target children and typical peers. Each child in the class is assigned a "buddy" for a specified period of time, and each day includes a "buddy time" session of 20 minutes in length, often during the "free play" period of the preschool day. All children in the class participate, so some pairs include two typical

children; others have a typical child and one with a disability. The rules for buddy time are taught to the group:

- Week 1: STAY with your buddy; maintain physical proximity to assigned partner.
- Week 2: PLAY with your buddy; maintain proximity while continuing to play with your partner (partners are offered a choice of one activity each from a visual "choice board" then instructed to play with each partner's choice for half the buddy period session, usually 10 to 20 minutes).
- Week 3: TALK with your buddy; say your partner's name to establish joint attention, make suggestions for playing together, talk about the play, respond to what your partner says by repeating, saying more about it, or asking a question.

Pairs who comply with the rules for a buddy session each receive a prize. This reward gives the typical child an incentive to help the child with a disability maintain contact. These kinds of peer-mediated interventions can help to integrate students with disabilities more effectively in mainstream settings. They also increase their opportunities for exposure to relevant peer models, and for using their communication skills in an authentic context.

Goldstein et al. (2007) also support the use of sociodramatic script training, in which adults develop scripts for peer pretend play around familiar activities. Several scripts may be developed, such as shopping in a grocery store, going to the doctor, and visiting the post office. This method is usually conducted with groups of three preschoolers, at least one of whom has a communication disorder. Each child is assigned to a role within the script by the adult, and given gestural/motor (for preverbal children) and/or verbal responses to use in the script. The children are taught the script and prompted to stay in their roles during free play. An adult is available to "coach" during play time, reminding children of their roles and prompting them to continue playing together.

Timler et al. (2007) suggest an additional way to employ peers in social communicative intervention: as a context for generalizing clinician-delivered intervention. After teaching social communication skills in a clinician-mediated program, the SLP can set up "practice" sessions designed to provide naturalistic opportunities to use newly learned skills in authentic contexts, like pretend play. Again the clinician can remain at the edge of the play, providing prompts and coaching clients to use the skills learned in the intervention session as they engage with their peers.

Service Delivery Models for Children with Developing Language

Our discussion of agents of intervention answers the "Who?" aspect of intervention contexts. The following discussion of service delivery models will answer the questions "Where?" and "When?" We talked in Chapter 3 about the range of service-delivery models available to us. These include the pull-out, or clinical, model; the language-based classroom; the consultant model; and the collaborative model. We've seen that a variety of agents of intervention can be involved in any of these service delivery models. Let's look at how each service delivery model might function for a child in the DL period.

Clinical Model

Many children in the DL phase are seen for one-to-one or small-group intervention in schools, clinics, and private-practice settings using this model. If you did your training in a program that had a campus clinic affiliated with it, you probably earned some of your clinical practicum hours seeing preschool children there, using this service delivery option. Despite the many onslaughts on

its primacy, it is still a common service delivery model used with children in the DL period. And there's nothing wrong with it. Roberts, Prizant, and McWilliam (1995) showed that few differences existed in interactive styles of either clients or clinicians when in-class and pull-out methods of intervention were compared. Just as we want to have a repertoire of clinical procedures available to us to match to the needs of the client, it is helpful to have a range of service delivery models we can use. The clinical model is very useful for children with attentional problems, for whom a classroom or other rich environment might be too distracting. It provides a helpfully quiet environment for children with hearing impairments or others who have difficulty screening out background noise. It can provide a safe and comforting place for children with behavioral or emotional problems who need the nurturing qualities of a one-to-one attachment to an adult.

The major shortcoming of the clinical model, aside from its high cost and labor intensity, is that it may be less effective at achieving generalization to the natural communicative environment. For this reason, it is wise to be especially careful to build in some of the generalization activities discussed in Chapter 3 when this model is used. Similarly, we need to be sure to build in some social interactive opportunities that will facilitate peer interactions for our clients. To achieve this end, the clinician must be sure to incorporate a mix of activities across the continuum of naturalness from structured CD to more naturalistic CC approaches, using multiple exemplars, involving multiple communication partners, carrying on the intervention in different places, using naturalistic reinforcers, using distracter items and intermittent reinforcement, providing coaching in peer interactions, and encouraging self-monitoring.

Language-Based Classroom

A classroom specially designed to provide intensive language stimulation and training in the context of a mainstream, reverse mainstream (typical peers invited to join a special education preschool), or special education program is a model that is used with increasing frequency to address the needs of children in the DL phase. For SLPs with little background in early education, following such a service delivery model can seem daunting. The need to address the individual needs of all the students within a common set of activities may seem difficult at first. But the advantages of the model are many. Language-based classrooms usually provide extended periods of intervention time, more than the usual 45 minutes

Classroom-based intervention is often used at the preschool level.

two or three times a week. These settings also provide opportunities to work as a team to improve language and pre-literacy skills for children with disabilities and those at risk (Hadley, Simmerman, Long, & Luna, 2000; Justice et al., 2008).

Bricker and Pretti-Frontczak's (2004) activity-based intervention program, Bunce's (2008) language-focused curriculum, and Morrow's (2008) Literacy-Rich Preschool are examples of language-based classroom models. These classrooms typically involve theme-based units that incorporate traditional preschool activities such as crafts, story reading, pretend play, and small-group interactions. Some may include pull-out or clinical service to some or all of the students for a portion of the day, but the bulk of the intervention is done in the context of the classroom activities, which are chosen not only for their theme and content, but for the specific purpose of fostering communicative development. SLPs often serve as lead teachers in these classrooms, or function collaboratively on a team with a special educator, and have responsibility for planning the overall classroom program so that it addresses the communicative needs of all the students. Table 9-9 presents some of the strategies suggested by Pretti-Frontczak and Bricker (2004) for enhancing communicative development in these settings. The procedures can, of course, be used in a variety of other intervention settings as well. You'll probably notice that many are similar to Wetherby and Prizant's (1989) communication temptations and are not all that different from Cleave and Fey's (1997) focused stimulation. Classroom-based preschool language intervention combines a variety of approaches we've been discussing, such as milieu teaching, indirect language stimulation, script therapy, and theme-related structure. As such, it exemplifies what we mean by hybrid intervention.

Routine activities are one context for language modeling and practice in these settings. Each client's language goals can be integrated in the language used in the routines. If Rachel, for example, were involved in this type of intervention program, a goal such as producing subjective pronouns might be addressed during snack each day. She might be asked by the teacher, "Who wants a cracker? If you want a cracker, raise your hand and say, 'I do!' Who wants a cracker?" Children with different goals would be provided with models of their own target forms during the same activity.

Theme-based units are another feature of language-based classrooms. If the theme for the week were "planting and growing," then stories, songs, and rhymes around the unit might be presented during group time. The group might play "Ring Around the Rosie" and read *The Carrot Seed* (Kraus & Johnson, 1945). Activities the children could choose from during Free Choice time might include making a plant collage with pre-cut paper shapes in the Art Center; listening to a prerecorded story with a planting theme in the Listening Center; pretending to plant a garden with appropriate props in the Dramatic Play area; and building walls, flower boxes, and a plant sale stand in the Block Center.

Again, individual goals would be addressed in theme-based activities. Using Rachel as our example, again, she might be asked to sing the line "We all fall down" when it comes up in the song. During story reading she might be asked to repeat certain parts of the story that include the pronoun *he* in response to the teacher's question. For outdoor time, the group might take a nature walk to look for things that grow. Rachel might be asked to name some of the growing things she sees as she walks along, beginning each sentence with, "I see . . ." At snack time, sunflower and pumpkin seeds might be served. Rachel could be asked to select which she wants by saying, "I want . . ." At the Art Center, Rachel could be asked to answer questions such as, "Who put a leaf on the collage?" with "I did!" A concept lesson might include planting seeds to grow in the classroom. The teacher might describe each step in the planting, and then ask students to reiterate the sequence of actions after they were finished. Rachel, for her turn, could be asked to answer questions such as, "Who put a seed in the dirt?" with "I did!" Again, children with other goals would also be presented with opportunities for modeling of practice of these forms within the same activities.

Child-initiated contexts also are used for intervention purposes in these programs, as they are in the incidental teaching approach. Any initiation by the child would receive a response that highlighted or capitalized on the child's identified intervention goals. If Rachel, for example, said, "Me cold!" to the teacher on the playground, the teacher could respond, "Are you? *I*'m cold, too. *I* am. *I* am very, very cold today. And you are too! *I* need a warmer coat. *I* need a hat. *I* need mittens. How about you?"

Another advantage is that classroom-based intervention provides ample opportunity for development not only of communicative skill but of emergent literacy. Prelock, Cataland, Honchell, and Cordonnier (1993) suggested the importance of including "literacy centers" within the preschool environment for children with language disorders. These centers would include theme-based

TABLE 9-9 Strategies for Activity-Based Language Intervention

Strategy	Example
Forgetfulness	Forget to give out brushes during painting; children must do something to request needed supplies.
Novelty	Introduce slightly new elements into known routine (e.g., play "Farmer in the Dell" wearing a big straw hat. Let children who comment on the hat have a turn to wear it).
In sight but out of reach	Put attractive or necessary objects where children can see them, but cannot get them without help. Encourage them to communicate a request.
Violate expectations	Omit or change a step in a routine (e.g., give a child a dish of ice cream but no spoon).
Piece by piece	Give items needed for an activity one at a time, so the clients need to communicate something to get each one. At snack time, give out one raisin at a time, or color by giving out one crayon at a time.
Assistance	Put the child's snack in a clear glass jar that he or she cannot open without help, so the child needs to communicate a request to obtain an object or activity.
Sabotage	Unplug the music player, then ask child to turn it on; hide children's coats when it is time to go outside. This forces the client to do something communicative to try to correct the situation.
Delay	Pause in the midst of an activity to get the child to communicate the need to continue (e.g., pause while zipping a coat before going outdoors).

Adapted from Bricker, D., & Pretti-Frontczak, K. (2004). *An activity-based approach to early intervention.* (3rd ed.). Baltimore, MD: Paul H. Brookes Publishing.

opportunities for seeing print in labels and captions for pictures; playing with literacy artifacts such as menus, newspapers, grocery lists, and product labels drawn from classroom themes. Justice (2007) reminds us to include opportunities for children to write and pretend to write in these activities. Writing their own names is a particularly important skill for preschoolers to learn and practice in meaningful settings, such as writing and signing notes, letters, and invitations within dramatic play contexts. Justice suggests using *mediated writing*, in which adults encourage children to use invented spelling and scaffold their translation of sounds within words to print in a range of emergent writing activities, throughout the preschool day, including "writing" stories, labeling drawings to follow up storybook experiences; and dictating class "experience stories" to record events of importance to the group. Kaderavek and Justice (2004); Morrow (2008); and Enz, Prior, Gerard, and Han (2008) provide additional activities, and Watson, Layton,

Pierce, and Abraham (1994) outlined additional ways to incorporate literacy events in the preschool classroom. Table 9-10 gives some examples of their suggestions.

Consultant Model

It's very likely that some part of the service delivery for children in the DL period will involve the SLP in a consulting role. One reason is that the U.S. Department of Education (2007) reports that 40% of preschool children with disabilities spend the bulk of their time in community programs, such as child care centers, nursery schools, and Head Start classrooms, rather than in dedicated special education classes. Many SLPs providing services to these "mainstreamed" preschoolers will visit each site only once a week, or less, in order to get to all the preschoolers on their caseload. What is the best service delivery model for this situation? Dinnebeil, Pretti-Frontczak, & McInerney (2009) argue that, rather than attempting to provide direct service for the small amount of time

TABLE 9-10 Facilitating Emergent Literacy in Preschool Classroom Activities

	Print Awareness	Book Awareness	Story Sense	Phonological Awareness	Matching Speech and Print	Practicing Prereading and Prewriting
Circle time	Look for name tag	Make "book" with words of daily song; children follow along as they sing, teacher points out words in book			Match printed words in song "book" to the words they sing	"Read" job list with students' names and pictures of each classroom job
Story time	Show book during reading	Point out when pages are turned	Use well-structured stories; ask questions about story after reading	Point out rhymes, alliteration in reading; ask students to remember words that rhymed or started with the same sound from the story	Have children "read" parts of the book chorally	Have children "read" parts of the book chorally
Center time	Provide magnetic, felt, tactile letters at play centers	Provide blank paper "books" for children to write and draw in	Relate art activities to stories read; carry over story theme	Encourage invented spelling in art and play activities	Label favorite play equipment; post classroom rules for children to "read"	Label drawings, encourage children to invent spellings to label their own drawings
Snack time	Label snack supplies; have snack helpers "read" labels		Follow recipes from stories, such as "Stone Soup"	Talk about sounds in words for snacks eaten; make up rhymes for daily snack item	Encourage children to "read" labels on foods used at snack	Encourage children to "read" labels on foods used at snack
Outdoor time	Use signs, such as a "STOP" sign, in games such as "red light, green light"		Act out favorite stories in outside play		Use cards with pictures and words in addition to verbal instructions in games such as "Simon Says"	Use cards with pictures and words in addition to verbal instructions in games such as "Simon Says"

Adapted from Watson, L., Layton, T., Pierce, P., & Abraham, L. (1994). Enhancing emerging literacy in a language preschool. *Language, Speech, and Hearing Services in Schools, 25,* 136-145.

that can be devoted to each client, a consultative model, in which the SLP and regular classroom personnel jointly identify ways to provide IEP-based instruction that is embedded in everyday classroom routines, is the best practice. Fixsen, Naoom, Blase, Friedman, and Wallace (2005) identify a coaching model of consultation, in which instruction, demonstration, and feedback is provided to classroom personnel, as the only evidence-based form of consultation currently available. So, just as we coach our clients in social interactive skills by providing them with a somewhat scripted set of interactive behaviors that we model for them, then encourage them to try as we provide hints, tips, and reminders, we can use the same approach to help early childhood classroom teachers to use ILS, or incidental teaching, or whatever methods we prescribe to target a client's communication development. In this way, the client gets the benefit of these interventions for a much larger portion of the day than could be provided by direct clinical service. Box 9-8 gives an example of the kind of specific consultation suggestions and data forms that might be given to a classroom teacher in a consultative coaching model to help include a client's phonological targets within the classroom setting.

Consultative coaching can also involve helping teachers understand and manage challenging behaviors. We talked earlier about the fact that children with disabilities sometimes turn to maladaptive behaviors, such as aggression, because they do not have more conventional means available for expressing themselves. Nungesser and Watkins (2005) report that the presence of challenging behaviors can limit a child's opportunities to participate in mainstream settings, because teachers are unwilling or feel unable to manage these difficult episodes. They also found teachers are often unaware of the communicative function of these behaviors. As consultants, SLPs can help teachers to understand how communication disorders can lead to these behaviors, how communication intervention can impact them, and how to select appropriate language-based prevention and intervention approaches. This process is often called functional communication training (FCT; Bopp, Brown, & Mirenda, 2004). Positive behavior support is another approach widely advocated for use with preschoolers with challenging behaviors (Benedict, Horner, & Squires, 2007; Hemmeter, Fox, Jack, & Broyles, 2007). In working with teachers as consultants on managing challenging behaviors, Nungesser and Watkins (2005) and Bopp, Brown, and Mirenda (2004) made the following suggestions for SLP consultations:

- Help the teacher to understand that these behaviors may be used to serve a communicative function.

BOX 9-8   Consultation Suggestions for Including Phonological Targets within a Classroom Setting

Classroom Theme:
Winter
Center:
Water play
Phonological Targets:
/s/, /z/, and /s/ blends
Activity:
Cookie sheets filled with ice are placed floating in the water at the water table. Small toy people figures are placed there, too. A sign is placed over the water table that reads, "Skate, slip, and slide," which is read to the class when the activity is introduced.
Suggestions for Teacher:
As you circulate among students at the table, model talking about the figures as they skate, slip, and slide. Talk with the children about safety on ice, the process of freezing and melting, how the ice feels and looks, and their own experiences with ice and skating. Introduce target vocabulary in this talk. As the ice begins to melt, give the children toothpicks and small pieces of paper to make signs that say, "Keep off ice" or "Stay off." Use target vocabulary to ask open-ended questions and comment on the changes in feel, look, and safety of the ice as it melts.
Target Vocabulary:
Ice, icy, frozen, freeze, freezing, slide, slip, slippery, skate, across, start, sign, safe, safety, smooth, slick, soft, melts, cracks, slush, sink, sinking
Evaluation:
Allow the student to play at the water area for several days, providing models of target vocabulary, and encouraging peers to provide additional models. After 3 days, track the client's productions at the center for 7 minutes, using the data sheet below. Put a hash mark under "Attempts" each time the client attempts a word with a target sound and a check under "Correct Productions" each time the target sound is produced correctly. Discuss with the team at weekly meetings to decide if new target sounds and words should be added.
Sample Data Sheet

TARGET SOUND	# ATTEMPTS	# CORRECT PRODUCTIONS
/s/		
/z/		
/sl/		
/sk/		
/st/		
/sm/		
/ts/		
/ks/		

Adapted from Prelock, P., Cataland, J., Honchell, C., & Cordonnier, M. (1993). *Effective collaborative intervention models for the preschool and home setting.* Poster session presented at National Convention of the American Speech-Language-Hearing Association, Anaheim, CA.

- Establish the function of the maladaptive behavior through functional behavior analysis.
- Use visual schedules to aid comprehension and predict events.
- Model dealing with the behavior within the classroom. Work with the child in a situation likely to trigger the behavior, and model how to prevent it, by providing an appropriate communication strategy to the child when aggressive behavior seems imminent.
- Suggest that the teacher model using language for emotions within classroom activities; show students how to talk (or communicate) about how they feel; and encourage peers to do the same.
- Help teachers involve families in carrying over strategies to the home setting.

An additional role we have as consultants is to do ongoing assessment and evaluation of the client's program. We need to decide when to move on to a new goal, modify the program, or terminate intervention. This monitoring function can be fulfilled by giving the parent or teacher evaluation procedures (that is, data sheets such as the one in Box 9-8) to be filled out at specified time intervals. Alternatively, we can collect the data ourselves by spending some time directly assessing the client periodically. This approach has the advantage of keeping us in touch with the client in a more immediate way than simply reviewing written records. We can get a better "feel" not only for what but also for *how* the client is learning. It also increases our credibility with our consultees. If we are known to be willing to get down on the floor and "get our hands dirty" with the client in the DL period, we are less likely to engender resentment on the part of the people who see themselves as "really doing all the work" of delivering intervention. Such resentments are lethal to the success of a consultative form of intervention. A little direct involvement with the client can go a long way toward avoiding this dangerous pitfall.

Collaborative Model

Roth and Troia (2006) discuss two forms of collaborative intervention aimed at enhancing language and pre-literacy skills in preschool classrooms: *demonstration teaching* and *team teaching*. Both allow the SLP to support these developments not only for children with identified special needs, but for those at risk for literacy difficulties who may not qualify for special educational services

In the first approach, the SLP acts as a "guest teacher," providing targeted intervention activities for clients placed in a mainstream classroom setting. Dialogic storybook reading, in which the SLP reads a story and asks a series of questions throughout the reading aimed at focusing children's attention on vocabulary, story structure, recall, and inferencing, is an excellent vehicle for such demonstration lessons. Roth and Troia suggest using *CROWD* questions as a basis for discussion and modeling with teachers:

C = Completion questions that focus on the linguistic structure (The cat was wearing a red and white _____? [hat] Are there any words that you heard that rhyme with *hat?*)

R = Recall questions that focus on story content. (Where did the children's mother go?)

O = Open-ended questions that focus on increasing amount of talk about the book. (Why do you think the fish was upset with the cat's ideas?)

W = Wh- questions that focus on teaching new vocabulary. (Can anyone find the *rake* in this picture? What do you use a *rake* for?)

D = Distancing questions that focus on linking book events with one child's own experiences. (How would you feel if you made a mess in your house while your mother was not around?)

Roth and Troia identify team teaching is a second form of collaborative intervention. Here the SLP spends her time not demonstrating a lesson, but participating in a lesson designed in collaboration with the teacher. The SLP may work with a small group that includes both students with IEPs as well as those identified as at risk, or needing extra assistance. The SLP may provide additional activities and guided practice in areas such as curricular vocabulary, phonological awareness skills, or narrative structure and recall.

This form of collaboration is very similar to that used in a responsiveness to intervention (RTI) model. Although RTI has primarily been implemented in primary grade classrooms, these approaches have been advocated for preschool classrooms, as well (Bayat, Mindes, & Covitt, 2010; Coleman, West, & Roth, 2009; Fuchs, Buysse, & Coleman, 2007; Jackson et al., 2009; Justice, 2006), particularly for those in which a large number of children are at risk for difficulties in learning to read due to limited English proficiency, low socio-economic status, or a high incidence of students with language delays. When applying RTI in preschool settings, the same basic principles defined for school-aged implementation apply. According to Coleman, West and Roth (2009), these include:

- A tiered framework of instruction, comprising
  - Tier I: Provision of evidence-based instruction for all students
  - Tier II: More intensive instruction for children for whom progress monitoring indicates a need for additional support
  - Tier III: Additional support that is more intense and individualized
- Continuous progress monitoring
- Collaborative problem solving

Cabell and McGinty (2008) argue that the SLP's unique knowledge of the connections between oral language, phonological awareness, and literacy are key to making us valuable contributors to the design of the highest quality Tier 1 instruction. Our consultation on the development of this instruction will focus on the range of important pre-literacy domains to be included—phonological awareness, print and alphabet knowledge, and literate language—and on the need for both

- *embedded strategies* seen in classrooms with literacy-rich environments (e.g., available books and writing materials, display of literacy artifacts, encouragement of interaction with books and print), as well as
- *explicit, direct instruction* that highlights aspects of print during storybook reading, introduces new vocabulary in conjunction with classroom themes, and provides guided practice in letter and sound identification as well as phonological awareness.

SLPs will also be key players in monitoring children's progress in the acquisition of these pre-literacy skills, and using this progress monitoring to identify children who need additional support through Tier II or III intervention. SLPs may either design or deliver this more intensive instruction. As in all RTI models, team planning is as essential for success in preschool classrooms as in primary grades.

Collaborative intervention, whether in an RTI or other format, requires intensive planning, coordination, and cooperation among team members. Giangreco (2000) identified five themes that reflect successful collaborative efforts involving SLPs:

- *Be ready to learn from others*. It is not necessary for the SLP to present himself or herself as the "expert." Instead, listen to

the contributions of others and consider them from your per-spective as a language specialist.

- *Take responsibility for the student as a team*. Each member of the team should feel ownership in the student's program. Rather than saying the student "belongs" to the special educa-tion or classroom teacher, the team should share their individ-ual viewpoints on the student's needs, find points of agree-ment, and cooperatively assume responsibility for his or her progress.
- *Have a system in place for making decisions*. Build time for discussion and comparing points of view into the team pro-cess. Have established means of resolving conflicts and deal-ing with conflicting views.
- *Clarify the roles of team members*. Decide who will do what when. Not all members need to be involved in all aspects of a student's program. Make explicit joint decisions.
- *Support families and regular education teachers*. Include fam-ily and teachers in meetings; include family and teacher per-ceptions in planning. Be aware that the child will spend more time in the home and classroom than in the therapy setting, so these are the contexts in which it is most important for the child's progress to be seen.

INTERVENTION FOR OLDER CLIENTS WITH SEVERE IMPAIRMENT AND ASD AT THE DEVELOPING LANGUAGE LEVEL

Students with Severe Disabilities

Some clients whose language is in the DL phase may be quite a bit older than preschool age. Students with severe disabilities and developmental delays who have been in language intervention programs for a number of years may be operating within Brown's stages II to V in terms of their use of language forms and meanings. Is the goal for these clients to achieve fully adult grammar and semantics? Should we attempt to teach them all the rules and vocabulary we would choose as targets for a younger, less severely involved child? Part of this decision, of course, involves the family. Their desires and perceptions of the client's needs will play an

Intervention for older clients with developing language uses functional material.

important role in determining intervention targets. Nelson (2010) provided several principles that we should keep in mind when designing intervention programs for older students at the DL level. These are summarized in Box 9-9.

FCT can be used with students who have some speech, or those whose primary mode of communication is augmentative or alterna-tive communication (AAC). Task analysis, breaking the client's communicative needs down into very small "slices," also can help in planning the intervention. For example, suppose the ecological inventory (see Chapter 8) identified the need to take the city bus to school each day as an important context in which communication is needed. The clinician might ride the bus with the client one day and note the communication that is required. It might be noticed that the client needs to find the correct place to wait for the bus by "reading" the sign or at least identifying the sign that says "Bus Stop" and finding the stop with the correct bus number. Then the client might need to check the number on the bus that stops; get on the right one; show the driver a bus pass; and say, "Please tell me when we get to Washington School." The client might need to sit near the front of the bus to hear the driver announce the stop. The client would need to listen for the announcement, get up when it is heard, and say, "Thank you" to the driver before getting off the bus.

BOX 9-9   Principles of Intervention for Older, Severely Impaired Clients at Developing Language Levels

1. Focus intervention on helping students develop functional abilities for participating with as much independence as possible in mainstream settings.
2. Goals for older individuals in this phase of language development should be functional, rather than based on the normal devel-opmental sequence. Instead of attempting to teach all the grammatical morphemes, choose specific language forms that are useful for particular situations selected by means of an ecological inventory.
3. Provide specific communication services for clients who:
   - Have trouble understanding instructions in their daily living activities
   - Cannot produce enough communication to function independently in a variety of mainstream settings (such as travel, school, work, shopping, leisure)
   - Violate rules of politeness and appropriateness in social interactions
   - Lack functional abilities to read important environmental signs and use functional written communication
   - Have difficulty making their speech understood, speaking fluently, or using audible voice
4. Use activities and materials in intervention that are appropriate and functional.
5. Develop early literacy skills, using specific behavioral techniques, even if cognitive levels usually associated with reading have not been achieved.
6. Develop opportunities for students to participate as independently as possible in important social contexts (athletics, church, clubs, leisure activities, etc.).

Adapted from Nelson, N. (2010). *Language and literacy disorders: Infancy through adolescence.* Boston. Allyn & Bacon.

The clinician could record each of these steps and, using behavioral techniques, modeling, and role-playing in script therapy, teach each piece of the process, one at a time. As each is acquired, it can be "chained" (McCormick & Goldman, 1984) onto the sequence being learned, so that the sequence gets longer as each new piece is added, until the client can perform the entire sequence independently in the educational setting. Then the clinician may want to accompany the client again in the real situation to provide monitoring and feedback as the new chain of skills is used in the functional setting.

Note that, in using script therapy or behavioral techniques, a long, complex sentence such as, "Please tell me when we get to Washington School," could be taught, even though such structures might be developmentally more advanced than the client's spontaneous speech would suggest is possible. Functional intervention means teaching a few powerful scripts or behaviors that might not be acquired as generalizable rules. Similarly, "reading" might be considered developmentally too advanced a skill for certain clients. But careful training could enable such clients to "read" several important signs and symbols that have functional significance. These might include the "Bus Stop" sign and the ability to match the numbers on the sign, the bus, and the bus pass. When working with severely impaired older clients, we don't want to impede their progress toward autonomy by requiring them to go through all the stages of normal development before attempting to teach skills that can foster independence.

Another focus for students at this level will be FCT (Bopp, Brown, & Mirenda, 2004; Mancil & Boman, 2010). As we discussed when talking about our consultative role, this training is used to replace troublesome behaviors that serve a communicative function with more adaptive responses. FCT can take place either in speech or using AAC systems. Bopp, Brown, and Mirenda (2004) argue that SLPs are equipped to provide FCT, in either direct or consultative roles, because of our familiarity with AAC strategies and our depth of knowledge about communication. They provide detailed instructions for implementing an FCT program. These are summarized briefly in Table 9-11. Research summarized by Bopp et al. (2004), Mancil (2006), and Prelock et al. (2011) also supports the use of FCT to prevent and replace maladaptive behaviors for clients with severe disabilities. Parents need to be involved in replacing maladaptive behavior with more functional communication strategies at this level, using approaches similar to the ones we discussed earlier. Tait, Sigafoos, Woodyatt, O'Reilly, and Lancioni (2004) showed that parents could be successful in helping their children replace challenging behaviors with communication and that these gains were maintained over time.

Halle, Brady, and Drasgow (2004) emphasize the importance of helping children with severe disabilities repair communication breakdowns. These, too, are a source of frustration for low-functioning students, as they may be attempting to communicate in a way that is not easily understood by their audience, and these breakdowns can lead to maladaptive behaviors. They emphasize the importance of developing a larger repertoire of socially acceptable signals, so if one fails they have alternatives, and of making sure communication partners (parents, teachers, and peers) are cued in to the child's new signals and encouraged to respond to them.

One additional strategy is relevant here. Visual schedules have also been shown to be helpful as a part of FCT (Bopp et al., 2004). These help students predict what will come next and can avoid maladaptive behaviors due to the frustration of not understanding the rapid flow of events in a classroom. Visual schedules can be made from a variety of materials, using a range of levels of symbols. An example of a visual schedule appears in Figure 9-1. Hodgdon (1995) provides additional examples of visual schedules. Electronic visual schedules, such as the iPrompt application, provide a more normative, less stigmatizing platform for developing these assistive devices.

Preschoolers with ASD

Young children with ASD tend to be delayed in their language development, although most will have developed some level of spoken language by the end of the preschool period. For these

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TABLE 9-11   Elements of Functional Communication Training

Element	Example
Functional Behavior Analysis: Identify functions of maladaptive behavior	Child bites peers; observe when child bites and identify antecedent, such as inability to gain access to toy peer has
Identify a form of communicative response available to the client	A word or sentence, sign or gesture, picture book or board, AAC device such as a voice output communication aid (VOCA)
Match an adaptive response to the communicative function of the maladaptive behavior	Teach child to use sign for "want" when he wishes to gain access to a peer's toy
Establish response mastery: make sure new communication achieves desired outcome	Teach "want" sign to peers and encourage them to respond when child requests in this way, or to call a teacher if they cannot respond
Establish appropriate schedule of reinforcement	Ensure that at the first desired response is achieved quickly (less than 20 sec). Gradually time delay can increase. Teach child to use "want" sign with clinician and adults first to guarantee quick response; later bring in peers.
Provide an alternative form if first is unsuccessful	Teach child if "want" sign does not achieve goal to use "please" sign
Use mild punishment when problem behaviors occur; quickly redirect to new communication behavior	If child bites or begins to bite, use brief facial screening (hands over eyes), then hand-over-hand guidance to produce "want" sign

Adapted from Bopp, K., Brown, K., & Mirenda, P. (2004). Speech-language pathologists' roles in the delivery of positive behavior support for individuals with developmental disabilities. *American Journal of Speech-Language Pathology, 13,* 5-19; Halle, J., Brady, N., & Drasgow E. (2004). Enhancing socially adaptive communicative repairs of beginning communicators with disabilities. *American Journal of Speech-Language Pathology, 13,* 43-54; Mancil, G., & Boman, M. (2010). Functional communication training in the classroom: A guide for success. *Preventing School Failure, 54*(4), 238-246.

Joe's Schedule (an example of a visual schedule)
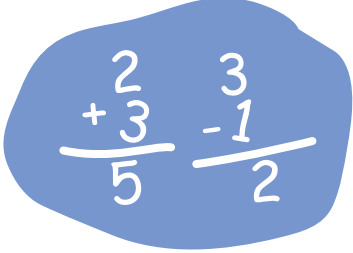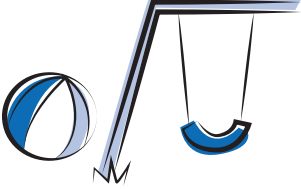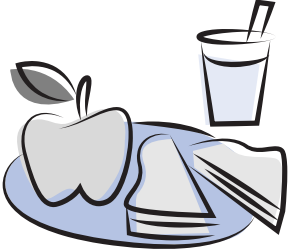
| Math class | Recess | Art class |
| Lunch | Reading class | Bus |

FIGURE 9-1   Example of a visual schedule.

children, whose syndrome results in significant delays in both language and other forms of communication, the preschool intervention program will generally need to target the development of both language forms and functions. Chapters 6 and 7 provide guidelines for working with children with ASD at preverbal and single-word levels. Here we will address the needs of those who have developed some spoken language, but are still acquiring the basic forms and functions of linguistic communication.

Echolalia

Prelock (2006), Prizant & Duchan (1981), Prizant and Rydell (1984), Stribling et al. (2006), and Tager-Flusberg & Caronna (2007) discuss the role of echolalia in the language of children with ASD. Children with ASD are often seen to echo what others say during early stages of language development. But it's important to know that echolalia is neither universal nor unique to this syndrome. Some typically developing children have transient immediate echolalia, and it sometimes is observed in children who are language delayed or blind. For about 40% of children with ASD, echolalia is a first step toward language acquisition, and it generally decreases as spontaneous language grows (Tager-Flusberg & Calkins, 1990).

Echolalia can be immediate or delayed. Immediate echolalia can consist of the last word(s) of another person's sentence, or the whole of the previous utterance. Often it shows the characteristic pronoun reversal sometimes seen in, although not unique to, autism (e.g., a child says, "You want juice?" after being asked if he wants juice). Delayed echolalia occurs when a child with little or no spontaneous language repeats commercials or large chunks of dialogue from movies or conversations heard earlier. Echolalic phrases may be complex but do not necessarily reflect the child's

level of spontaneous language. Although echolalia in children who have ASD can seem to be a self-stimulatory behavior, it sometimes is functional, allowing children to make requests, soothe themselves, participate in a social routine, or gain time to process language (Prizant & Duchan, 1981).

Behavioral interventions are often used to help children decrease their use of echolalia. Ahearn, Clark and MacDonald (2007), for example, used *response interruption and redirection* (RIRD), an approach that involved a teacher issuing a series of vocal demands the child readily complied with at other times (such as "Say, Hi!") when echolalia occurred. The adult continued to present these demands until the child complied correctly with three consecutively. This treatment was found to significantly reduce the frequency of echolalia in the three children studied, and to increase in appropriate communication, as well.

Another approach to reducing echolalia is more naturalistic (Laski, Charlop & Schreibman, 1988), involving prompting changes in the child's echoed production, to elicit *mitigated echolalia*. The clinician can echo the child's echo, then ring a slight change and invite imitation of the change. For example, if the child says, "yellow balloon," the clinician can say "Yellow balloon! I like blue! Here's a blue balloon!" Materials that correspond to the modified model can be offered and withheld until the mitigated form is produced. Once this can be done in short phrases, longer utterances can be used. The same kinds of activities can take place around the social routines being learned. After learning to sing "Five Little Monkeys," for example, the routine can be changed to "Five Little Doggies," etc. It is important to accompany work on reducing echolalia with efforts aimed at increasing language comprehension and production, since advances in language are usually accompanied with spontaneous decreases in the use of echolalia, as we said earlier.

Language Form

Tager-Flusberg, Paul, & Lord (2005) reported that, when children with ASD learn to speak, most aspects of language form, such as phonology, morphology and syntax, are more or less on par with cognitive level. This would imply that once children start using spoken language, these aspects would naturally evolve. Unfortunately, this is not always the case, for two reasons: first, language development is greatly delayed in children with ASD, so that even though a child with ASD may achieve more or less developmental-level appropriate language at school age, they can take much longer than other children do to get there, and experience very limited spoken communication abilities throughout the preschool period. Second, a substantial proportion of speakers with ASD show patterns of language acquisition that are similar to those seen in children with DLD (Tager-Flusberg & Joseph, 2003). These children show *both* autistic communication difficulties *and* the problems in acquiring language form, including delayed speech sound development, difficulty with learning grammatical morphemes, auxiliary verbs and closed-class morphemes, as well as higher rates of syntactic errors and ungrammatical sentences, for longer periods of time. These findings suggest that many preschoolers with ASD will need intervention in the same areas as other children with DLD, in addition to intervention to address the communicative symptoms of autism.

Children with ASD sometimes develop speech with clear articulation, adequate prosody and fluency. But it is not unusual, either, for speech in preschoolers with ASD to be delayed or difficult to understand. Some preschoolers with ASD may need help developing their speech skills, just as other preschoolers do.

Many of the same techniques we've talked about already to address these delays in the development of speech and language form are appropriate for children with ASD as well as those with DLD. However, because of their difficulties with imitation and joint attention, many children with ASD have difficulty responding to the kinds of child-centered and hybrid techniques that work well with other preschool clients. For this reason, many language form programs for young children with ASD make use of clinician-directed, behavioral approaches, like discrete trial training. In fact, these approaches, so far, have the strongest evidence base for this population (Foxx, 2008; Mandell, Levy, & Schultz, 2010; Rogers & Vismara, 2008). Some examples of behavioral programs developed specifically for teaching language form to children with ASD appear in Table 9-12.

Language Content

Although research suggests that children with ASD may learn words in an atypical way (e.g., Norbury, Griffiths, & Nation, 2010), their use of the words they know has been found to be very similar to that of other children (Tager-Flusberg et al., 2005). The main differences in semantic development in children with ASD are seen in difficulties with certain classes of words. They use few words that refer to mental states, like *think, remember,* and *know,* and they have trouble with deictic uses of words, those like *I/you, here/there, come/go,* and *give/take,* that shift meaning depending on the point of view of the speaker. These kinds of words may need special attention in an intervention program for a client with ASD.

Language Use

Pragmatics are, of course, the area in which all children with ASD will require assistance, even the highest functioning, most verbally precocious individuals. For children still learning basic lan-

| TABLE 9-12 | Clinician-Directed Programs to Develop Language Form in Children with ASD |

Program	Reference
Teaching Developmentally Delayed Children: The Me Book	Lovaas, 1981
Verbal Behavior	Sundberg & Michael, 2001
Teach Me Language	Freeman & Dakes, 1996
Scripts and Script Fading	McClannahan & Krantz, 2006
Rapid Motor Imitation Antecedent Training	Tsiouri & Paul, 2012
Pivotal Response Training	Koegel & Koegel, 2006

guage forms, we would argue that using pragmatic contexts as generalization opportunities for practicing forms learned in more structured contexts makes sense for children with ASD, as it does for other preschoolers. Timler, Vogler-Elias, and McGill (2007) suggest using a *system of least prompts* to work on generalizing language forms to new pragmatic contexts. They argue this method is useful to avoid allowing children to become dependent on adult support. The system involves first identifying levels of prompts that can be offered to a child to use a new form in a pragmatic setting; such as:

- Level 1: Visual cue; for example, pointing to a picture on a visual schedule showing the steps to entering a play interaction
- Level 2: Nonspecific verbal cue; for example, "Would you like to say something to your friend?"
- Level 3: Nonspecific verbal prompt; for example, "Say something to your friend."
- Level 4: Cloze prompt; for example, telling the child, "Say, 'Can I . . . ?'"
- Level 5: Imitation prompt; for example, telling the child, "Say, 'Can I play with you?'"

When the child needs help to use the forms learned to engage in a generalization activity, such as a peer interaction, the clinician offers the lowest level prompt first. Higher level prompts are only offered if needed.

For preschoolers with ASD who show strengths in language form, intervention will still be needed to help them use their language to engage effectively with others, particularly with peers. Timler et al. (2007) and Goldstein et al. (2007) suggest the following strategies:

- Self-monitoring: Children are given concrete guidelines, such as a visual schedule or social story describing a particular pragmatic interaction, like asking a friend to share a toy. The adult practices each step outlined in the schedule or story with the child, then has the child re-enact the sequence without adult cues, relying only on the visual or graphic support. The adult then asks the child to go through the schedule or story and check whether he or she remembered all the steps. If any were left out, the sequence is practiced again. Figure 9-2 provides an example visual schedule for use in self-monitoring.
- Peer mediation: Typical peers are especially powerful agents of social skills intervention (Goldstein et al., 2007). Goldstein et al. report that teaching preschool peers a set of

- Walk over to your friend.

- Watch your friend.

- Get a toy like the one your friend is using.
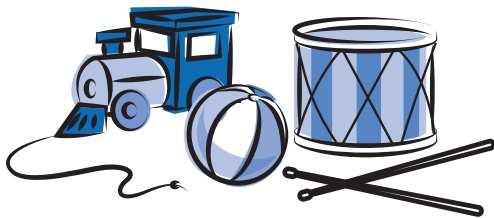
- Do the same thing as your friend.

- Tell an idea.
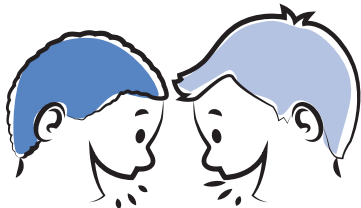
FIGURE 9-2   Visual schedule for peer play entry.   (Adapted from Beilinson, J., & Olswang, L. [2003]. Facilitating peer-group entry in kindergartners with impairments in social communication. *Language, Speech, and Hearing Services in Schools, 34,* 154-166.)

simple strategies, and providing daily "buddy time"—in which dyads of typical and autistic preschoolers were required to remain together for 20 to 30 minutes several times per week—was effective in increasing interactions for preschoolers with ASD. Strategies were taught as "buddy skills." Each strategy was taught separately, so that at first pairs of children learned simply to stay together; then to stay and play; and finally to stay, play, and talk. Box 9-10 provides an outline of this training.

- Socio-dramatic script training: Small groups of children are taught a "script" or expected set of events for a pretend play scenario, like those we discussed as "event structures," as a "lesson." Each child is assigned a role within the script, such as doctor, patient, or patient's mother. The children are then provided with props in the dramatic play area and encouraged to enact the script. An adult is available to remind children to stay within their roles, and use the scripted language they had been taught; however adult prompts are kept to a minimum, in order to encourage interaction among the children. Once the children have played one script several times, a new script, such as shopping at a pet store, may be taught. Box 9-11 provides a sample socio-dramatic play script.

BOX 9-10   "Buddy Skills" for Peer-Mediated Pragmatic Skills Training

Typical peers were given several 15-minute periods of training throughout the program. Buddies were taught three sets of strategies for engaging with peers with ASD. They were provided with rewards for maintaining each level of interaction for the entire "buddy time" period.
Stay:
Typical peer buddies are taught that it is their job to stay with their assigned buddy throughout a designated 20-minute period. Their only job is to stay close to the buddy. If the buddy moves away, the typical peer is taught to follow him.
Play:
Typical peer buddies are taught to not only stay near their buddy but to play together, using the same materials. Specifically, they were taught to get the peer with ASD to look at materials together with the typical peer, and the peer is taught to initiate play actions ("Let's race these cars").
Talk:
When buddy pairs could stay and play together, typical peer buddies were taught to add talking to their strategies. They were taught to tap the child with ASD on the shoulder to get his attention, call his name, describe what they were doing together and respond to any attempt by the child with ASD to communicate.

BOX 9-11 Example Socio-dramatic Play Script

Event Structure:
Shopping at a pet store
Roles:
Storekeeper (S), child shopper (C), child shopper's dad (D)
S: Hi, welcome to the pet store! Can I help you?
C: Puppy! I want a puppy!
D: How much does a puppy cost?
S: It depends. Which puppy do you want?
C: This one! I like this one.
S: That one costs a lot.
D: I don't have a lot of money. Is there one that costs less?
S: Yes, this puppy is only $10.
C: Can I pet him?
D: He won't bite us, will he?
S: No, just be careful and pet his back gently.
C: I like him, daddy. Can I have him?
(different endings can be improvised: Dad says no, dad says yes, puppy bites, etc.)

Adapted from Goldstein, H., Schneider, N., & Thiemann, K. (2007). Peer-mediated social communication intervention: When clinical expertise informs treatment development and evaluation. *Topics in Language Disorders, 27,* 182-199.

CONCLUSIONS

Intervention for clients with DL requires a great deal of thought and planning, as we've clearly seen. Like intervention for any level of language development, intervention at this stage can make use of a broad range of techniques, agents, and settings. Our job as clinicians is to match this repertoire to the needs of our clients. The goals of intervention for clients in the DL period are to increase the elaboration, maturity, and efficiency of communication and to help the clients use that communication in life's important contexts, including play, problem solving, and real social interaction. Let's go back to Rachel and see how we might address some of her needs in an intervention program. Remember that this is just one possible solution. You might like to try to devise a different program just to explore some of the many ways of attaining the same goals.

Ms. Snyder prepared the following IEP to address Rachel's needs:

PRESENT LEVEL OF PERFORMANCE
Rachel's parents understand her speech for the most part, but it is difficult for those outside the family. Articulation testing on 12/18/11 revealed frequent deletions of sounds in final position, and substitution errors on /s/, /z/, /f/, /g/, /k/, /l/, /r/, /ʃ/, /θ/, /ʒ, and /tʃ/. Phonological process analysis from a spontaneous speech sample showed frequent final consonant deletion, stopping of fricatives, fronting of palatals and velars, and gliding of liquids. Both standardized testing and speech-sample analysis revealed that Rachel is functioning significantly below age level in terms of productive syntax, with most forms at or below a 3-year level of development. Receptive skills appear about 1 year below general developmental level. These developmental delays often make it difficult for her to communicate her intentions in school and social settings, resulting in frustration and isolation for her.

SPECIAL EDUCATIONAL NEEDS
Rachel's speech skills cause her significant problems in interacting with peers and teachers, and she occasionally has cried in frustration at being unable to make herself understood. Rachel needs structured intervention to improve her speech production, increase the number of consonants produced correctly, and reduce the use of phonological processes that interfere with intelligibility. She also would benefit from intervention to increase her productive language skills, so that they come nearer to her receptive level. Rachel also will also receive individualized services from the reading specialist to help her make progress toward learning letter sounds and names, along with the rest of the kindergarten class.

ANNUAL GOALS (AND ACTIVITIES)

Goal	Activity
1. Increase intelligibility and phonological production skill	Use Prezas and Hodson (2010) approach in individual pull-out sessions to address phonological errors identified in assessment.
2. Increase vocabulary	Use collaborative lessons to focus on vocabulary items taken from classroom themes. Have the group produce vocabulary items targeted, draw pictures of scenes containing the item, do sorting activities in teams around groups of words being targeted, and similar tasks.
3. Increase syntactic skills in conversational contexts	Teach ILS techniques to the classroom teacher; have the teacher spend several minutes during Free Choice activity each day with Rachel, providing expansion, extension, recasts, and buildups/breakdowns, focusing especially on forms of be verbs.

**Short-Term Instructional Objectives
for Goal Number 1**
1. By February break, Rachel will produce words containing a final /s/ sound, given a list of 10 consonant-vowel (CV)/s/ words drawn from classroom stories and curricular themes, with 80% accuracy.
2. By spring break, Rachel will produce CV/s/ words in spontaneous conversation with teachers and peers with 75% accuracy.
3. By February break, Rachel will produce words containing velar sounds, given a list of 10 CVC words drawn from classroom stories and curricular themes containing /k/ and /g/ sounds with 80% accuracy.
4. By spring break, Rachel will produce CVC words containing velars in spontaneous conversation with 75% accuracy.
5. By May 1, Rachel will produce words containing /z/, /tʃ/, and /ʃ/, given a list of 10 CVC words drawn from classroom stories and curricular themes, with 80% accuracy.
6. By the end of the school year, Rachel will demonstrate spontaneous speech that is 75% intelligible by peers and

teachers in a small group activity, as indicated by three consecutive observations in which there is no more than one request for repetition or similar signal of misunderstanding.

Alternative Benchmarks
1. Rachel will produce CVC words accurately enough to be adequately understood by peers and the classroom teacher during group discussions around stories read at group time.
2. Rachel will demonstrate adequate intelligibility in spontaneous speech with peers so that teacher observations reveal no more than occasional requests for repetition or clarification in dramatic play interactions.

Adaptations

Rachel will have an adult education aide present for 25% of her time in the regular classroom. The aide will be available to work with Rachel to help her accomplish fine motor tasks that she has difficulty doing on her own (cutting, writing, etc.).

SPECIAL EDUCATION AND RELATED SERVICES

Rachel will receive 20 minutes of direct speech-language intervention three times a week in a quiet area of the classroom. In addition, the SLP will provide consultation on Rachel's program to the classroom teacher. This consultation will consist of 30 minutes per week in which the SLP updates the teacher on Rachel's progress and makes suggestions for language activities the teacher can do in the classroom to foster Rachel's linguistic development.

Periodic Review
Date: April 4, 2011

Rachel has achieved all goals listed in Annual Goals

#1."Rachel will improve her phonological production so that she can participate fully in the academic and social curriculum of the kindergarten class by contributing to group discussions during story time and interacting successfully with peers during dramatic play time."

Although Rachel still makes articulation errors, her intelligibility has improved so that 80% of her speech is understandable by teachers and peers in the classroom. SLP services should now focus on language goals within the classroom setting, rather than continuing to work on pronunciation in individual therapy. Language services will be delivered on a collaborative basis. Individual phonological intervention will be discontinued.

Student: Rachel R.   DOB: June 5, 2001   PPT date: Sept. 15, 2006

PRESENT LEVELS OF DEVELOPMENT

Physical development

Vision: Within normal limits

Hearing: Within normal limits

Health status: Within normal limits

Communication: Rachel's parents understand her speech for the most part, but it is difficult for those outside the family. Articulation testing on 9/10/10 with the GPTA-2 revealed performance at the 7th percentile. Errors included frequent deletions of sounds in final position, and substitution errors on /s/, /z/, /f/, /g/, /k/, /l/, /r/, /ʃ/, /tʃ/, and /ʒ/ in all positions. Phonological process analysis from a spontaneous speech sample showed frequent final consonant deletion, stopping of fricatives, fronting of palatals and velars, and gliding of liquids. Both standardized testing and speech-sample analysis revealed that Rachel is functioning significantly below age level in terms of productive syntax, with most forms at or below a 3-year level of development. Receptive skills appear about one year below general developmental level. These developmental delays often make it difficult for her to communicate her intentions in school and social settings, resulting in frustration and isolation for her.

INDIVIDUALIZED EDUCATION PROGRAM MEASURABLE ANNUAL GOAL AND SHORT TERM OBJECTIVES

☐ Academic/Cognitive ☐ Social/Behavioral ☒ Communication ☐ Gross/Fine Motor ☐ Health ☐ Self Help ☐ Other: (specify) _____

Measurable Annual Goal #1 Rachel will improve her phonological production so that she can participate fully in the academic and social curriculum of the kindergarten class by contributing to group discussions during story time and interacting successfully with peers during dramatic play time: Use Hodson and Paden (1991) approach in individual pull-out sessions to address phonological errors identified in assessment.	Method of Evaluation	Performance Criteria	Report of Progress*			
			Nov.	Jan.	April	June
	1: Monthly artic, probes; 6: Classroom observation	C: 80% correct in probes; J: No more than 1 misunderstanding/ observation				
Short Term Objectives/Benchmarks						
Obj#						
1. By Feb. break, Rachel will produce words containing final /s/ sounds, given a list of 10 familiar CV/s/ words with 80% accuracy.						
2. By spring break, Rachel will produce CV/s/ words in spontaneous conversation with teachers and peers with 75% accuracy.						
3. By Feb. break, Rachel will produce words containing velar sounds, given a list of 10 familiar CVC words containing /k/ and /g/ sounds, with 80% accuracy.						
4. By spring break Rachel will produce words containing CVC words containing velars in spontaneous speech with 75% accuracy.						
5. By May 1, Rachel will produce /z/, /ʃ/, and /tʃ/ sounds, given a list of 10 familiar CVC words containing these sounds, with 80% accuracy.						
6. By the end of the school year, Rachel will demonstrate spontaneous speech that is 75% intelligible by peers and teachers in a small group activity, as indicated by three con-secutive observations in which there is no more than one request for repetition or similar signs of misunderstanding.						
Alternative Bench Marks #						
1. Rachel will produce CVC words accurately enough to be adequately understood by peers and the classroom teacher during group discussions around stories read at group time.						
2. Rachel will demonstrate adequate intelligibility in spontaneous speech with peers so that teacher observations reveal no more than occasional requests for repetition or clarification in dramatic play interactions.						

Sample Individualized Education Plan for "Rachael"

Measurable Annual Goal #2 Rachel will use new vocabulary words drawn from classroom literature in mediated retelling activities and in spontaneous speech: Use collaborative lessons to focus on vocabulary items taken from classroom themes. Have the group produce vocabulary items targeted, draw pictures of scenes containing the item, do sorting activities in teams around groups of words being targeted, and similar tasks.	Method of Evaluation	Performance Criteria	Report of Progress*			
			Nov.	Jan.	April	June
Short Term Objectives/Benchmarks	7: Data taken by aide	B: 90%				
Obj#1: Rachel will retell a story heard during story time to her aide, using 6 vocabulary words pretaught from the story during language therapy session, with moderate prompting from the aide.						
Obj#2: Rachel will retell a story heard during story time to her aide, using 6 vocabulary words pretaught from the story during language therapy session, with minimal prompting from the aide.						
Obj#3: Rachel will dictate an original story to her aide that contains the words learned in Obj. #2 with minimal prompting.						
Obj#:						
Obj#:						

Measurable Annual Goal #3 Increase syntactic skills in conversational contexts: ILS techniques will be taught to classroom teacher and aide; each will spend several minutes during Free Choice activity each day with Rachel, providing expansion, extension, recasts, build-ups/break-downs, focusing especially on forms of *be* verbs.	Method of Evaluation	Performance Criteria	Report of Progress*			
			Nov.	Jan.	April	June
Short Term Objectives/Benchmarks	6: SLP will take monthly speech samples to monitor responses, MLU, and syntactic errors.					
Obj#1: By the end of the marking period, Rachel will imitate adult's expansions of her utterances, in Free Choice ILS activities, 70% of the time.						
Obj#2: By the end of the second marking period, Rachel will increase her MLU by 1-2 morphemes.						

Evaluation Procedures	Performance Criteria	Report of Progress Key*
1=Criterion-referenced/curriculum based assessment **2**= Pre and post standardized assessment **3**=Pre and post base line data **4**=Quizzes/tests **5**=Student self-assessment/rubic **6**=Observation **7**=Work samples/project/experiment/ portfolio **8**=Job performance or products **9**=Behavior/performance rating scale **10**=Standardized test **11**=Achievement of objectives **(Note: Use with goal only)** **12**=Other: (specify) _____	**A**=100% **B**=90% **C**=80% **D**=70% **E**=Standard score increase: _____ **F**=Months growth increase: _____ **G**=Passing grades/score: _____ **H**=Frequency/trials: (e.g., 9/10) _____ **I**=Duration: (e.g., 15 min, 1 per) _____ **J**=Successful completion of task/activity _____ **K**=Other: (specify) _____	**M**=Mastered **S**=Satisfactory progress (likely to achieve) **U**=Unsatisfactory progress (unlikely to achieve) **NP 1**=No progress (will **Not** achieve) lack of prerequisite skills **NP 2**=No progress (will **Not** achieve) need more time **NP 3**=No progress (will **Not** achieve) inadequate assessment **NP 4**=No progress (will **Not** achieve) excessive absences/tardiness **NI**=Not introduced **O**=Other: (specify) * Indicating extent to which progress is sufficient to achieve goal by the end of the year.

Special Education and Related Services:
1. Rachel will have an adult educational aide present for 25% of her time in the regular classroom. The aide will be available to work with Rachel to help her accomplish fine-motor tasks that she has difficulty doing on her own (e.g., cutting, writing). In addition, the aide will monitor Rachel's interactions with peers and will prompt her to use strategies for intelligibility provided by the SLP.
2. Rachel will receive 20 minutes of direct speech-language intervention three times/week in a quiet area of the classroom. In addition, the SLP will provide consultation on Rachel's program to the classroom teacher. This consultation will consist of 30 min. per week in which the SLP updates the teacher and aide on Rachel's progress, makes suggestions for language activities the teacher can do in the classroom to foster Rachel's linguistic development, and shares strategies for improving her intelligibility.

Classroom Modifications:
Rachel will be given a visual schedule to assist her in making transitions throughout the school day.

Periodic Review:
As of the end spring break, Rachel has achieved all goals listed in Annual Goal #1: "Rachel will improve her phonological production so that she can participate fully in the academic and social curriculum of the kindergarten class by contributing to group discussions during story time and interacting successfully with peers during dramatic play time." Although Rachel still makes articulation errors, her intelligibility has improved so that 80% of her speech is understandable by teachers and peers in the classroom. SLP services will now focus on language goals within the classroom setting, rather than continuing to work on pronunciation in individual therapy.

STUDY GUIDE

I. Intervention Policy Issues at the Developing Language Level
  A. What is IDEA? What kinds of service planning does it mandate for children at the preschool level?
  B. What does family-centered intervention mean for a child at the developing language level?
  C. How is the family to be involved in the development of the IEP?

II. Intervention for Developing Language: Products, Procedures, and Context
  A. Discuss some of the considerations that go into choosing intervention goals at the developing language phase.
  B. Under what conditions should a child receive speech sound intervention during the developing language phase?
  C. How does the principle of "one new thing at a time" apply to semantic and syntactic intervention in the developing language period?
  D. What are some of the typical patterns of grammatical difficulty seen in children in the developing language phase?
  E. Discuss the use of comprehension versus production goals in intervention at the developing language phase.
  F. Discuss the role of pragmatics, play, and problem solving in intervention at the developing language period.
  G. Discuss several clinician-directed methods of phonological intervention for children with developing language. For what kinds of clients or goals would these be appropriate?
  H. How can CD intervention methods be modified to increase naturalness?
  I. Discuss the two child-centered approaches to intervention at the developing language period.
  J. How can ILS be modified for children in the developing language phase?
  K. How can modeling of higher levels of play be integrated into ILS?
  L. Outline several extensions of script therapy for children in the developing language period.
  M. Describe hybrid intervention for children with developing language. What three types of activities can provide opportunities for teaching in this approach?
  N. Describe three ways to integrate emerging literacy into preschool classroom activities.
  O. Describe a hybrid approach to phonological intervention.
  P. Discuss the role of paraprofessionals in intervention for children with developing language.
  Q. What considerations go into using parents as agents of intervention? What activities are most appropriate for parents?
  R. How can peers be used in language intervention for children with developing language?
  S. What kinds of children and targets are best served with clinical models of intervention?
  T. What skills are needed by the SLP for a language-based classroom in the developing language period?
  U. What are the advantages of classroom-based and collaborative models of service delivery?
  V. Discuss ways of improving the effectiveness of a consultative model of intervention in the developing language period.
  W. Describe how an RTI model would be used at the preschool level.

III. Intervention with Older Clients with Severe Impairment and Children with ASD at the Developing Language Level
  A. How can an ecological inventory be used to set goals for the older, severely impaired client at the developing language stage?
  B. Describe six principles that can be used to guide intervention for older, severely impaired clients with developing language. Provide an example of applying each of these principles.
  C. Describe task analysis as it applies to the older, severely impaired client at the developing language stage.
  D. Discuss the issue of using the developmental sequence to guide intervention planning for the older, severely impaired client at the developing language stage.
  E. Name several strategies for addressing pragmatic skills in preschoolers with ASD.
  F. What role can peers play in intervention for preschoolers with ASD?

Vocabulary Training Targets during the DL Period

COMMONLY USED VERBS

Ask
Begin
Break
Build
Buy
Call
Carry
Catch
Clean
Climb
Close
Cook
Copy
Count
Cry
Cut
Do
Dress
Eat
Fall
Feed
Feel
Fight
Find
Finish
Fly
Get
Give
Go
Have
Hear
Hide
Hit
Jump
Keep
Kick
Laugh
Leave
Let
Like
Listen
Look
Lose
Make
Meet

Need
Open
Pick
Play
Pull
Push
Put
Read
Roll
Run
Say
See
Shake
Shout
Sing
Sit
Sleep
Stand
Start
Stop
Take care
Talk
Throw
Touch
Wait
Walk
Want
Wash
Write

DESCRIPTIVE TERMS

Big, little
Long, short
Large, small
Fat, thin
Soft, hard
Heavy, light
Same/alike, different
Old, young
Pretty, ugly
Blue, red, yellow . . . .
Hot, cold, warm, chilly
Wide, narrow
Thick, thin
Sweet, sour
Nice, mean

Funny, silly, sad
Fast, slow
Rough, smooth
Angry, afraid, happy . . . .
Clean, dirty
Empty, full
Old, new
Loud, quiet
High, low
Dark, light

QUANTITY TERMS

One, two, three . . .
Many, much, lots of
Some few, couple
More, another
Nearly, almost
Less
As much/little as
Plenty
Always, never

NOUN CLASSES

Body parts
Clothing
Foods
Animals
Tools, utensils
Furniture
Kinship terms
Colors
Shapes
Numbers
Letters
Academic items (pencil, blackboard . . .)

SPATIAL TERMS

In
On
Under
Into
Over
Upside down
(in) Between
Right-side up

Inside, outside
Beside
Behind
Next to
First, last, middle
Above, below
Top, bottom
In front of
In back of
Through
Toward

TEMPORAL TERMS

Next
Soon
Later
Now
Before
After
Yesterday
Today
Tomorrow
Sometimes
Early, late
Morning, afternoon, evening
Days of week
Months of year
Seasons
Day
Week
Hour
Minute

CONJUNCTIONS

And
And then
But
Or
Because
So
If
When
Until
Before/after

Adapted from Owens, 2009.

Children's Books that Use Semantic and Syntactic Patterns Commonly Targeted in Language Intervention

Target	Books Containing Target Pattern	Example of Language Pattern
-*ing* ending	Audrey Wood, *The Napping House,* Singapore: Harcourt Children's Books, 1984	. . . where everyone is **sleeping**.
	Bill Martin and John Auchambault, *Here Are My Hands,* New York: Henry Holt, 1995	Here are my (body parts) for **(verb)ing** and **(verb)ing**
	Marie Hall Ets, *In the Forest,* New York: Puffin Books, 1976	. . . **blowing** his horn.
	Maurice Sendak, *Alligators All Around,* New York: Scholastic, 1991	bursting balloons, **catching** colds . . .
	Maurice Sendak, *Chicken Soup with Rice,* New York: Scholastic, 1992	**(x)-ing** once, **(x)-ing** twice, **(x)-ing** chicken soup with rice
	Ruth Young, *Golden Bear,* New York: Viking, 1992	Making snowmen Watching tulips
	Steven Kellogg, *A-Hunting We Will Go,* Minneapolis, MN: Sagebrush, 2001	A-**(x)-ing** we will go.
	Irene Smalls, *Jonathan and His Mommy,* New York: Scholastic, 1992	I like to go **walking** and **talking** with my mom.
PRONOUNS		
Subjective	Eric Carle, *The Very Busy Spider,* New York: Philomel Books, 1999	**She** was very busy.
	Eric Carle, *The Very Hungry Caterpillar,* New York: Philomel Books, 1994	But **he** was still hungry.
	Janet and Allan Ahlberg, *Peek-a-Boo,* New York: Penguin Books, 1984	**He** sees his (x).
	Marc Brown, *Arthur's Nose,* Minneapolis, MN: Sagebrush, 2001	**He** didn't like his nose.
	Masayuki Yabuuchi, *Whose Are They?,* New York: Philomel Books, 1985	**They** belong to (animal).
	Masayuki Yabuuchi, *Whose Baby?,* New York: Philomel Books, 1985	**It** belongs to (animal).
	Maureen Roffey, *Look, There's My Hat,* New York: Putnam Publishing Group, 1985	There's **my** (x).
	Nicki Weiss, *Where Does the Brown Bear Go?,* New York: Greenwillow Books, 1998	**They** are on their way home.
	Robert Kraus, *Herman the Helper,* New York: Prentice-Hall Books, 1987	**He** helped (family member).
	Rod Campbell, *Oh, Dear!,* New York: Philomel Books, 1994	**He** helped the (person). So **he** went to the (animal home) and asked the (animal).
	Mercer Mayer, *There's a Nightmare in My Closet,* New York: Golden Books, 1992	**I** always close my closet door.
	Marc Brown, *Arthur's Christmas,* Boston: Little, Brown and Company, 1984	**He** started making his list.
Objective	Bill Martin Jr., *Brown Bear, Brown Bear, What Do You See?,* New York: Henry Holt and Company, Inc., 1995	I see (x) looking at **me.**
	Steven Kellogg, *Can I Keep Him?,* New York: Dial Books for Young Readers, 1976	I found an (x). Can I keep **him?**
	Craig Strete, *They Thought They Saw Him*, New York: Greenwillow Books, 1996	They thought they saw **him.**
	Mercer Mayer, *Just My Friend and Me,* New York: Golden Books, 2001	Just my friend and **me**.
	Mercer Mayer, *Just Me and My Little Sister,* New York: Golden Books, 1986	. . . **me** and my little sister.

Target	Books Containing Target Pattern	Example of Language Pattern
Possessive	Bill Martin and John Auchambault, *Here Are My Hands,* New York: Henry Holt, 1995	Here are **my** (body parts) for (verb)ing and (verb)ing
	Janett and Allan Ahlberg, *Peek-a-Boo,* New York: Penguin Books, 1984	He sees **his** (x).
	Judith Viorst, *My Mamma Says,* Old Tappin, NY: Simon and Schuster, 1987	Eat **your** soup!
	Judith Viorst, *Alexander and the Terrible, Horrible, No Good, Very Bad Day,* New York: Aladdin Paperbacks, 1972	. . . **my** picture of the invisible castle.
	Marc Brown, *Arthur's Nose,* Minneapolis, MN: Sagebrush, 2001	He didn't like **his** nose.
	Merle Peek, *Mary Wore Her Red Dress and Henry Wore His Green Sneakers,* New York: Clarion Books, 1993	Mary wore **her** red dress. Henry wore **his** green sneakers.
	Nicki Weiss, *Where Does the Brown Bear Go?,* New York: Greenwillow Books, 1998	They are on **their** way home.
	Noelle Carter, *My House,* New Jersey: Viking Children's Books, 1991	**My** house is a (x).
	P.D. Eastman, *Are You My Mother?,* New York: Random House, 1999	Are you **my** mother?
	Robert Kraus, *Whose Mouse Are You?,* New York: Simon and Schuster, 1986	What is **your** (x)?
Reflexive	Margot Zemach, *The Little Red Hen,* New York: Farrar, Straus, and Giroux, 1983	Then I'll do it **myself,** said the little red hen.
	Idries Shah, *The Lion Who Saw Himself in the Water,* Cambridge, MA: Hoopoe Books, 2001	. . . saw **himself** . . .
	Claude Lebrun, *Little Brown Bear Dresses Himself,* New York: Children's Press, 1996	I can dress **myself.**
	Mercer Mayer, *All by Myself,* New York: Golden Books, 2001	All by **myself.**
PREPOSITIONS		
	Allan and Janet Ahlberg, *Each Peach Pear Plum,* New York: Penguin USA, 1999	**In** the ditch, **over** the wood.
	Atusko Morozumi, *One Gorilla,* New York: Doubleday, 1990	Each page has a different group of animals in a new location that is preceded by a different preposition.
	Bill Martin Jr., *Brown Bear, Brown Bear, What Do You See?,* New York: Henry Holt, 1995	I see (x) looking **at** me.
	Bill Martin Jr., *Polar Bear, Polar Bear, What Do You Hear?,* New York: Henry Holt, 1995	I hear (animal) (sound)ing **in** my ear.
	Burton Albert, *Where Does the Trail Lead?,* New York: Simon and Schuster, 1991	. . . **to** a crest of dunes **at** the edge of the sea . . .
	Ed Emberley, *Klippity Klop,* New York: Little Brown, 1974	**Across** the field. **Through** the field. **Over** the bridge.
	Eric Carle, *The Secret Birthday Message,* New York: Harper Trophy, 1986	Locative prepositions
	Gail Gibbons, *Sun Up, Sun Down,* New York: Harcourt, 1983	It rises **in** the east and shines **through** my window.
	Jonathan London, *Let's Go Froggy,* New York: Puffin Books, 1996	He looked under/in/on . . .
	Kathi Appelt, *Elephants Aloft,* San Diego, CA: Voyager Books, 1997	Locative prepositions
	Linda Banchek, *Snake In, Snake Out,* New York: Bantam Doubleday Books, 1992	Snake **in,** snake **out.**
	Mercer Mayer, *There's an Alligator Under My Bed,* Hong Kong: Dial Books, 1987	**Under, in**
	Nadine Bernard Westcott, *The Lady with the Alligator Purse,* New York: Little, Brown 1998	. . . **with** the alligator purse . . .
	Pat Hutchins, *Rosie's Walk,* New York: MacMillan, 1997	**around** the lake, **through** the fence
	Patrician Lillie, *Everything Has a Place,* New York: Grenwillow, 1993	**In** it, **on** it.
	Robert Kalan, *Jump, Frog Jump,* New York: Greenwillow Books, 1996	**under** the fly, **after** the frog, **into** the pond.
	Ruth Brown, *A Dark, Dark Tale,* New York: Dial Books, 1984	**In** the woods there was a house. **On** the house there was a door. **Behind** the house there was . . .
	Stan and Jan Berenstain, *Bears in the Night,* New York: Random House, 1971	**Under** the bridge. **Around** the lake. **Between** the rocks.
	Stan and Jan Berenstain, *Inside, Outside, Upside Down,* New York: Random House, 1997	**in** a box, **on** a truck.
	Stan and Jan Berenstain, *The Berenstain Bears and the Spooky Old Tree,* New York: Random House, 1978	One **with** a light. One **with** a rope. One **with** a stick.
	Steve Metzger, *We're Going on a Leaf Hunt!,* New York: Scholastic, 2008	We can't go **through** the waterfall. We have to go **around** it.
	Eric Hill, *Where's Spot?,* New York: Puffin, 2003	Is he **under** the bed?

Target	Books Containing Target Pattern	Example of Language Pattern
BE VERBS		
Present tense	Noelle Carter, *My House,* New York: Viking Children's Books, 1991	I *am* a (x).
	P.D. Eastman, *Are You My Mother?,* New York: Random House, 1997	*Are* you my mother?
	Irene Smalls, *Jonathan and His Mommy,* New York: Scholastic, 1992	Then we *take* giant steps *. . .* and *talk* in loud giant voices . . .
	Mikhail Baryshnikov, *Because . . .,* New York: Athenum Books for Young readers, 2007	This *is* me. I *live* over there in that red house.
Past tense	Edward Lear, *The Owl and the Pussycat,* New York: Putnam Publishing Group, 1997	*. . . went* to sea.
	Eric Carle, *The Very Hungry Caterpillar,* New York: Putman Publishing Group, 1994	But he *was* still hungry.
	Jez Alborough, *It's the Bear,* Cambridge, MA: Candlewick Press, 1994	The bear *munched.* He *crunched.* He *chomped . . .*
	Lois Ehlert, *Read Leaf, Yellow Leaf,* San Diego: Harcourt Brace & Company, 1991	The wind *blew.* They *twirled* and *whirled.*
	Maurice Sendak, *One Was Johnny,* New York: Harper Collins Children's Books, 1991	One *was* Johnny . . . Two *was . . .*
	Remy Charlip, *Fortunately,* New York: Aladdin, 1993	Fortunately/unfortunately, (x) *was . . .*
	Rose Greydanus, *Double Trouble,* New York: Troll Communications, 1994	*Was* it Tim? *Was* it Jim?
	Ezra J. Keats, *Over in the Meadow,* New York: Scholastic, Inc., 1999	(Verb) *said* the Mother. We (verb) *said* the X, and they *(verb)-ed.*
	Ezra J. Keats, *Peter's Chair,* New York: Puffin Books, 1998	Peter *stretched . . . was* finished.
	Nancy Tafuri, *The Ball Bounced,* New York: Greenwillow Books, 1989	The ball bounced. The (x) (verb-ed).
	Ruth Krauss, *The Carrot Seed,* Mexico: HarperFestival, 1993	The dog *barked.* A little boy *planted* a seed.
	Ted Arnold, *Green Wilma,* New York: Puffin Books, 1998	She *sat* up . . .; *croaked* and *started . . .*
	Tommy dePaola, *Charlie Needs a Cloak,* New York: Aladdin, 1982	He really *needed* a cloak.
	Tommy dePaola, *The Knight and the Dragon,* New York: Putnam Juvenile, 1998	*. . .* had never *fought* a dragon.
(be) (verb)ing	Lydia Dabkovich, *Sleepy Bear,* New York: Puffin Books, 1985	The birds *are leaving*.
	Margaret Wise Brown, *The Runaway Bunny,* New York: HarperCollins, 2005	I *am running* away.
	Mirra Ginsburg, *The Chick and the Duckling,* New York: Simon and Schuster, 1988	I *am (x)-ing.*
	Paul Galdone, *Henny Penny* (folktale), New York: Houghton Mifflin, 1979	Where *are you going?*
	Rita Gelman, *I Went to the Zoo,* New York: Scholastic Inc., 1995	Present progressive tense
VERB VOCABULARY		
	Allison Lester, *Clive Eats Alligators,* New York: Houghton Mifflin Co., 1991	Clive eats . . .
	Laurie Lazzaro Knowlton, *Why Cowboys Sleep with Their Boots On,* Gretna, LA: Pelican Publishing Company, 1995	Lassoed, branded, stripped, crawled
	John Burningham, *Skip Trip,* New York: Viking Children's Books, 1984	Illustrated action words
	John Burningham, *Sniff, Shout,* New York: Viking Children's Books, 1984	Illustrated action words
	John Burningham, *Mr. Gumpy's Outing,* New York: Henry Holt and Company, 1970	*. . .* if you don't *squabble . . .* yes, but don't *hop* about
Modal auxiliaries	Ann Jonas, *Where Can It Be?,* New York: Greenwillow Books, 1986	I'*ll look* in my (location).
	Charlotte Zolotow, *Do You Know What I'll Do?,* New York: Harper-Collins Publishers, 2000	I'*ll* pick you a bunch . . .
	Dr. Seuss, *Mr. Brown Can Moo, Can You?,* New York: Random House, 1996	Mr. Brown *can (verb),* can you?
	Dr. Seuss, *Green Eggs and Ham,* New York: Random House, 1999	*Would you, could you . . .?*
	Jake Wolf, *And then What?,* New York: Greenwillow Books, 1993	*You'll* sail around the city . . .
	Jean Marzollo and Jerry Pinkney, *Pretend You're a Cat,* New York: Dial Books for Young Readers, 1997	*Can you* (action verb)?
	Margaret Wise Brown, *The Runaway Bunny,* New York: Harper Collins, 2005	I *will run* after you.
	Margot Zemach, *The Little Red Hen,* New York: Farrar, Straus, & Giroux, 1993	Who *will help* me (x)? "Then I'*ll do* it myself," said the Little Red Hen.

Target	Books Containing Target Pattern	Example of Language Pattern
	Masayuki Yabuuchi, *Whose Footprints?,* New York: Putnam Publishing Group, 1985	*Can you* guess?
	Nancy Hellen, *The Bus Stop,* New York: Orchard Books, 1988	*Can you see* the bus yet?
	Robert Lopshire, *Put Me in the Zoo,* New York: Beginner Books, 1966	I *can put* them (x).
	Dr. Seuss, *I Can Lick 30 Tigers Today,* New York: Random House, 1969	I *can* lick 30 tigers today . . . *will* you please step out of line?
NEGATIVES		
	Charles G. Shaw, *It Looked Like Spilt Milk,* New York: HarperCollins Children's Books, 1993	It *wasn't* (x).
	Dr. Seuss, *Green Eggs and Ham,* New York: Random House, 1999	I *do not* like them.
	Eric Carle, *The Very Busy Spider,* New York: Putnam Publishing Group, 1999	The spider *didn't* answer.
	Ernst Ekker, *What Is Beyond the Hill?,* New York, Lippincott, 1985	The world does *not* stop there . . .
	Laura Numeroff, *Dogs Don't Wear Sneakers,* Old Tappan: Simon and Schuster, 1996	X *don't* (verb)
	Marilyn Sadler, *It's Not Easy Being a Bunny,* New York: Beginner Books, 1983	I *don't* want to be a (x).
	Maurice Sendak, *Pierre,* New York: Harper Collins Children's Books, 1962	I *don't* care.
	Mirra Ginsburg, *Four Brave Sailors,* New York: Greenwillow Books, 1987	They *do not* fear.
	Nancy Carlstrom, *I'm Not Moving, Mama,* New York: Simon and Schuster, 1990	I'm *not* moving.
	Paul Galdone, *The Gingerbread Boy* (folktale), New York: Houghton Mifflin Company, 1983	They *couldn't* (x). You *can't* (x).
	Uri Shulvitz, *One Monday Morning,* New York: Simon and Schuster, 1986	But I *wasn't* home.
	Dr. Seuss, *The Cat in the Hat,* New York: Random House, 1957	We did *not* like it. *Not* one bit.
QUESTIONS Wh-	Ann Rockwell, *In Our House,* New York: HarperCollins, 1991	*What* do we do?
	Ben Shecter, *When Will the Snow Trees Grow?,* New York: HarperCollins Children's Books, 1993	*When . . . and*
	Bill Martin Jr., *Brown Bear, Brown Bear What Do You See?,* New York: Henry Holt and Company, 1995	*What* do you see?
	Bill Martin Jr., *Polar Bear, Polar Bear What Do You Hear?,* New York: Henry Holt and Company, 1991	*What* do you hear?
	Diane Goode, *Where's Our Mama?,* New York: Puffin Books, 1995	*Where's* our mama?
	Janet and Allan Ahlberg, *Peek-a-Boo,* New York: Viking Children's Books, 1997	*What* does he see?
	Jean Marzollo and Jerry Pinkney, *Pretend You're a Cat,* New York: Dial Books for Young Readers, 1997	*What* else can you do like a *(x)?*
	John Burningham, *Would You Rather,* New York: SeaStar 1978	*Would* you rather (x) or (y)?
	Margaret Wise Brown, *Where Have You Been?,* New York: Scholastic TAB Publishing Inc., 1990	*Where* have you been?
	Margot Zemach, *The Little Red Hen* (folktale), New York: Farrar, Straus, & Giroux, 1993	*Who* will (action) this (object)? *Who* will harvest this wheat? *Who* will plant this wheat?
	Margret Miller, *Who Uses This?,* New York: Greenwillow Books, 1990	*Who* uses this?
	Masayuki Yabuuchi, *Whose Baby?,* New York: Philomel Books, 1985	*Whose* baby is it?
	Masayuki Yabuuchi, *Whose Footprints?,* New York: Putnam Books, 1985	*Whose* are they?
	Mercer Mayer, *What Do You Do?,* New York: Scholastic Inc., 1987	*What* do you do with a kangaroo?
	Nicki Weiss, *Where Does the Brown Bear Go?,* New York: Greenwillow Books, 1998	*Where* does the (x) go?
	N.N. Charles, *What Am I?,* New York: Scholastic, 1994	*What* am I?
	Pamella Allen, *Who Sank the Boat?,* New York: Putnam Publishing Group, 1996	*Who* sank the boat?
	Paul Galdone, *Henny Penny* (folktale), New York: Houghton Mifflin Company, 1984	*Where* are you going?
	Robert Kalan, *Jump, Frog, Jump,* New York: Greenwillow Books, 1996	*How* did the frog get away?
	Robert Lopshire, *ABC Games,* New York: Harper Collins Children's Books, 1986	*Which* one will (x)? *Where* is the (x)?

Target	Books Containing Target Pattern	Example of Language Pattern
	Robert Lopshire, *Put Me in the Zoo,* New York: Beginner Books, 1996	***What*** can you do?
	Sue Williams, *I Went Walking,* San Diego: Harcourt Brace and Company, 1996	***What*** did you see?
	Thomas and Wanda Zacharias, *But Where Is the Green Parrot?,* New York: Delacorte Press/Seymour Lawrence, 1978	But ***where*** is the green parrot?
Do insertion	Dr. Seuss, *Green Eggs and Ham,* New York: Random House, 1999	***Do*** you like them?
	Mary Serfozo, *Who Said Red?,* New York: Simon and Schuster, 1992	***Did*** you say (x)?
	Shigeo Watanabe, *How Do I Put It On?,* New York: Putnam Publishing Group, 1991	***Do*** I put them on like this?
	Stan and Jan Berenstain, *The Berenstain Bears and the Spooky Old Tree,* New York: Random House, 1997	***Do*** they dare (x)?
Yes/no	Eric Hill, *Where's Spot?,* New York: Interlink Publishing Group, 1994	***Is*** he in the (x)?
	Jean Marzollo and Jerry Pinkney, *Pretend You're a Cat,* New York: Dial Books for Young Readers, 1997	***Can you*** (action verb)?
	Masayuki Yabuuchi, *Whose Footprints?,* New York: Putnam Publishing Group, 1985	***Can*** you guess?
	Nancy Hellen, *The Bus Stop,* New York: Orchard Books, 1988	***Can*** you see the bus yet?
	P.D. Eastman, *Are You My Mother?,* New York, Beginner Books, 1999	***Are*** you my mother?
	Rose Greydanus, *Double Trouble,* New York: Troll Communications, 1994	***Was*** it Tim? ***Was*** it Jim?
Have auxiliary	Shigeo Watanabe, *Where's My Daddy?,* New York: Putnam Publishing Group, 1996	***Have*** you seen my daddy?
	Paul Galdone, *The Gingerbread Boy* (folktale), New York: Houghton Mifflin Company, 1983	I'***ve run*** from the (x).

COMPLEX SENTENCES

Target	Books Containing Target Pattern	Example of Language Pattern
Relative clauses	Maurice Sendak, *One Was Johnny,* New York: HarperCollins Children's Books, 1991	. . . ***who lived*** by himself . . .
	Nancy Tafuri, *This Is the Farmer,* New York: Greenwillow Books, 1994	This is the farmer ***who kisses*** his wife, ***who*** . . .
	P. Adams, *There Was an Old Lady Who Swallowed a Fly,* New York: Child's Play, 1989	. . . ***who swallowed a fly*** . . . ***who swallowed*** spider . . .
Wh complement	Margaret Wise Brown, *Where Have You Been?,* New York: Scholastic Inc., 1989	That's ***where*** I've been.
	Liza Baker, *I Love You Because You're You,* New York: Scholastic, 2001	I love you ***when*** you're happy . . .
If clause	Chris Riddell, *The Trouble with Elephants,* New York: HarperCollins, 1991	***If, then***
	Judi Barrett, *Cloudy with a Chance of Meatballs,* New York: Aladdin, 1982	***If*** food dropped like rain . . .
	Laura Numeroff, *If You Give a Mouse a Cookie,* New York, HarperCollins Childrens Books, 1997	. . . ***then*** he'll want a glass of milk.
	Laura Numeroff, *If You Give a Moose a Muffin,* New York, HarperCollins Childrens Books, 1994	. . . ***then*** he'll want some jam . . .
	Margaret Wise Brown, *The Runaway Bunny,* HarperCollins Children's Books, 1977	***If*** you . . . ***then*** I'll . . .
	Tommy dePaola, *I Love You, Mouse,* New York: Harcourt, 1976	***If*** I were a mouse, I'd build you a furry nest
But clause	Ann Herbert Scott, *Hi,* New York: Putnam Publishing Group, 1997	. . . ***but*** sentences
	Mercer Mayer, *Just For You,* New York: Golden Books Family Entertainment, 1982	I wanted to X, ***but*** . . .
	Martin Waddell, *What Use is a Moose?,* New York: Scholastic, 1996	So he hung the wash on the moose, ***but*** . . .
Because clause	Laurel Portet-Gaylord, *I Love Daddy Because,* New York: Dutton Childrens Books, 1991	I love (x) ***because*** . . .
	Steve Zuckman & Stephen Edelman, *It's a Good Thing,* New York: HarperCollins, 1987	It's a good thing ***because*** . . .
	B.G. Hennessey, *Because of You,* Somerville, MA: Candlewick, 2005	***Because*** of you . . .

CHAPTER

Language, Reading, and Learning in School: What the Speech-Language Pathologist Needs to Know

10

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. Name roles and responsibilities of school-based speech-language pathologist (SLP) practice.
2. Describe the major acts of legislation that govern practice in schools; and describe their implications for practice.
3. Recognize documents critical to school-based SLP practice.
4. Discuss the role played by SLPs in early intervening and responsiveness to intervention models of instruction.
5. List the characteristics of school-aged children with language and learning deficits.
6. Describe connections among oral language, learning, and literacy.
7. List similarities and differences in oral and written language.
8. Identify effective strategies for promoting literacy through oral language support and instruction.

Nick's mother reported she'd had a drug problem before he was born. She'd used a variety of street drugs, and Nick had been born small and showed signs of drug effects at birth. His mother enrolled in a rehabilitation program while he was an infant, overcame her addiction, and worked hard to make a good home for Nick. Nick received a variety of services during his preschool

years, when he'd been somewhat overly active and slow in learning to talk. By the time he entered kindergarten, he had improved greatly and passed a kindergarten screening. He was placed in a mainstream class, and direct services were discontinued. But his third-grade teacher, Mrs. Johnson, noticed early in the year that Nick was having difficulty keeping up with the class. He seemed to be progressing adequately in first and second grade and seemed to enjoy reading the patterned picture books his teachers used for reading materials. His primary-grade teachers did note, though, that his speech was somewhat simpler than that of his classmates and he seemed to have trouble paying attention and following directions in class. Mrs. Johnson was concerned, now that more reading was required from classroom textbooks and more independent work in subject areas became part of the curriculum. Nick seemed to be falling behind. He didn't seem able to read the class texts on his own. He couldn't remember the directions she gave for completing assignments. He seemed unable to "get with" the classroom routines she'd established, such as filling out a card each day to indicate whether he was having a school hot lunch or box lunch from home. He wasn't able to learn the spelling list she assigned each week or write the simple book reports she required. He also was beginning to become disruptive, interrupting other students when they were doing their work, fidgeting and annoying others when she read to the class from the children's novels that were part of her program, and making "wisecracks" instead of contributing productively to class discussions. Mrs. Johnson felt that Nick was a child who could benefit from assessment for special educational services.

Nick is a child whose oral language sounds normal to the "naked ear." He does not make many obvious errors in phonology or syntax, although he did when he was younger. Now his problems with communication are subtler and harder to define, but they seem to have a significant impact on his ability to acquire the skills needed for success in school. There are many children like Nick in our school classrooms, and they often come to the attention of the speech-language pathologist (SLP) through "early intervening" and responsiveness to intervention (RTI) procedures. Some, like Nick, have histories that suggest a possible root of their problem. Others have no such history, but simply have difficulty meeting the demands of the school curriculum for no apparent reason. Some may have started speaking late, have shown delays in acquiring words, combining words into sentences, or pronouncing the sounds of speech. Others have had unremarkable preschool language histories but seem to "hit a wall" when it comes to making the transition from oral to written language. Regardless of their language history, these children are beyond Brown's stage V in terms of their vocabulary and sentence structures. They may be classified as learning disabled, reading disabled, or dyslexic, or they may have no diagnosis but have been identified in RTI (see Chapter 3) programs or been recommended for "early intervening services" in areas of language and literacy to prevent school failure.

Over 80% of children with disabilities in schools are diagnosed with the following four categories of disorder: learning disabilities (LDs) (46%), speech/language impairments (20%), intellectual disability (9%), and emotional disturbance (8%) (U.S. Department of Education, 2005). These statistics make up the bulk of children who receive services under the Individuals with Disabilities Education Act (IDEA); the remainder includes children with disorders such as autism, cerebral palsy, traumatic brain injury, vision and hearing impairments, and so on. These figures suggest that over two-thirds of the children on the caseloads of school SLPs will have language and/or learning disorders. And increasingly, due to recent laws requiring schools to be accountable for students' progress, SLPs are being recruited to address not only the speech and oral language difficulties faced by these students, but to serve on literacy teams, to identify struggling readers, and to develop RTI plans for children with identified special needs, as well as to prevent students from failing to achieve classroom literacy goals.

Here in Section III, we focus primarily on children who, despite otherwise apparently typical development, struggle to succeed in the acquisition of literacy. Many of these children fall under the broad rubric of language-learning disability (LLD). This term implies that students have difficulty with various aspects of communication that interfere with their ability to succeed in school. Other children the SLP will encounter may not have an identified disability, but will fail to make adequate progress in the regular curriculum and will need some support to prevent them from falling so far behind peers as to eventually be diagnosed with a learning disability. Both these types of children, though, will have mastered the basic vocabulary, sentence structures, and functions of their language but have trouble progressing beyond these basic skills to higher levels of language performance in both oral and written modalities. In Chapters 11 and 12, we will talk about the role of the SLP in promoting both language and literacy development for such students during their elementary school years, from kindergarten through fifth or sixth grade, when normally developing children are between 5 and 12 years of age. In Chapters 13 and 14, we will look at adolescents with LLDs in secondary school settings.

There are, of course, children in schools whose communicative skills are still in the developing, emerging, or prelinguistic levels. Some of these students will be placed in resource rooms or special education classes, and others in inclusive settings. SLPs who work in school settings will find these children, too, included in their caseload. In fact, one of the exciting things about working in schools is the wide variety of issues and levels of functioning the SLP encounters. Thanks to legislation that mandates free, appropriate public education (FAPE) to all children, those with every type and severity of communication disorder will go to public schools along with their peers. Although specific methods for use with the broad range of disabilities seen in school settings are not addressed in this chapter, principles for addressing the needs of school children at earlier stages of communication can be found in Chapters 6 through 9. However, because SLP practice in schools involves work with individuals at all points on the spectrum of communicative function, as well as knowledge of the legal and professional issues specific to school-based practice, we will preface our more focused discussion on language/literacy issues for this stage of development by examining some of the issues that affect practice with all our students in school settings.

SCHOOL-BASED PRACTICE IN SPEECH-LANGUAGE PATHOLOGY

SLPs, as part of the educational team that delivers comprehensive services to students with disabilities, provide a wide array of supports to their clients in schools. The American Speech-Language-Hearing Association (ASHA, 2010) has recently redefined our roles and responsibilities to reflect the broad range of activities appropriate for SLPs who practice in school settings. These appear in Box 10-1.

Laws Applying to School-Based Services

SLPs who work in schools are guided by federal laws that regulate special education. The Individuals with Disabilities Education Act (IDEA) of 1997 (reauthorized in 2004) is the major piece of legislation that applies to this work. Part B of IDEA specifies how services are to be provided for children aged 3 to 21. The specific diagnostic categories recognized as requiring special education appear in Box 10-2. Where earlier special education laws had been concerned with ensuring access to FAPE in the least restrictive environment (LRE) and providing Individualized Educational Plans (IEPs) for all children, the 1997 act and 2004 reauthorizations shifted to emphasize accountability for meaningful educational results by:

- Increasing parental participation
- Identifying student strengths and parental concerns
- Raising expectations for children with disabilities by relating student progress to the general education curriculum
- Ensuring that all children have scientifically-based, appropriate instruction in reading
- Including regular education teachers in the special educational team
- Including children with disabilities in district-wide assessments and reports
- Supporting high standards for professionals involved in service provision

In addition, the No Child Left Behind Act of 2001 (NCLB) also focuses on increasing accountability. It is designed to hold schools accountable for making sure that all children, including those with

BOX 10-1   Roles and Responsibilities of School-Based SLPs

CRITICAL ROLES
- Working Across All Levels—providing appropriate speech-language services in Pre-K, elementary, middle, junior high, and high schools with no school level underserved. (Note: In some states infants and toddlers would be included in school services.)
- Serving a Range of Disorders—working with students exhibiting the full range of communication disorders, including those involving language, articulation (speech sound disorders), fluency, voice/resonance, and swallowing.
- Ensuring Educational Relevance—SLPs address personal, social/emotional, academic, and vocational needs that have an impact on attainment of educational goals.
- Providing Unique Contributions to Curriculum—SLPs offer supports in addressing the linguistic and metalinguistic foundations of curriculum learning for students with disabilities, as well as other learners who are at risk for school failure, or those who struggle in school settings.
- Highlighting Language/Literacy—SLPs contribute significantly to the literacy achievement of students with communication disorders, as well as other learners who are at risk for school failure, or those who struggle in school settings.
- Providing Culturally Competent Services—SLPs make important contributions to ensure that all students receive quality, culturally competent services. SLPs have the expertise to distinguish between language disorders and cultural and linguistic differences, socioeconomic disadvantage, lack of adequate prior instruction, and the process of acquiring the dialect of English used in the schools. SLPs can also address the impact of language differences and second language acquisition on student learning and provide assistance to teachers in promoting educational growth.

Range of Responsibilities—SLPs help students meet the performance standards of a particular school district and state.
- Prevention—SLPs are integrally involved in the efforts of schools to prevent academic failure.
- Assessment—SLPs conduct assessments in collaboration with others that help to identify students with communication disorders as well as to inform instruction and intervention.
- Intervention—SLPs provide intervention that is appropriate to the age and learning needs of each individual student and is selected through an evidence-based decision-making process. Although service delivery models are typically more diverse in the school setting than in other settings, the therapy techniques are clinical in nature when dealing with students with disabilities.
- Program Design—SLPs employ a continuum of service delivery models in the least restrictive environment for students with disabilities, and they provide services to other students as appropriate.
- Data Collection and Analysis—SLPs use data-based decision making, including gathering and interpreting data with individual students, as well as overall program evaluation .

- Compliance—SLPs are responsible for meeting federal and state mandates as well as local policies in performance of their duties. Activities may include Individualized Education Program (IEP) development, Medicaid billing, report writing, and treatment plan/therapy log development.

Collaboration—SLPs work in partnership with others to meet students' needs.
- With Other School Professionals—SLPs provide services to support the instructional program at a school and complement and augment those made by other professionals.
- With Universities—SLPs form relationships with universities to share knowledge and perspectives and can serve as resources for university personnel and the university students whom they teach.
- Within the Community—SLPs work with a variety of individuals and agencies involved in teaching or providing services to children and youth.
- With Families—For students of all ages it is essential that SLPs engage families in planning, decision-making, and program implementation.
- With Students—SLPs actively engage students in goal planning, intervention implementation, monitoring of progress, and self-advocacy appropriate to age and ability level.

Leadership—SLPs provide direction in defining their roles and responsibilities and in ensuring delivery of appropriate services to students.
- Advocacy—SLPs advocate for appropriate programs and services for their clients, including reasonable workloads, professional development opportunities, and other program supports. SLPs articulate their roles and responsibilities to others in their professional setting, and work to influence the development and interpretation of laws, regulations, and policies to promote best practice.
- Supervision and Mentorship—SLPs supervise student SLPs, clinical fellows, and paraprofessionals. They mentor new SLPs.
- Professional Development—SLPs are valuable resources in designing and conducting professional development. Given their expertise in communication and language, SLPs have much to offer other educators, including administrators, teachers, other educational specialists, and paraprofessionals in the collaborative effort to enhance the performance of students in schools.
- Parent Training—SLPs are in a position to provide training to parents of students of all ages with regard to communication development and disorders. They may be especially helpful to families in creating a language- and literacy-rich environment.
- Research—Federal law requires the use of scientific, research-based practices. It is important for SLPs in the schools to participate in research to generate and support the use of evidence-based assessment and intervention practices.

Adapted from ASHA (2010). Roles and responsiblities of speech-language pathologists in schools [Professional Issues Statement] www.asha.org.

disabilities and those from impoverished backgrounds, achieve success in school. The law includes:
- The requirement that schools show adequate yearly progress (AYP) on tests and graduation rates
- Permission for school to spend up to 15% of special education funds to support students in the general curriculum
- Standards for reading instruction
- Consequences for schools that fail to demonstrate AYP

One impetus behind NCLB is the notion that too many children, particularly poor children, are identified as having special educational needs, perhaps because they have limited readiness for school and inadequate preschool experience (including limited

BOX 10-2 Diagnostic Categories Recognized
by IDEA 2004

- Autism
- Blindness/Visual Impairment
- Deafness/Hearing Impairment
- Deaf-blindness
- Emotional Disturbance
- Intellectual Disability
- Orthopedic Impairment
- Specific Learning Disability
- Speech/language Impairment
- Traumatic Brain Injury
- Multiple Impairments
- Other Health Impaired

language development as a result of restricted models) to prepare them to succeed in the general curriculum. An implication of this notion is that more should be done in the general curriculum to prevent academic failure. RTI is a recent innovation in instruction that attempts to provide more intensive help to students who are struggling without having to identify them as having special educational needs. We'll talk more about how this approach works later on in this chapter.

Another law that pertains to practice in schools is Section 504 of the Rehabilitation Act of 1973. It guarantees equal protection for individuals with physical or mental disabilities. Although it does not provide funding for services, it does require accommodations to allow students to participate in general education, such as physical access to school buildings for students in wheelchairs, assistive listening devices, and extra time to complete tests and assignments. Children with 504 plans do not receive an IEP; and generally such plans are used to support children who do not qualify for one of the twelve diagnoses listed in Box 10-2. Often, for example, children with attention deficit hyperactivity disorder who do not have other disabilities will be accommodated by means of 504 plans.

Recent laws affecting special education have resulted in SLPs' increasing involvement in classroom activities and collaborative approaches to helping children with a variety of challenges succeed in the school curriculum. Although as recently as 10 years ago, SLPs often worked on goal sequences and themes they developed themselves to address IEP objectives, current practice in schools requires us to support clients to succeed in the general curriculum, deriving communication goals from classroom topics and embedding activities within classroom settings. Recent emphasis on RTI has also moved the role of the SLP away from providing "speech therapy" in a segregated space, and toward applying the SLP's knowledge and skills in the connections between language and literacy to all tiers of RTI instruction, as well as in more traditional individualized therapy.

Preassessment and Referral Under RTI

Many school systems today use the RTI (see Chapter 3 for definition and further discussion) model, particularly in the primary grades, to attempt to resolve learning problems within the regular education setting, by providing classroom modifications and accommodations that can prevent the need for special education or

for labeling a student as having a special educational need. RTI approaches are most often seen in the area of literacy instruction in the primary grades (Fuchs & Fuchs, 2009), although their use in other curricular areas and age levels is expanding (see, for example, Ehren & Whitmire, 2009; Justice, McGinty, Guo, & Moore, 2009; Montgomery, 2008). As we saw in Chapter 3, RTI uses a three-tiered structure (National Joint Committee on Learning Disabilities, 2009):

Tier I: High quality, scientifically research-based classroom instruction for all students in general education, with ongoing, curriculum-based assessment and continuous progress monitoring.

Tier II: Students who lag behind peers receive small group, more specialized instruction to prevent failure within general education.

Tier III: For students who continue to struggle after provision of intensified, small group instruction in Tier II, individualized instruction may be provided; if adequate progress is not made, comprehensive evaluation is conducted by a multidisciplinary team to determine eligibility for special education and related services.

RTI, then, is aimed at *prevention* of reading disability.

Children who are found, through the monitoring process, to have difficulty with regular classroom instruction in this model, may be provided first with accommodations within the regular program, such as sitting closer to the teacher, or using an assistive listening device; alternatively, they may receive RTI Tier II (small group, intensified) instruction for a specified period of time. If ongoing assessment finds these strategies are adequate, students may return to Tier I instruction with ongoing follow-up consultation to the classroom teacher. If however, the accommodations fail to lead to adequate progress, students may be either placed in a Tier III (individualized, intensive) instructional setting, where progress will continue to be assessed, or referred directly for special educational evaluation. If Tier III support is provided without special education referral, progress will continue to be monitored and a formal referral for special educational assessment is made only if this high level of support fails to yield adequate progress after a specified period of time. By the time a child is referred for an evaluation for special education, though, the SLP may have already had a chance to get to know him or her through participation in RTI.

Implementation of RTI provides a number of important roles for SLPs. Ehren, Montgomery, Rudebusch, & Whitmire (2009) suggest that SLPs in RTI settings can make unique contributions by (1) participating, through their knowledge of the connections between oral language and literacy, in the design of Tier I instruction by planning and conducting professional development on the language basis of literacy, helping to select scientifically based literacy instruction programs, and choosing appropriate screening and progress-monitoring approaches; (2) collaborating with general education teachers in presenting Tier I instruction, assisting with ongoing progress monitoring, and helping teachers develop accommodations within Tier I for struggling students; and (3) serving students by providing small group and individual instruction at Tiers II and III, and using a range of assessments from tests to observational methods to identify struggling students and monitor progress. While RTI involves changes from the way SLPs have traditionally operated in school settings, it provides opportunities, as well: opportunities to use more pragmatic, authentic assessment procedures to identify children having difficulty, to work more closely with general education teachers on ways to enhance

language and literacy skills not only for children with special educational needs, but for students for whom school failure can be prevented with just a little extra "boost" early in their school careers, and to allocate time for indirect services such as supporting classroom teachers and others who work with children before referrals for special education happen. All these opportunities give SLPs the chance to be a more highly visible, integrated member of the school success team.

Still, SLPs will continue to be responsible for the communication skills of all children in public schools, such as those with intellectual disability, autism spectrum disorder, hearing impairment, and severe speech impairments. As Ukrainetz (2006) pointed out, SLPs may find their services needed *both* by students with recognized special needs *and* by students needing support within an RTI model, as a preventive measure. SLPs in work in settings that demand these dual roles may need to make adjustments in the organization of their delivery of services. We'll talk about some of these options in Chapter 12.

Determining Eligibility

One responsibility of the school SLP is to decide whether a student referred for speech-language services meets district eligibility criteria. Eligibility criteria, though, vary not only from state to state but in some cases from school district to school district. Just as we learned in Chapter 1 that there is no universally accepted definition of language disorder, there is no universally accepted criterion of eligibility for communication services in schools. Some states require a test score that is two or more standard deviations below the mean; others require two test scores that are 1.5 standard deviations below the mean, some a combination of test performance and severity rating, and so on (Moore-Brown & Montgomery, 2001). In districts that employ RTI, a student may be required to be tried at all three RTI levels before a referral for special education can be made.

Moreover, IDEA requires that whatever impairment the child has must adversely affect academic performance if services are to be provided. This requirement is interpreted rather broadly, though. Whitmire and Dublinske (2003) show that, because many state standards for academic proficiency include speaking and listening skills, children who have language problems may qualify for special educational services, even if their academic achievement is not significantly depressed by their communicative disorder. For example, even though residual speech errors on late-developing sounds such as /s/, /r/, and /l/ do not to carry great risk for literacy problems (Bishop & Clarkson, 2003), the presence of "speech/language impairment" as one category of disability eligible for special education services suggests that SLPs may include children with residual errors on caseloads, particularly if the errors affect social opportunities and acceptance. SLPs need to become familiar with the eligibility requirements and local proficiency standards of the school districts in which they are employed and learn to use these standards to find ways to provide services for all children with communicative needs.

Documenting Present Level of Educational Performance

When a student is deemed eligible for special educational services, the IEP includes a summary of the assessment information gathered on the child. A variety of areas are assessed by the educational team; these include intellectual functioning; readiness or academic skills; communicative status; motor ability; sensory status; health and physical status; emotional, social, and behavioral development; and self-help skills. Not every area needs to be assessed for every student, however. If deficits are restricted to speech and language, for example, present level of performance may be given in communicative areas alone. The law requires that multiple instruments be used, so that children are not identified as having a disability on the basis of only one test. Informal, observational, parent or teacher interview, and language sampling measures, as well as standardized instruments, can be part of this assessment, and information from previous assessments can also be used. The assessment of performance must also include information on how the child's disability affects participation and progress in academic and social environments. For schools that employ RTI models, much of this information may be gathered through the course of the child's participation in the various levels of RTI, thus economizing the new information that needs to be collected at the time of referral.

Writing Individualized Educational Plans

Once a child has been identified as having a special need in the area of communication, the next step is to establish goals and objectives to meet these needs, as identified in the assessment. These goals and objectives are incorporated into the IEP, which contains the components listed in Table 10-1.

Annual Goals

IDEA requires that annual goals be designed to help the child participate and make progress in the general curriculum. The annual goals are directly related to assessment data in the Present Level of Performance section. IDEA 2004 requires that present levels of performance and annual goals be linked to the general curriculum. The goals must be measurable and be achievable within 1 calendar year. Each goal should have five components (Bateman, 2006):

1. The <u>direction</u> of the intended change (increase/decrease/maintain)
2. The <u>area of deficit</u> (e.g., reading comprehension) or <u>excess</u> (e.g., articulation errors)
3. The <u>present level of performance</u> (e.g., at fifth percentile for grade on word reading)
4. The <u>expected annual ending level</u> of performance (e.g., performs at 20th percentile for grade on word reading)
5. The <u>resources</u> needed to accomplish the expected level of performance (e.g., one-to-one instruction; consultation with classroom teacher)

Goals are targeted for each of the areas assessed in which the child has a special educational need. Each area targeted is usually given a separate page on the IEP, and each annual goal in that area is given a section on the page. Beneath each annual goal, the short-term instructional objectives required to reach that goal may be listed. These objectives form the basis for monitoring the student's progress.

Short-Term Objectives and Benchmarks

Short-term objectives (STOs) are the discrete steps toward the annual goal. They comprise the task analysis for each annual goal, and are listed sequentially in the IEP. Objectives should conform to the "SMART" acronym (PACER Center, 1990): *S*pecific, *M*easurable,

TABLE 10-1   Required Components of the Individualized Educational Plans

Component	Description
Strengths & concerns	Parent concerns and priorities, as well as child's areas of relative strength are listed.
Evaluation results	Assessment results are reported and interpreted.
Present level of educational performance	The effect of the student's disability on participation and progress in the curriculum is reported.
Annual goals	Long-term goals related to meeting general educational curriculum or other educational needs that result from the disability are listed in each area of disability.
Short-term objective and benchmarks	Measurable, sequenced steps toward annual goals are detailed.
Amount of special education or related services	Projected beginning date, frequency and types of service, and an estimate of duration are given.
Supplementary aids and services	Describes how the regular educational program will be modified so that the child can participate, how services will contribute toward this participation in the general education curriculum, as well as in extracurricular activities. Also contains information about the types of related services needed (SLP, occupational therapy, etc.). These services may be direct, as in one-to-one therapy, or indirect, as in consultation to the classroom teacher by the SLP. Any assistive equipment the student might need to participate in the curriculum (such as a hearing aid or an AAC device) is also listed.
Participation in regular education environments (least restrictive environment; LRE)	The extent of the student's participation with students without disabilities in both educational and extracurricular settings is given. Accommodations might be included, such as support staff to help the child succeed in the setting, modifications in transportation and equipment, and behavioral interventions to manage problem behaviors in the classroom.
Test modifications	Modifications needed to participate in district-wide assessments of student achievement are given.
Transition services	Interagency responsibilities and community links to help student move toward adult placement are listed.
Notification of transfer rights	Documentation that the student has been informed of his or her rights when maturity is reached.
Evaluation procedures and measurement methods	How and when student progress will be measured (progress must be reported as often as it is for general education students). Progress must be evaluated at least once every 3 years, although it can be done more often. Assessment may be relatively short and may use existing data or observational records. Parents also must be informed of how the child's progress toward goals will be measured, and they must receive progress reports as least as often as children in regular education receive report cards. The reevaluation can have three possible outcomes: (1) continuation—if the student is moving toward goals as expected, the plan can be continued without changes; (2) modification—if small changes in the IEP are needed to maximize student progress but the changes are not significant enough to warrant another IEP meeting; or (3) revision—if the IEP must be rewritten with significant changes because of lack of or greater-than-expected progress that warrants the targeting of new goals or a reduction in services needed. Parents' consent must be obtained for the program to be changed.
IEP team members	Signatures of all IEP members, including parents, general education teachers, special educators, and administrators are needed.

Adapted from Moore-Brown, B., Montgomery, J., Bielinski, H., & Shubin, J. (2005). Responsiveness to intervention: Teaching before testing helps avoid labeling. *Topics in Language Disorders, 25(2),* 148-167.

*A*ttainable, *R*elevant, and *T*eachable. Each short-term objective has four components:

1. Conditions: the circumstances under which the behavior will be performed ("after identifying its story elements with the SLP;" "given a list of ten words and a list of meanings selected from science units")
2. Description of specific behavior ("Nick will complete a book report on a book chosen in collaboration between the teacher and the SLP;" "James will match the word to its meaning")
3. Criterion for measuring success or attainment of the goal ("that includes at least four of the five elements required for the class assignment;" "with 90% accuracy")
4. Evaluation procedure: the way the goal will be measured ("as measured by improvement in grades on book report assignments;" "as measured on end of unit tests")

Benchmarks describe the amount of progress a student is expected to make during each segment of the school year. They translate grade level standards into concrete things the student should be able to do and understand and mark progress toward the achievement of curricular standards. Each benchmark may contain several indicators, which describe what students will be able to do without teacher assistance on the way toward accomplishing the goal. Both STOs and benchmarks are used to specify the sequence of specific measurable behaviors that will be observed as a student makes progress from the current level of performance to the annual goal (O'Donnell, 1999).

Specifying Services, Modifications, and Accommodations

The IEP must state the amount and type of educational services the student will receive. However, it is important for SLPs to know that the law does *not* require that a specific number of hours of service per week be stated. Clinicians can be flexible in specifying the amount of service by, for example, planning for *daily* service over the course of a specified time period (for example, 1 month or 1 marking period), planning for consultation with general education teachers, co-teaching,

or specifying a number of hours of service over the course of a longer time period (say, 35 hours over the course of a semester), so that more and less intensive periods of intervention and monitoring can take place. For children over 14 years of age, transition planning to post-secondary settings must also be part of the IEP. In addition, other supports such as assistive devices, modification of transportation, test requirements, etc. should also be stated in the IEP.

Evaluation

Planning for evaluation of progress is also an important element. Most children on IEPs will be required to participate in district-wide testing, but other forms of evaluation of progress may also be used.

DELIVERING SERVICES WITHIN THE CURRICULUM

Under IDEA regulations, SLPs no longer work separately on a set of language goals and activities they develop on their own. Whether they work in individual "therapy" sessions, with a small group of students within a classroom activity, or alongside the classroom teacher in a collaborative model, language activities are drawn from the general education curriculum, and goals address helping the student progress through it, to whatever extent possible.

INCLUSION

The 2004 regulations place a greater burden on local education agencies (LEAs) to justify any placement that is not full-time in a mainstream classroom. However, this does not mean that every child must be placed in the general classroom all the time. The law requires that there be a continuum of services to meet the needs of children who are not placed in the mainstream full time. Moreover, the only alternative to full inclusion need *not* be a completely seg-regated program. Instead, there can be levels of involvement be-tween these two extremes. SLPs will be involved in determining the nature and extent of inclusion for their students, and in finding ways to provide appropriate services within the mainstream setting.

These issues will be addressed again at each of the developmental levels we will discuss for the school-aged student. But for now, let's get back to Nick. How can we define and characterize the language needs of children like him? What is the SLP's role in ameliorating their problems? We'll take these questions one at a time.

STUDENTS WITH LANGUAGE LEARNING DISABILITIES

Definitions and Characteristics

Before we start talking about what children with LLD are like, let's make sure we understand the terms often used to discuss them. Learning disability (LD) is perhaps the most general. IDEA 2004 defines learning disability as

> ". . . a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, *dyslexia*, and developmental *aphasia*."

However, learning disabilities do not include, ". . . learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage" [34 Code of Federal Regulations §300.7(c)(10)].

A more colloquial definition would be that LDs involve an unex-pected difficulty, relative to age and other abilities, in learning in school. *Unexpected* is usually taken to mean that there is no obvious explanation for the child's difficulty. So, as the IDEA definition states, the child may or may not have a hearing impairment, intel-lectual disability, emotional disturbance, autistic disorder, motor deficit, or lack of opportunity or experience, but even if these are present, they would not be sufficient to explain the learning problem. Many definitions of LD have traditionally included a discrepancy criterion. That means that eligibility for the label involved a signifi-cant discrepancy (and we saw in Chapter 1 how hard that is to agree upon!) between potential (usually meaning IQ) and achievement (usually measured by a standardized test of school performance) or between areas of development, such as between verbal and nonver-bal IQ. The discrepancy criterion has now fallen out of favor, for many of the reasons we talked about in Chapter 1. In fact, in the 2004 reauthorization of IDEA, the law specifically states that a dis-crepancy between test scores does *not* have to be the criterion for eligibility for LD. LEAs may, under the new law, choose a different criterion, such as lack of response to scientifically-based instruction. This provision of IDEA has opened the door for the use of RTI as a method both of preventing academic failure and as a means of iden-tifying children with learning disabilities.

Not all LDs are language-based. A student could have a specific learning problem in, say, mathematics or graphomotor skills that might not be based on a language weakness. But the U.S. Depart-ment of Education estimated in 2002 that 80% of children with LD have their primary difficulties in the language-based skills of read-ing and writing/spelling. For most children with LD, then, if other academic areas are affected, it is because of the underlying deficit in literacy. These LDs that affect primarily reading, writing, and spelling are the ones we will call *language-learning disorders*. We use this term to emphasize the fact that reading, writing, and spell-ing are language-based skills that draw on a foundation of oral language abilities. Students with LLDs have underlying weak-nesses in their oral language base, even when speech might sound OK to the "naked ear," and they often have histories of delayed speech and/or language development. We can think of LLDs, then, as one type—probably the most common type—of LD.

Another term in common use for the disorders we are calling LLD is *reading disorder,* or RD. Catts and Kamhi (2005b) use this term to refer to a heterogeneous group of poor readers whose weak language skills play a causal role in their reading difficulty. The "simple view" of reading (Kahmi, 2009), the view most prevalent among reading researchers today, holds that these reading disorders can be divided into two basic classes, as depicted in Figure 10-1. There we can see that children are given the label *dyslexia* when they have a deficit that primarily affects their ability to decode, or to translate letters into their corresponding sounds and synthesize the sounds to form words. The National Institute of Child Health and Development adopted this definition of *dyslexia* (Lyon, Shaywitz, & Shaywitz, 2003):

> Dyslexia is a specific RD that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word rec-ognition and by poor spelling and decoding abilities. These difficulties

Word Recognition

FIGURE 10-1 Classification of RD based on the Simple View of Reading (Adapted from Catts, Adlof, & Weismer, [2006]. Language deficits in poor comprehenders: A case for the simple view of reading. *Journal of Speech, Language, and Hearing Research, 49,* 278-293.)

typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

Contemporary summaries of the current state of research on dyslexia (Pennington & Bishop, 2009; Pennington & Lefly, 2001; for reviews, see Catts & Kamhi, 2005b; Goswami, 2009; Pennington & Bishop, 2008; Pugh & McCardle, 2009; Ramus & Szenkovits, 2009; Scarborough, 2003; Shaywitz & Shaywitz, 2005; Snow, Burns, & Griffin, 1998; Snowling, 1996; Snowling & Hayiou-Thomas, 2006; Snowling & Stackhouse, 1996; Vellutino et al., 2004; Vellutino, Fletcher, Snowling, & Scanlon, 2004) show that the root of this specific reading disorder has been quite firmly established as an inadequate ability in word identification due primarily to deficiencies in phonological skills, with the involvement of specific brain regions demonstrated through neuroimaging studies (see Frost et al., 2009; Noble & McCandliss, 2005; Shaywitz & Shaywitz, 2005 for review). Evidence for visual processing disorders as a cause of dyslexia is very weak; children with dyslexia don't reverse words and letters visually, as has been thought in the past. Instead, their primary difficulty is in the phonological awareness, memory, and coding skills that allow children to do phonemic segmentation and synthesis tasks, and learn to use the alphabetic principle—the understanding that words can be broken down into sounds and that letters stand for sounds which can be combined to produce words—to decode print. Other deficiencies in word recognition and reading comprehension stem from this basic difficulty in cracking the alphabetic code. A wide range of studies (e.g., Bradley & Bryant, 1985; Gillon, 2005b; Liberman & Liberman, 1990; Mann & Liberman, 1984; Noble & McCandliss, 2005; Scarborough, 2003; Schuele & Boudreau, 2008; Snowling & Nation, 1997; Stackhouse & Wells, 1997) has shown that phonological awareness is highly correlated with reading ability, and that treatment for phonological awareness is associated with increases in decoding skill (e.g., Ehri et al., 2001; Gillon, 2005b; Schuele & Boudreau, 2008).

Specific comprehension deficits, on the other hand, are those seen in children who typically have long-standing delays in oral language acquisition that affect their ability to comprehend language in any form, whether oral or written. These children may learn to decode in the first few grades and may manage early classroom texts normally, when their language content is simple and the demands on comprehension limited. These students run into difficulty in middle grades, when their weak oral language skills are inadequate to support the more complex content they need to process in grade-level reading material. Of course, some children may have both kinds of difficulties, as Figure 10-1 suggests.

So what's the difference between RD and dyslexia? Most current thinking, represented by Catts and Kamhi (2005a), Catts et al., (2006), Snowling (1996), Snowling and Hayiou-Thomas (2006), and Vellutino et al. (2004), holds that dyslexia is part of a continuum of language disorders. What differentiates dyslexia from a more general LLD or RD is that dyslexia involves a specific deficit in single-word decoding that is based in a weakness in the phonological domain of the oral language base and has only a secondary impact on reading comprehension. It is a disorder affecting just one aspect of the reading process: decoding. Children with LLD, on the other hand, can have problems with both single-word reading and comprehension, and not only of written language, but of oral language, as well. These comprehension problems are thought to stem from difficulties the child has not only in phonological processing but in other language domains, such as syntax and semantics. Children with more general LLDs often have a history of delayed speech and language development as preschoolers, whereas those with dyslexia often do not (Snowling, 1996). We can think of dyslexia as a specific subtype of RD, which is a common subtype of LLD.

Will all children who fail to make progress in RTI have LLD? Since use of RTI to prevent school failure is relatively new, we don't have a lot of hard evidence to answer this question. Essentially, though, if the theory behind RTI is correct, children who do not make adequate progress given the supports provided at Tiers II and III would be considered to have a learning disability that qualifies them for special education, by definition, since the definition of LLD is a difficulty in learning literacy that is unexplained by other problems and is not the result of poor instruction. In this sense, RTI is used to identify learning disabilities (National Joint Committee on Learning Disabilities, 2005). What about the converse? Will all children with LLD fail to make adequate progress in RTI? Again, this is partly a matter of definitions. If RTI is designed to separate children who just need a bit of extra help from those with biologically based learning disabilities, we would expect that children who can keep up with grade expectations given only the limited support Tiers II and III provide would *not* have a *bona fide* learning disability. But we won't know for sure, at least until these children are followed throughout their academic careers to determine whether problems continue to crop up after early school years. In any case, the good news is that RTI approaches give the SLP an opportunity to support not only those children with identified disabilities, but to use our knowledge of language across modalities to serve a broad range of children who struggle to learn to read for whatever reason, and to increase our contribution to their success in school.

What are the communicative characteristics that we'll see in children who do have language-learning disorders? A great deal of research has been done in recent years to describe these characteristics. Let's look at some of the typical problems seen in students with LLDs and talk about what they might mean for academic achievement.

Phonological Characteristics

School-aged children with LLD do not necessarily have obvious errors in their speech production, and their speech is generally intelligible. A good deal of research has examined the relationship between preschool speech delay and later reading problems. Generally, findings suggest a higher prevalence of speech disorders in children with LLDs than in the general population, with about 25% of children with LLD showing delayed speech development at school age, whereas only 4% to 6% of the general population does (Kuder, 1997; Pennington & Bishop, 2009). Hesketh (2004) and Leitao and Fletcher (2004) reported that, although most children with speech delays during the preschool period make adequate progress in reading once they get to school, a small number of them develop phonological awareness and literacy delays. Snowling, Bishop, and Stothard (2000) reported that reading outcomes are poorest for children with the most severe phonological disorders. As it is for other children, phonological awareness appears to be the best predictor of literacy achievement in these speech-delayed students. Stackhouse (1996) reports that these speech difficulties primarily affect the acquisition of spelling. Still, it is important to know that both Pennington and Bishop (2009) and Peterson et al. (2009) found that reading difficulties in children with a history of speech disorders were better predicted by their *language* skills (speech and language difficulties often go together in young children) than by their speech.

Even though children with LLD do not have significant articulation errors, they often show difficulty with speech perception, phonological memory and phonological awareness (Pennington & Bishop, 2009), as well as with complex phonological production in difficult words (such as *statistics*) or phrases ("Fly free in the Air Force"; Catts, 1986), or in repeating phonologically complex non-words (such as /tribabli/). Tests involving phonologically complex, multisyllabic words (such as *aluminum*) and unfamiliar nonsense words can be useful in identifying these children. Rvachew (2006) and Rvachew and Grawburg (2006) reported that speech-delayed children who have poor speech perception and low receptive vocabulary were at greatest risk. Rvachew advocates assessing both speech perception and vocabulary in making decisions about whether to provide intervention to prevent literacy difficulties in speech-delayed preschoolers.

Children with LLD have consistently shown problems with short-term memory tasks (Catts, 1989; Snowling, 1996). Bishop (1997) and Liberman and Liberman (1990) reported, though, that these deficits are restricted to memory for verbal material. Students with LLD generally have no difficulty with memory tasks involving nonverbal stimuli or environmental sounds. Moreover, children with LLD show weaknesses in the ability to do rapid naming and in non-word repetition tasks. When asked, for example, to say all the days of the week or to repeat nonsense words, such as *flipe* or *wid,* children with LLD perform more poorly than those with normal school achievement (Larrivee & Catts, 1999; Snowling, 1996; Wesseling & Reitsma, 2001). These problems may not sound phonological at first, but researchers believe that the source of this difficulty is in establishing and retrieving accurate phonological representations (or segmenting the words into sounds, then storing sound-by-sound auditory images and retrieving these images as a template for production) of verbal material. These same problems also are thought to be related to the word retrieval difficulties so commonly seen in children with LLD.

We can point to two important factors to remember about phonological skills in youngsters with LLD. First, phonological production may sound adequate; problems with phonological processing, including memory, perception, and complex production, that appear to be related to literacy can only be tapped by specially designed tasks. These include imitation of complex sound sequences, and activities that tap phonological awareness including segmenting words into constituent phonemes, counting sounds in words, producing words with one sound left out (such as *fun* without the /f/ sound), sound manipulation (such as reversing sounds in words), and sound categorization (such as identifying words that have the same last sound, like *men* and *dawn*), as well as nonsense word imitation and rapid naming assessments. Several measures have been devised to tap these abilities. They include *The Test of Phonological Awareness* (Torgensen & Bryant, 2004), *Test of Phonological Skills* (Newcomer & Barenbaum, 2004), *The Phonological Awareness Profile* (Robertson & Salter, 1995), *The Comprehensive Test of Phonological Processing* (Wagner, Torgensen, & Rashotte, 1999), and *The Lindamood Auditory Conceptualization Test* (Lindamood & Lindamood, 2004), to name a few. Tasks that ask children to produce rapid sequences of names, such as naming the months of the year, or to imitate nonsense words also are useful in this regard. The *Rapid Automatized Naming and Rapid Alternating Stimulus Tests* (Wolf & Denckla, 2004), as well as subtests from language measures such as the *Clinical Evaluation of Language Fundamentals* (Wiig et al., 2003) can be helpful here. Second, the research on phonological skills in children with LLD suggests that some of the deficits that appear to be related to memory or semantic ability may actually stem from these "underground" phonological skills, particularly the ability to segment, store, and retrieve words from memory on the basis of their phonological properties. This finding tells us that as we think about remediating skills such as word retrieval, we need to add phonological components to the intervention program.

Syntactic Characteristics

Deficits in comprehension and production of complex syntax also are widely reported in children with LLD (Catts, Fey, Zhang, & Tomblin, 1999; Eisenberg, 2007; Fey et al., 2004; Gerber, 1993; Nelson, 2010; Roth & Spekman, 1989; Scott, 2004; Tomblin, Zhang, Buckwalter, & O'Brien, 2003). They have particular trouble understanding sentences with relative clauses, passive voice, or negation (Kuder, 1997). Paul (2000c) suggested that school-aged children with LLDs tended to rely for a longer-than-normal time on comprehension strategies for processing passive sentences and those containing relative and adverbial clauses. For example, students with LLD persist in misinterpreting sentences such as "Before you brush your teeth, put away your towel," in which the order of clauses ("brush teeth," "put away towel") is the opposite of the intended order of events (first put away towel, then brush teeth). Typical children go beyond these strategies to full comprehension by 7 or 8 years of age. Students with LLD, though, continue to use strategies based on expectations of the way things usually happen or on word order throughout the elementary years and beyond.

Students with LLD do not make a large number of syntactic errors in spontaneous speech; error rates in children between 8 and 11 years of age decline from 11% to 3% in speech; although these rates are still significantly higher than the rates of peers (Eisenberg, 2007; Scott, 2004). Error rates in writing are much higher, however. Moreover, their language output is often perceived as "simple" or "immature" by adults around them. They may use fewer complex sentences, less elaboration of noun phrases with multiple modifiers

("that big, red barn"), prepositional phrases ("the house in the country"), and relative clauses ("the house that's in the country") (McCormick & Loeb, 2003). Verb phrases may be less complex (Eisenberg, 2007), containing few adverbs (such as *slowly*, *resentfully*) or combinations of auxiliary verbs ("could have been running"). Their sentences may actually be longer than those of peers, because they use fewer complex forms to condense their expression (Kuder, 1997). They show lower rates of subordination, embedding and elaboration of phrases in speech, and fail to increase these rates in writing as typical peers do (Eisenberg, 2007; Scott, 2004). Gerber (1993) reported that children with LLD have basic, functional syntactic skills but that their sentences are less elaborated than those of age-mates, and they may not encode all the relevant information within their utterances. In addition, they show reduced fluency, flexibility, and productivity in their grammatical forms than typical peers (Eisenberg, 2007).

Morphological problems also are common, accounting for two-thirds of the syntactic errors in the speech of students with LLD (Eisenberg, 2007; Scott, 2004), particularly in morphemes that are hard to hear (McCormick & Loeb, 2003; Wiig, 1990b), and typically acquired late (Kuder, 1997). Oetting & Hadley (2009) report that most problems in spoken verb morphology resolve by age 8 in these children, but these errors continue, and are especially prevalent in writing (Scott, 2004). Examples of these morphemes include those with "s," such as plurals, possessives, and third-person singular; comparatives and superlatives; irregular forms; and advanced prefixes and suffixes *(-ly, un-, re-, dis-, -ment, -able, -ness)*. Other error types are also seen in speakers with LLD. These include difficulty with pronoun reference, subject-verb agreement, as well as problems with coordination and subordination (Scott, 2004). Still, many children with LLD do not exhibit any discernible problems with syntax. Doehring, Trites, Patel, and Fiedorowicz (1981) reported that only 50% of students with LLD demonstrated syntactic deficits.

Semantic Characteristics

Children with LLD have small vocabularies that are restricted to high-frequency, short words (Catts et al., 1999; Kuder, 1997). However, Snider (1989) pointed out that school-age children with normal development acquire many new vocabulary items through reading rather than through conversation. So vocabulary deficits in students with LLD are likely to be, at least in part, the result rather than the cause of reading problems. In addition to small vocabularies, other semantic problems are commonly reported in students with LLD. Knowledge of word meanings is often restricted, with poor development of associations among words and of categorization of words into semantic classes. Difficulties with multiple-meaning words also are typical of students with LLD. Excessive reliance on nonspecific terms (*thing*, *stuff*) and special difficulty with relational and abstract words have been reported as well (Wiig & Semel, 1984). Word-retrieval difficulties also are widely noted (see Catts & Kamhi, 2005b; Gerber, 1993; Kuder, 1997; McGregor, 2009, for review). These difficulties include decreased speed and accuracy in confrontation naming and word-finding problems, characterized by substitution and circumlocution in spontaneous speech. Again, not all children with LLD display these problems. Furthermore, the problems may be related not only to lexical deficits, but also to the difficulties with retrieval of phonological codes from memory, as discussed earlier (German & Newman, 2004), as well as with working memory deficits (McGregor, 2009).

Beyond the word level, other semantic problems are often seen in children with LLD. These include difficulties in understanding complex oral directions (Murray, Feinstein, & Blouin, 1985); difficulties producing and understanding figurative language, such as metaphors, similes, and slang (McGregor, 2009; Nippold, 1998; Roth & Spekman, 1989); and in producing narratives (Catts et al., 1999; McGregor, 2009). Trouble integrating meaning across sentences (Klein-Konigsberg, 1984) also is seen. That is, some children with LLD seem to be limited in their capacity to process semantic information. They can understand information from one or two sentences as well as age-mates but have difficulty integrating information from larger discourse units.

Pragmatic Characteristics

Conversation

Many children with LLD have limited verbal fluency (Oetting & Hadley, 2009). They don't talk much, and what they say is brief and unelaborated. Damico (1991) suggested that the speech of students with LLD is particularly prone to disruptions, such as false starts, mazes, and other forms of dysfluency. Several researchers (Brinton, Fujiki, & Sonnenberg, 1988; Donahue & Bryan, 1983; Meline & Brackin, 1987) have reported that the language used by students with LLD is often more hostile, less assertive, less persuasive, less polite and tactful, and less clear and complete than that of peers. Students with LLD are less likely than peers to respond to conversational bids (Fujiki & Brinton, 2009), less sensitive to the needs of their listeners, often give incomplete or inaccurate descriptions or have trouble adjusting their speech to the age or social status of their audience (Kuder, 1997). Furthermore, these studies suggest that many children with LLD have trouble clarifying miscommunication and requesting clarification of inadequate messages, and show poor topic maintenance (Kuder, 1997). Fujiki & Brinton (2009) argue that while some of these deficits in pragmatic use of language may be attributable to limitations in language structure, there are children in whom pragmatic problems seem to go beyond those attributable to their structural difficulties. Some pragmatic deficits are seen even in students who do not have documented impairments in semantics and syntax (McCord & Haynes, 1988). In fact, conversational pragmatics may be the area of the most significant deficits in the oral language of some students with LLD (Hart, Fujiki, Brinton, & Hart, 2004). These findings stress the importance of evaluating pragmatic skills when assessing communication in students with LLD.

Other Discourse Genres

Students with LLD also often demonstrate difficulties with processing and producing other types of discourse besides conversation. Westby (2005) discussed the notion that discourse genres can be thought of as falling along a continuum of formality. This continuum extends from the least formal oral, conversational style on one end to the highly formal, literate style on the other. Literate discourse styles are those found in written and other formal modes of communication, such as those used in scientific papers, essays, sermons, and lectures. Literary language differs from basic oral conversation in several ways. One is its degree of contextualization. Oral language is generally highly contextualized. Much information that supports the exchange, such as objects being discussed, facial expressions, gestures, and intonational cues, are present in the immediate environment. Literate language, on the other hand, is highly decontextualized. Virtually all the information needed for comprehension is present within the language itself, and little support is available outside it. These two extremes also differ in function, topics, and forms. Table 10-2, as well as Ukrainetz and Gillam (2009), describes some of these additional differences.

TABLE 10-2 Differences between Oral and Literate Language

	Oral Style	Literate Style
Function	To regulate social interactions. To request objects and actions. To communicate face-to-face with a few people. To share information about concrete objects and events.	To regulate thinking. To reflect and request information. To communicate over time and distance. To transmit information to large numbers of people. To build abstract theories and discuss abstract ideas.
Topic	Everyday objects and events. Here and now. Topics flow according to associations of participants. Meaning is contextually based.	Abstract or unfamiliar objects and events. There and then. Discourse is centered around preselected topic. Meaning comes from inferences and conclusions drawn from text.
Structure	High-frequency words. Repetitive, predictable, redundant syntax and content. Pronouns, slang, jargon. Cohesion based on intonation.	Low-frequency words. Concise syntax and content. Specific, abstract vocabulary. Cohesion based on vocabulary and linguistic markers.

Adapted from Westby, C. (1991). Learning to talk—talking to learn: Oral-literate language differences. In C.S. Simon (Ed.), *Communication skills and classroom success: Assessment and therapy methodologies for language- and learning-disabled students* (Table 13-1, p. 337). Eau Claire, WI: Thinking Publications.

Westby (2005) suggested that narrative discourse falls midway between these two extremes. It does this because it relies on a very familiar structure, a "story grammar" (Box 10-3) that provides support for comprehension. Narratives differ from conversation in that they are essentially monologues rather than dyadic, but they can contain dialogue that is similar in informality to conversation. Because it covers this "middle ground" between familiar oral language styles and more difficult literate forms, Westby has argued that narrative skills can form a bridge from oral to literate language. Research on narrative skills (Bishop & Edmundson, 1987;

Boudreau, 2006, 2008; Feagans & Applebaum, 1986; Tabors, Snow, & Dickinson, 2001) has demonstrated that they are significant in predicting success in school. The development of narrative skills, then, would seem to be important in maximizing the chances for academic accomplishment in students with LLD.

Narrative discourse skills have been studied extensively in typical students and in those with LLD. These studies start from the premise that stories told by members of mainstream North American society have a more or less typical structure, which has been labeled a "story grammar." A variety of ways of schematizing this grammar have been presented in the literature. Stein and Glenn's (1979) scheme is presented in Box 10-3.

It is important to remember, though, that different cultures have different ways of telling stories (Fiestas & Pena, 2004). Chapter 5 outlined some non-Western storytelling styles. Although it is important for students in our schools to learn to use the mainstream story form, we should not assume that children from culturally different backgrounds are deficient if they tell a different style of story (O'Connell, 1997). Assessment of narrative skills in these children can follow some of the guidelines we discussed in Chapter 5. Using a Parent-Child Comparative Analysis (Terrell, Arensberg, & Rosa, 1992), for example, we can compare the story of a child from a culturally different home with a story sample from an adult in that culture to determine whether narrative deficits are present. Alternatively, we can ask an adult from the home culture to evaluate a story told by a child of the same culture, or use dynamic assessment to collect narratives before and after mediation (Pena et al., 2006). Still, even when cultural differences account for differences in narrative style, competence with mainstream story structures is nonetheless important for success in school. If a child with LLD from a culturally different background is having trouble producing and understanding stories in school, attention to the standard story grammar in the intervention program can be helpful, as long as we remember to present this form as another way of telling stories, not a "better" way. If a child from a culturally different background without other language or learning problems is having the same difficulty, the clinician might work with the classroom teacher to expose the student to a series of storybooks containing increasingly mature mainstream narrative forms.

BOX 10-3 Story Grammar

Story = Setting + episode structure.
Episode = Initiating event + internal response + plan + attempt + consequence + reaction.
Setting—introduces the main characters, the protagonist, and the context of time and place.
Initiating event—the occurrence that influences the main character to action. It may be a natural event, an action, or an internal event, such as a thought, perception, or wish.
Internal response—indicates the thoughts and feelings of the main character in response to the initiating event. It may include an interpretation of the event, formulation of a goal, or some other response.
Plan—indicates the intended action of the main character.
Attempt—indicates the actions of the main character in pursuit of the goal.
Consequence—indicates the achievement or nonachievement of the main character's goal, as well as any other events or states that might result from the attempt.
Reaction—includes any emotional or evaluative responses of the main character to the preceding chain of events.

Adapted from Johnston, J. (1982). Narratives: A new look at communication problems in older language-disordered children. *Language, Speech, and Hearing Services in Schools, 13,* 144-155; Stein, N., & Glenn, C. (1979). An analysis of story comprehension in elementary school children. In R. Freedle (Ed.), *New directions in discourse processing,* vol. 2 (pp. 53-120). Norwood, NJ: Ablex.

Understanding stories requires more than just repeating information heard or read. While literal comprehension involves recalling information explicitly stated, much of what it takes to make sense of a story has to be read "between the lines" (Westby, 2009). For example, what if a story starts out, "She was outside riding her bike when she heard the flapping of wings under the bushes. Tears came to her eyes. She ran inside to get a shoe box"? Literal comprehension would involve remembering that the sound came from under the bushes, and the girl was riding a bike when she heard it. But most of us would also be able to infer that the story is about a girl who finds and rescues an injured bird. The comprehension skills involved in drawing this conclusion are called *inferential comprehension,* because they require us to put together information given to infer something that is not directly stated. Bishop (1997), Letts and Leinonen (2001), and Westby (2009) report that children with LLD have difficulty with both literal and inferential comprehension in narratives.

Roth (1986) reported that difficulty in recall of stories by children with LLD also is characterized by (1) poor understanding of temporal and causal relations, (2) dearth of detail, (3) errors in information, and (4) decreased length of retelling. In terms of the ability to generate stories, a variety of deficits have been found in students with LLD. Newman & McGregor (2006) reported that both teachers and lay people identified deficits in the narratives of children with LLD and that objective measures of story length, grammaticality, and thematic development differentiated LLD storytellers from typical story tellers. Liles (1987) and Ripich and Griffith (1988) reported difficulty with cohesive devices, such as pronouns and conjunctions, although not all students with LLD had these problems. Even though students with LLD seem to have a grasp of the basic story grammar structure, such as that summarized in Box 10-3, Newman & McGregor (2006), Gerber (1993), and Westby (1989b) all reported that these children tell shorter stories with fewer complete episodes, fewer complex sentences, more limited vocabulary, and less overall organization. Difficulty in the use of linguistic structures in productive narrative tasks—including utterance length and cohesive adequacy, (Bishop & Edmunson, 1987; Liles, 1985; Liles & Purcell, 1987; Paul & Smith, 1993; Pearce, McCormack, & James, 2003)—is also reported. Montague, Maddux, and Dereshiwsky (1990) found that students with LLD used fewer internal responses and showed less attention to characters' feelings and motivations than did normally achieving students in storytelling tasks. Difficulties in the linguistic structure of narratives, including deficits in lexical diversity, correct use of morphological structures, proportion of complex syntax, and fluency have been noted (Boudreau, 2006; Reilly, Losh, Bellugi, & Wulfeck, 2004). Additionally, children with LLD also experience difficulty in constructing or retelling narratives, including recall of fewer information units, propositions, utterances, and story grammar components; as well as difficulty with text cohesion (Boudreau & Hedberg, 1999). Ukrainetz and Gillam (2009) showed that children with LLD provide less expressive elaboration of narratives, rendering their stories less "artful" than those of peers.

Applebee (1978) characterized the development of narrative skills in children as progressing through a series of stages. A modification of Applebee's system that has been used in research on children with language and learning disorders (Klecan-Aker & Kelty, 1990; Paul, Hernandez, Taylor, & Johnson, 1996; Paul, Laszlo, & McFarland, 1992) is presented in Box 10-4. Paul, Hernandez, Taylor, and Johnson (1996) found that, by first grade, children with normal language development were producing stories at stage four

or five in this sequence, whereas children with a history of language delays during the preschool period produced stories at significantly lower levels of maturity, generally around stage three. Because narrative skills are known to be related to success in school, findings such as these suggest that children with low levels of narrative development may be at risk for academic problems. This finding, in turn, suggests that narrative skill is one area that is important to assess in children with LLD. Although many older students with LLD produce true narratives, their progress toward this level may be slower than normal. If deficits in narrative maturity are found through narrative assessment, narrative skills could be a useful part of the intervention program. The aim would be to use narrative skills to build the bridge from oral to literate language.

Another type of discourse that can cause problems for students with LLD is the *expository* text (Scott & Windsor, 2000; Ukrainetz, 2009; Westby, 2005). Expository texts fall at the most literate end of the continuum of language styles. This genre provides the least contextual support and relies most heavily on purely linguistic processing. Expository texts don't tell a story. They are explanations and descriptions that usually contain information new to the receiver. This means that strategies of applying prior knowledge to comprehend the text ("top-down," or concept-driven, strategies) are not effective. Instead, the listener or reader must attend to the individual facts and details to get the meaning ("bottom-up," or data-driven, processing). This puts an extra load on memory and other information-integrating processes, since there isn't a readily available structure or framework, like a story grammar, to which to attach the information. Instead, the listener or reader has to remember all the pieces of information, organize them into some kind of schema relating to their content, then search for some kind of structure in the text to facilitate integrating the new information with what he or she already knows (Nelson, 2010; Westby & Clauser, 2005).

In primary grades, most information is conveyed through narrative formats, even in content areas such as science and social studies. By the time children reach intermediate grades, however, many textbooks are written in expository rather than narrative form, and the further students progress in school, the more expository text they encounter (Otto & White, 1982). Saenz and Fuchs (2002) reported that expository texts are more difficult to comprehend than narrative for students with LLD. We will discuss the assessment and remediation of expository text deficits in the chapters on advanced language.

There are additional text structures that students must eventually master, including *persuasive* or *argumentative* genre (Scott and Erwin; 1992), as well as the logical argument (Ukrainetz, 2007). These involve the attempt to convince a listener of something and are some of the latest discourse forms to be acquired. This alone suggests that they will be areas in which students with LLD will have considerable difficulty.

Social/Emotional Characteristics

A range of studies (e.g., Bryan et al., 2004; Elias, 2004; Elksnin & Elksnin, 2004) show that students with pragmatic deficits could be expected to have difficulty with the social interactions that pragmatic skills support. In general, children with LLD have been shown to be less accepted by peers, have poorer social skills and higher levels of problem behaviors than children with typical school achievement (Weiner, 2002). These students experience rejection by peers, have difficulties in developing reciprocal friendships and gaining admittance to social groups; when they do join a

BOX 10-4   An Adaptation of Applebee's System for Scoring Narrative Stages

STAGE 1 (Heap Stories)
Heaps consist primarily of labels and descriptions of events or actions. There is no central theme or organization among the propositions. Sentences are usually simple declaratives. Stories at this level are used by normally developing children at 2 or 3 years of age.

Example: "Mercer went out his home. He got to the playground. Then he found a frog. Then he fell off the cliff. Frog is in the water. Doggy pulls on a stick. A boy is mad. Then he called the police. Then he rested. And then he goed in jail."

STAGE 2 (Sequence Stories)
Sequences consist of labeling events around a central theme, character, or setting. There is nothing that could be considered a plot; rather, there is a description of what a character has done. One event does not necessarily follow temporally or causally from another. Stories at this level are used by normally developing children at 3 years of age.

Example: "Little boy. Tree, frog. Tree, person, dog, bucket, and tree that he climbing on, bucket and dog. They fell off. Then they ran down the hill and trip down. And then the frog was happy. And then the dog was swimming. Then there was a dog happy. Then there's a frog sitting on the tree. So they went to the tree that fall into the water where the frog is. And then the boy caught the dog. Lookit, the dog's in the net! And then the dog go."

STAGE 3 (Primitive Narratives)
Stories have a core or central person, object, or event. They contain three of the story grammar elements: an initiating event, an attempt or action, and some consequence around the central theme. But there is no real resolution or ending and little evidence of motivation of characters. Stories at this level are used by normally developing children at 4 to 4½ years of age.

Example: "Find a frog. He sees a frog. He fell. And the frog hopped. And he catched the dog. Frog hopped again. Then he went away. The boy was angry. And the frog was pretty nervous. Then he followed the foot track."

STAGE 4 (Chain Narrative)
Stories show some evidence of cause-effect and temporal relationships, but the plot is not strong and does not build on the attributes and motivations of characters. The ending does not necessarily follow logically from the events and may be very abrupt. Four story grammar elements are present. They usually include those found at the primitive narrative level: initiating event, attempt or action, and some consequence around the central theme. Some notion of plan or character motivation may be present. Stories at this level are used by normally developing children at 4½ to 5 years of age.

Example: "A boy went for a walk with his dog to fetch water and catch fish. There was a frog. He caught the frog. The boy fell in because he tripped on the dog. The dog fell in too. The frog hopped onto a lily pad. The frog fell off. And the boy tried to catch the frog. And the boy actually caught the dog. The frog climbed onto a rock. The boy called him. They went away. The frog was sad. The frog followed him. He followed him into his house. And the frog was on the dog's head."

STAGE 5 (True Narrative)
Stories have a central theme, character, and plot. They include motivations behind the characters' actions, as well as logical and temporally ordered sequences of events. The stories include at least five story grammar elements, including an initiating event, an attempt or action, and a consequence. The ending indicates a resolution to the problem. Stories at this level are used by normally developing children at 5 to 7 years of age.

Example: "There was a little boy. And he wanted to get a frog. And he brought his dog. He saw a frog in the pond. He ran to catch it. But he tripped over a log. And he fell in the water. But the frog jumped over to a log. He told his dog to go try to get the frog. He almost caught the frog. But instead, he caught his dog. When he saw what he caught, he was mad. The little boy, he yelled to the frog. Then the boy went home and left the frog. The frog was sad alone. Then he followed the boy's footprints until he got into the house. Then he kept following them into the bathroom where the little boy took a bath with his dog. 'Hi,' said the frog. Then the frog jumped in the tub. And they were all happy together."

Adapted from Applebee, A. (1978). *The child's concept of a story: Ages 2 to 17*. Chicago, IL: University of Chicago Press; Klecan-Aker, J., & Kelty, K. (1990). An investigation of the oral narratives of normal and language-learning-disabled children. *Journal of Childhood Communication Disorders, 13*, 207-216; Paul, R., Lazlo, C., & McFarland, L. (Nov., 1992). *Emergent literacy skills in late talkers*. Mini seminar presented at the annual convention of the American Speech-Language-Hearing Association, San Antonio, TX; Wallach, G., & Miller, L. (1988). *Language intervention and academic success*. Boston, MA: College-Hill Publications; and Westby, C. (1984). *Development of narrative language abilities*. In G. Wallach & K. Butler (Eds.), *Language-learning disabilities in school-aged children* (pp. 103-127). Baltimore, MD: Williams & Wilkins. Examples of children's narrations from Mayer, M. (1967). *A boy, a dog, and a frog*. New York: Dial Books for Young Readers.

group, the groups tend to be disproportionately those of companions who show high levels of problem behavior (Pearl, 2002). Brinton et al. (2007) reported that children with LLD did not understand the impact of displaying emotion on relationships and seemed to lag behind typical children in developing emotion knowledge. Fujiki, Brinton, Isaacson, and Summers (2001) showed that children with LLD were more withdrawn than peers with typical development (TD). Moreover, these children show increased levels of loneliness and depression relative to typical peers (Margalit & Al-Yagon, 2002). Clearly, work on pragmatic skills for these students will need to focus on improving their social interactive abilities.

In addition to these social difficulties, students with LLD, particularly boys, have been shown to have greater difficulties in regulating their emotions than typically achieving children (Bauminger, 2008; Fujiki, Brinton, & Clark, 2002), a problem that can lead to difficulties in classroom behavior.

Background Knowledge

Catts (2009) and Snyder (2010) discuss the importance of "domain-specific" knowledge in reading comprehension. They argue that one reason many students have difficulty understanding what they read is that they lack information about the specific topic of the reading material. Just as much vocabulary is learned through reading during the school years, a lot of what we know about the world comes from reading, too (Catts & Kamhi, 2005b). If students are not reading or are having trouble understanding complex verbal

material so that reading comprehension is limited, how are they going to gain this new knowledge? They're not. As time goes on, students with LLD can fall further and further behind peers in terms of knowledge about the world. This deficit in world knowledge in itself limits learning. Since we learn essentially by relating new information to our existing background store, the smaller that background knowledge store is, the less easily new information can be added. It's a spiral that leads to increasing gaps in the knowledge base that students can apply to new information. Stanovich (1986) called this the "Matthew" effect, because as the Gospel according to Matthew tells us, the rich get richer and the poor get poorer. This suggests that as we work with students with LLD, we want to find ways to augment their knowledge about the topics of their curricular reading material, though oral language activities, as well as exposure to information in multiple modalities—including visual, digital, and experiential (Westby, 2010)—as we work on specific language goals. An enlarged knowledge base provides a foundation for more rapid acquisition of new information.

Attention and Activity

Unfortunately, many students who have learning problems also have behavioral and emotional difficulties that make it harder for them to take advantage of the instruction, both regular and special, that they receive (Ratner, 2004). We usually do not know whether the learning disorder is caused by these behavior problems, or vice versa, or whether something else entirely is causing both. For whatever reason, though, many students with LLD also qualify for diagnoses of behavior disorders or emotional disturbances such as those discussed in Chapter 4. The most common disorder associated with LLD is what mental health specialists call *attention-deficit hyperactivity disorder,* or ADHD (Tetnowski, 2004).

ADHD consists of a difficulty in marshaling attention, in knowing what to direct attention to and what to ignore, and in focusing on foreground information while filtering out background distractions. Children with attention disorders are easily distracted and have short attention spans, low frustration tolerance, inability to recognize the consequences of their actions or learn from mistakes, and difficulty organizing and completing tasks (Blum & Mercugliano, 1997; Damico, Tetnowski, & Nettleton, 2004). They appear forgetful, lose things, and behave impulsively. Some of these students also exhibit hyperactivity, which includes being fidgety and squirming constantly as well as being unable to sit still or seeming to have "ants in their pants." They are restless and run or climb excessively in inappropriate situations.

Not all students with LLD are emotionally disturbed, hyperactive, or inattentive, but a good number are. Although Tetnowski (2004) suggests it is difficult to determine the overlap of communication disorders and ADHD with any certainty, the overlap certainly exists. Forness, Youpa, Hanna, Cantwell, and Swanson (1992) estimated that 25% of students with LLD have associated behavioral or socioemotional disorders. Finneran, Francis, and Leonard (2009) suggest that children with language impairments who fail to meet full diagnostic criteria for ADHD often show reduced capacity, at a subclinical level, for sustaining attention. What this means for the SLP is that working with students with LLD may not always be easy (just in case you thought it would be!). They may not always be the docile, attentive students who can pick up what we are trying to teach them the first time around. It will be important to recognize the students who have these kinds of attentional difficulties so that

their special needs can be addressed in an educational program. We talked in Chapter 4 about strategies for addressing problems in attention and activity within the communication management plan. These strategies often include a combination of medication and behavioral interventions. A substantial portion of students with LLD need these special program considerations.

Summary

We've seen that students with LLD commonly have problems in a variety of language domains. Many students with LLD continue to have "underground" deficits in phonological processing, even when phonological production sounds OK. These phonological processing deficits are thought by many researchers to have an important impact on learning to read. Some of the semantic deficits commonly observed in students with LLD also may be related to these higher-level phonological-processing problems. Some students with LLD have difficulties with advanced syntax and morphology, but many do not have obvious or measurable errors in this area. Rather, their language production may simply be less fluent and complex than that of their peers. For students with LLD, pragmatics may be the area in which the majority of obvious deficits reside. They may be less adept than peers at ordinary conversation and probably have difficulty comprehending and producing the discourse structures nearer the literate end of the oral-literate continuum of discourse styles. These genres, such as narratives and expository texts, are necessary for success in the classroom. The general knowledge base of students with LLD also may be limited. Some have attention deficits, are restless and overly active, or have emotional problems that affect their ability to perform in school. These problems suggest areas of assessment and intervention beyond the traditional vocabulary, morphology, and sentence structures. To address the needs of students with LLD, then, we need to know where to look for their oral language problems to identify and remediate their difficulties. The characteristics of the LLD population that we've discussed here should help guide this process.

LANGUAGE, LEARNING, AND READING: WHAT'S THE CONNECTION?

We've seen that students such as Nick, who have difficulty succeeding in school even though they seem to have acquired basic oral language skills, commonly come to the attention of the SLP. We've talked about some of the oral language deficits typical of students like Nick as a way to answer the question: how can we characterize the language of children with LLD? Let's look now at the kinds of oral language skills that are needed for success in the classroom and how oral language skills relate specifically to the development of literacy. Then we will be in a better position to answer a second question: what is the SLP's role in ameliorating the deficits of children with LLD?

The Role of Oral Language in Classroom Discourse

Teacher Talk and the Hidden Curriculum

School talk is different from the kinds of conversations we have with friends and family (Christie, 2003). Wallach (2004) recently discussed the special requirements of classroom discourse.

In school, the teacher chooses the topic and students must comment on that topic, not one of their choosing. Students who do attempt to shift the topic to their own interests often find their remarks rejected or disvalued. Turn-taking rules in the classroom are quite different from those in other settings, too. The teacher decides who gets to talk, when, and for how long. Students, to be considered successful participants in classroom discourse, must learn to read subtle verbal and nonverbal cues about when they should volunteer to speak, what they should say, and when they should relinquish the floor. Westby (1998a) stressed that, in order to succeed in school, students have to be able to draw on two sets of knowledge at the same time: their knowledge of academic content (the right answers to teacher questions) and their knowledge of the social communication rules of the classroom.

Hoover and Patton (1997) pointed out that only a small part of the structure of the classroom discourse is ever verbalized by the teacher. The rest is part of the "hidden curriculum," the unspoken set of rules and expectations about how to behave and communicate in the classroom setting (Westby, 2007). For example, Cazden (2001) reported that the typical structure of classroom discourse follows the *initiation-response-evaluation* (IRE) format: *i*nitiation of a topic by the teacher, followed by a *r*esponse by the student, which then undergoes *e*valuation by the teacher (*I*: "What is the capital of California . . . Jose?" *R*: "Sacramento." *E*: "That's right, good job."). Students who fail to realize that adhering to this structure is part of the expectation of the classroom are often perceived by teachers as rude, difficult, or unable to learn. Yet their real problem may be an inability to grasp that this context has a different set of discourse structure rules than other contexts with which they are familiar, or to learn the differing rules that apply in different classroom contexts, such as whole class versus small group lessons (Peets, 2009). Donahue (1994) reported that for many students with LLD, difficulties with classroom discourse are more likely to be the trigger for referral for special education than is academic failure. This finding emphasizes the crucial role of mastering classroom discourse rules for success in school. As Donahue pointed out, inability to adapt to classroom discourse rules not only reflects but also contributes to failure in the classroom. That's because students who are not good at the "hidden curriculum" have restricted access to the kinds of learning experiences available in peer and teacher dialogues that lead to success in the academic curriculum (Nelson, 2009).

Classroom discourse patterns must be inferred for each instructional situation.

Decontextualized Language

Another difficulty with classroom language is that a great deal of it is decontextualized. In ordinary conversation, we often talk about things in the immediate environment, such the ingredients we need to cook dinner, or about topics on which all the participants have a great deal of shared knowledge, such as the members of our extended families and their doings. In school, though, much of what is discussed is quite outside the direct experience of the students, not to mention its being literally outside the immediate context of the physical environment. At home, families might talk about where Dad's shoe is. In school, teachers talk about where Australia is. A child who comes to school without much experience of such kinds of decontextualized language will find the discourse of the classroom especially difficult.

Dickinson, Wolf, and Stotsky (1993) reported that, although children from a variety of social and economic backgrounds have ample opportunities to develop adequate semantic and syntactic skills through ordinary parent-child interactions, the same is not true of opportunities to develop the discourse skills that are helpful in school. Children from middle-class families (regardless of their racial or ethnic background) are more likely than peers from low-income groups to have participated in oral language interactions at home that contribute to the development of decontextualized language skill. These interactions include narrations about personal experiences that middle-class parents both tell to and elicit from their children, as well as extended explanations of objects, events, and word meanings.

Although middle-class families in general engage in more such interactions than low-income families, it is important to remember that there is great individual variation within each group. In addition, Curreton et al. (2008) showed that low socio-economic status mothers could be taught to increase their use of decontextualized language in storytelling activities. The important thing for us as clinicians to know is this: if children are having trouble participating in classroom discourse, in spite of marginally adequate semantic and syntactic abilities, they may need additional experience and practice with decontextualized language. If, for whatever reason, a child has not gotten such experience at home during the preschool years or was unable to take advantage of it because of slowly developing basic language skills, part of our role can be to provide such experience and practice, and to help parents learn to provide similar experience in the home.

Classrooms and Culture Clash

Remember, too, that classroom discourse is a structure peculiar to our mainstream Western culture. For students entering school from culturally different backgrounds, the structure of classroom discourse is likely to be especially unfamiliar (Hammer, 2004; Westby, 2007). Differing expectations about a child's conversational role in the home do not necessarily represent a deprived environment. As shown in Chapter 5, different cultures use language for different purposes, and each culture has its own rules about how children, specifically, are to participate in linguistic interactions. A classic example comes from Phillips (1972). Native American children, in her example, refused to respond when a teacher asked them to correct the answer of another ("No, the capitol of California isn't San Francisco. Can you help her, Jim?"), because a display of knowledge and correction of a peer would be considered rude in their language community. Similarly, Schultz, Florio, and Erickson (1982) explained that the school requirement

Language forms the basis for success in the classroom.

that only one speaker talk at a time may be very different from the norm in some children's homes, where overlapping talk by multiple speakers is the rule. The knowledge of the way to talk in school, as we've said, is often assumed by teachers and never taught explicitly. Yet this "hidden curriculum" may be vastly different from the experience of language use with which a student comes to school.

Metalinguistic Skills

In addition to the ability to understand decontextualized language and to discern and adhere to the "hidden curriculum," other special language abilities are needed for success in school. Metalinguistic skill, the ability to use language to talk about language (Homer, 2009) is one example. Much of what goes on in the curriculum involves the ability to focus on and talk about language (Westby, 2005). Defining words; recognizing synonyms, antonyms, and homonyms; diagramming sentences and identifying parts of speech; recognizing grammatical and morphological errors in the process of editing writing assignments; recognizing ambiguity in words and structures with multiple meanings; and the metalinguistic skills needed to acquire reading and spelling competency all require an awareness of language beyond the ability to use words and sentences to communicate. We've already talked about the relations between phonological awareness and the acquisition of literacy. Wolter, Wood & D'zatko (2009) have shown that at least one other level of metalinguistic awareness, awareness of morphology, is also related to performance on reading and spelling in typical first grade children. As Webster and Plante (1992) suggested, such heightened levels of awareness may not have developed in school-age children who have just barely mastered the basics of oral language. The metalinguistic demands of the curriculum may cause problems for such children. Again, preschool experiences with talking about words and sounds at home make a big difference in the degree of metalinguistic awareness with which a child enters school (Bowey & Francis, 1991; Vellutino et al., 2004; Watson, 2003).

Metacognitive Skills and Self-Regulation

One last area of special language skill that is necessary in the classroom is the ability to reflect on, talk about, and manage one's thinking processes. Succeeding in academic settings requires the student to figure out what needs to be done to accomplish a task, create a plan, carry it out, and evaluate whether the task has been completed successfully. Moreover, the successful student needs to control impulses, such as urges to do something more appealing

than the current assignment may be. All these actions require meta-cognitive and self-regulatory ability.

Comprehension monitoring is one aspect of metacognition, and it is much more central to success in the classroom than to success in ordinary dyadic conversation, which provides so many more contextual cues for the person who is doing the comprehending. Elementary school students spend more than 50% of their time in school listening to the teacher, and high school students spend more than 90% of their time doing the same thing (Griffith & Hannah, 1960). You can see, then, that listening skills and the ability to monitor their effectiveness are very necessary for school success. Teachers, particularly those who teach grades beyond the primary level, use long, complex sentences for giving instruction and directions. They might, for example, give a direction, such as "Before you start your math paper, be sure to finish your spelling work." Such a sentence in which the clause that appears first (start your math) is supposed to be done second can cause errors in interpretation for a child with language-learning problems. Children with LLD, who are unable to monitor or evaluate their ability to understand what is said to them, have difficulty in overcoming these errors. Similarly, many teachers' directions have several parts ("Put your name in the upper right-hand corner of the paper, then number from 1 to 20 down the left-hand margin, and be sure to skip a line between each number."). To ask for clarification or repetition if they need it, children must be able to evaluate whether they have comprehended and remembered the entire sequence. Comprehension monitoring in expository discourse, such as class lectures, is especially important for students to figure out whether they are getting the point of the information being presented. The vocabulary of the teacher's talk also may include words with which a student is unfamiliar. Although many new vocabulary items can be deciphered from the context, the student needs to know when to apply these contextual strategies. Again, comprehension monitoring is essential for bringing such contextual support to bear. Moreover, some words cannot be figured out even when context is present. For these, the student must recognize the gap and ask someone, either the teacher or a peer, for a definition. Again, evaluating comprehension is a necessary part of this process. Dollaghan (1987) and Westby (2005) suggested that comprehension monitoring is likely to be less developed in students with LLD than in their normally developing peers.

Finally, metacognitive skills provide the foundation for *executive function,* or *self-regulation.* These functions involve allocating cognitive resources, such as attention, planning, impulse control, and organizing when faced with a complex task (Bashir & Singer, 2006). Nelson (2009) refers to these skills as "thinking language," the little voice we hear in our own heads when we have to think through how to accomplish something difficult. Although all these metacognitive skills tend to be weak in children with LLD, improvement of executive functions has been shown to predict literacy outcomes (Altemeier, Abbott, & Berninger, 2008), so curricula designed to address self-regulation skills may be quite effective in helping children succeed in school (Blair & Razza, 2007). We'll talk later about approaches to developing curricula like this.

The Role of Oral Language in the Acquisition of Literacy

Aside from the oral language demands of classroom discourse, oral language plays a second crucial role in school success: it lays the foundation for acquiring literacy. For many years, reading was
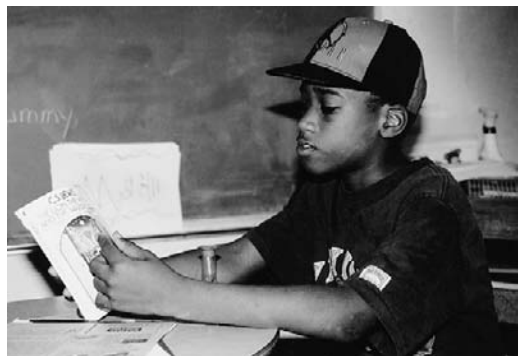
Reading is an important language skill for school-age children.

thought of as primarily a visual-perceptual skill. But since the 1970s, when Kavanaugh and Mattingly published their seminal work, *Language by Ear and Eye* (1972), researchers in reading have become convinced of the crucial psycholinguistic aspects of the reading process. Since then, most investigators studying the reading process consider reading and writing to be language-based skills that simply use visual input as a portal into the language-processing system (Catts & Kamhi, 2005a; Harlaar et al., 2008; Snowling & Stackhouse, 1996; Vellutino, 1979; Wallach, 2004; Watson, 2003). The implication of this shift in focus is that experts in language development (like SLPs) are seen as having a great deal to contribute to the understanding of literacy development and to the promotion of its growth. Because SLPs have such a strong background in oral language development, we are in an excellent position to influence how reading is taught, both in our role in assisting general education teachers provide the most effective RTI Tier I instruction to all students, as well as in developing support plans for struggling readers. Let's examine the oral language skills on which literacy builds and look at some of the ways oral and written language differ. Then we can see how oral language deficits might affect literacy acquisition. This information will help us in identifying areas for assessment and intervention in children who struggle with literacy, as well as in finding ways to educate teachers about the relations of language and literacy.

Emergent Literacy

One foundation for literacy development has been termed "emergent literacy" (Cabell, Justice, Zucker, & Kilday, 2009; Justice & Kaderavek, 2004; Justice & Vukelich, 2008; Sulzby & Teale, 1991; Van Kleeck, 1990; Whitehurst & Lonigan, 2003). Emergent literacy experiences are those in which children begin to develop ideas about how written language works and what it is used for before they actually begin decoding print. Emergent literacy skills develop primarily out of "literacy socialization" (Roberts et al., 2005; Snow & Dickinson, 1991) experiences, in which the child listens to books read by adults. In these interactions, children learn a lot about books and their literate language style. Children learn that if they cover up the little black squiggles on the page with their hands, the reader complains about being unable to see the words and therefore unable to tell the story, giving children the idea that the squiggles contain some meaning. Children learn which way the book opens, which page to look at first, and that the page must be turned to get to the next part. They learn that the print is consistent in telling the reader to say the same thing for each page each time

that page is read, regardless of who's reading. Most importantly, perhaps, these early book-reading interactions give the child experience with the genre of literary language, which is quite different from the language used for dyadic conversation (see Table 10-2). As Westby (2005) pointed out, literary language uses more precise and abstract vocabulary and has more complex syntax and different communicative functions than language used in oral conversation. A variety of studies (e.g., Justice et al., 2009; Roberts et al., 2005; and reviewed by Bus et al., 1995; Goldfield & Snow, 1984) have shown that children who are read to as preschoolers have an easier time learning to read than those who weren't. These literacy socialization experiences are especially helpful if they involve an opportunity for the child to engage in extended discussion about the books (Heath, 1982) and involve explicit attention to features of print (Justice et al., 2009). Justice and Kaderavek (2004) outlined four aspects of emergent literacy that research suggests are crucial to the development of reading and writing. These are summarized in Table 10-3.

In addition to parent-child book reading, other experiences also can foster literacy socialization. Watching TV shows such as *64 Zoo Lane*, *Arthur*, *Between the Lions*, *Blue's Clues*, *Maisy*, *Sesame Street*, etc., provides literacy socialization in the form of information about letter sounds, the structure of books, the communicative purposes of writing, and literary language exposure. Watching

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TABLE 10-3	Aspects of Emergent Literacy that Support the Acquisition of Reading and Writing

Aspect of Emergent Literacy	**Definition**
Phonological awareness	Awareness of the fact that words can be broken down into smaller units, such as syllables (kit + ty = kitty), onset-rime units (d [onset] + og [rime] = dog), and phonemes (/d/ + /a/ + /g/ = dog); ability to blend, segment, and manipulate sounds within words.
Print concepts	Understanding that letters and print make up words and represent ideas; ability to talk about units of language, such as words and letters; understanding the structure of books such as left-to-right progression, orientation of pages, etc., understanding that print is read the same way on each repetition.
Alphabet knowledge	Knowing names and sounds of letters in upper and lower case; understanding that letters stand for sounds and can be grouped to represent words; understanding that words can be read by decoding the sounds of the individual letters within them.
Literate language	Ability to understand decontextualized language; familiarity with conventional language used in narrative genres ("once upon a time"); access to the more formal register of language typically used in print.

Adapted from Justice, L., & Kaderavek, J. (2004) Embedded-explicit emergent literacy intervention I: Background and description of approach. *Language, Speech, and Hearing Services in Schools, 35,* 201-211.

these shows with parents and siblings, like having parent-child book reading experiences, also provides a good feeling about books and reading and a pleasant association with literary activities. This ability to feel good about books is perhaps as important as any other literacy socialization the child receives.

Oral Language Foundations for Reading Comprehension

Reading is a language-based skill, and understanding meaning through reading makes use of all the same processes used to extract meaning from oral language. In other words, a second foundation for understanding a written text is the linguistic knowledge about the content, form, and use of language that is required to understand speech. Catts (2009), Kamhi and Catts (2005a) and Scarborough (2003) pointed out that understanding the comprehension process in reading is essentially no different from understanding it in spoken discourse. Once a text has been decoded, its message is treated cognitively in just the same way as oral language input would be treated. Although the cognitive processes involved in comprehension are varied and complex (Figure 10-2), they are nonetheless similar whether the information to be comprehended came in through the eyes (read) or the ears (heard). So as Fig. 10-1 shows, and as Snowling and Hayiou-Thomas (2006) discuss, some children with reading problems will not display classic dyslexia, a deficit in phonological processing. Instead, they will show deficits in comprehension without inordinate difficulty in word reading, or they may have deficits in both word reading and text comprehension.

Children with limited skills in comprehending oral discourse, then, are going to have the same problem comprehending a written text. If basic oral vocabulary is so impoverished that students cannot recognize and associate a meaning with a large proportion of the words in a text, even if they can be decoded, the student's understanding of that text will be limited. If a student still relies on nonlinguistic comprehension strategies to understand complex sentences, that student will misunderstand such sentences in either oral or written formats. If a child has poor understanding of story grammar structure, comprehending narratives will be difficult, whether the narratives are oral or written. Nation, Clarke, Marshall, and Durand (2004) reported that children with low language abilities, even when they had not been identified as having specific language impairment (SLI), showed poor reading comprehension, even when their phonological awareness skills were adequate. Similarly, Skibbe et al. (2008) showed that children with delayed language development at age 4 continued to exhibit reading skills that were substantially lower than those of children with typical language in fifth grade. This suggests several things. First, intact, well-developed oral language skills in syntax, semantics, and pragmatics are necessary to comprehend written texts, just as they are to comprehend classroom discourse. Second, assessing a student's comprehension skills in oral formats and providing intervention for deficits in comprehension of oral semantic, syntactic, and pragmatic structures will build toward comprehension of both oral and written language. Finally, as Kamhi (2009) and Wallach, Charlton, and Christie (2009) suggest, remediation for difficulties in word reading may be addressed in the context of specific reading instruction, but problems in understanding oral or written texts will be addressed through collaboration between the SLP, the expert in development of oral language understanding, and the general education teacher who provides the curricular contexts in which comprehension instruction and guided practice will take place.

Metalinguistic Awareness

A third linguistic foundation for literacy acquisition involves metalinguistic awareness. Just as metalinguistic skills are important for participating in classroom discourse, they are essential for learning to read. Learning to read requires focusing on the language itself, at least in the early stages. A beginning reader needs to notice word boundaries; to develop letter-sound correspondences; and to talk about which printed form represents what word, words, or meanings. None of these activities is necessary for oral language development, but all are necessary as the child breaks into the code of

FIGURE 10-2 "The Reading Rope": Illustration of the many strands that are woven together in skilled reading. (Reprinted with permission from Scarborough H. (2003). Connecting early language and literacy to later reading (dis) abilities: evidence, theory, and practice. In S. Newman & D. Dickenson (Eds.) *Handbook of Early Literacy Research* (pp. 97-110). New York: Guilford Press.)

Language Comprehension

Background knowledge (facts, concepts, etc.)
Vocabulary (breadth, precision, links, etc.)
Language structures (syntax, semantics, etc.)
Verbal reasoning (inference, metaphor, etc.)
Literacy knowledge (print concepts, genres, etc.)

Increasingly strategic

Skilled reading: Fluent execution and coordination of word recognition and text comprehension

Word Recognition

Phonological awareness (syllables, phonemes, etc.)
Decoding (alphabetic principle, spelling-sound correspondences)
Sight recognition (of familiar words)

Increasingly automatic

written language. Tumner and Cole (1991) reported that metalinguistic skills also are crucial for allowing students to comprehend written texts and that instruction in metalinguistic awareness was effective in improving reading comprehension for these students.

One additional area of metalinguistic awareness is especially important for learning to read, even though it is not necessary for other language activities: phonological awareness, the realization that words are made up of sounds and that sound segments can be manipulated in words and represented by symbols (letters). We've already discussed the fact that phonological awareness, according to current thinking about the reading process, is central to learning to read in an alphabetic language like English (Brady & Shankweiler, 1991; Catts & Kamhi, 2005a; Gillon, 2000a; Hook & Haynes, 2009; Larrivee & Catts, 1999; Liberman & Liberman, 1990; Lyon, 1999; Snowling & Stackhouse, 1996; Torgensen, Otaiba, & Grek, 2005). To see why, let's talk about some of the differences between oral language and reading.

Discontinuities between Oral and Written Language

As we've seen, most researchers today believe that reading and writing are language-based skills. Still, although reading and writing rely on a foundation of oral language ability, they require something in addition. At first glance, it might seem that the extra piece is a visual one—the ability to process print through the visual channel. For many years, LD specialists believed that reading deficits were caused by problems in visual perception. As early as 1937, Orton noticed that children with reading problems sometimes read the word *was* as *saw*, or the letter *b* as *d*, for example, and attributed such problems to visual-perceptual deficits.

But Piasta and Wagner (2008) report that children with dyslexia make no more reversal errors than do peers with typical reading development. Current thinking on the question of the role of visual-perceptual deficits in reading disorders, dating back to Vellutino's (1977) review of research in this area, is that visual-perceptual problems play a relatively minor role in reading disorders. Most investigators in this area today believe that the primary deficits involved in reading disability are linguistic, not visual (Brady & Shankweiler, 1991; Catts, Adolf, & Weismer, 2006; Catts & Kamhi, 2005a; Goldsworthy, 1996; Scarborough, 2003; Snowling & Hayiou-Thomas, 2006). You can understand how reversals such as *was-saw* could be seen as linguistic rather than visual problems by considering the following example. Like most programs in speech and hearing sciences, the program in which I taught for many years was predominantly female. But one year I had two men in my language disorders class, a somewhat unusual occurrence. They were both quite tall, over 6 feet in height, although the resemblance stopped there. One was dark-haired, the other was fair. One was somewhat husky, the other very slim. They always sat on opposite sides of the classroom, the dark-haired one on my left, the other on my right. Yet throughout the entire year, I consistently mixed up their names! It wasn't that I couldn't perceive the visual differences between them—I just couldn't keep straight which name went with which person. This problem in association of names and referents may be similar to the difficulties children with reading disorders have in making distinctions like the one between *was* and *saw*, or between *b* and *d*. It's possible to explain this difficulty without positing a visual-perceptual deficit. If visual-perceptual problems are not the primary impediment to reading, what skills, in addition to basic oral language competency, are needed for success in literacy?

Biological Bases for Oral Language

To answer this question, one thing we need to remember is that oral language is a primary, biologically based system with a developmental progression that is similar across cultures, specialized neural structures adapted specifically for its functioning, and universal appearance in individuals with normal development (see Kamhi & Catts, 2005; Gleason, 2008; Olson & Gayan, 2003; Snow, Burns, & Griffin, 1998, for review). Speech perception, for example, is biologically programmed. We know this because infants as young as 4 weeks can distinguish between phonemes, even when they have no comprehension of language (Eimas, Miller, & Jusczyk, 1987) and infants as young as 7 months have been shown to perceive boundaries between words and syntactic units in connected speech (Jusczyk, 1999). The ability to process and use written language does not arise from biologically based neurological systems, though (Kamhi & Catts, 2005; Liberman & Liberman, 1990). There is great variability in the age and degree of proficiency of literacy acquisition in individuals within literate societies. Some typical individuals learn to read before kindergarten, some don't learn to read until adulthood, some never learn at all. Moreover, many cultures have never developed any form of written language.

Oral language is as old as the human race. Literacy, on the other hand, is a relatively recent invention (Sulzby & Zecker, 1991; Wilford, 1999). The requirement that everyone in a society be able to read is more recent still. Until well into the twentieth century, only a minority of people were literate, and there was no particular stigma or handicap attached to illiteracy. Learning to read does not come naturally to everyone, as its late development and limited penetration in human cultures suggests. For most children, learning to read does not happen as naturally and effortlessly as learning to talk does. Some direct instruction is usually needed. Why is this so? To understand fully why everyone does not learn to read naturally, we need to consider not only the lack of a biological basis for literacy but also the demands that the writing system imposes.

Writing Systems

Three kinds of writing systems have been developed in human societies. The earliest is like that used in contemporary Chinese, sometimes called *pictographic, logographic,* or *ideographic.* In this type of writing system, each symbol stands for a whole word. Learning to read in this writing system requires no ability to break words down into smaller units such as sounds, but does require a great deal of memory since a separate symbol has to be associated with each word in the language. It's also hard to develop a typewriter for an ideographic system! A second writing system is the *syllabary,* such as that used in the *kana* form of Japanese writing. In this system, each symbol represents a syllable, and syllables are combined to form words. This requires some awareness of the sound structure of words and places somewhat less load on the memory than an ideographic system. But a relatively large number of symbols must be learned, and it's still pretty hard to design a typewriter keyboard for a syllabary writing system. English uses the third type of writing system, an *alphabetic cipher*. In this system, each symbol represents a phoneme (more or less). An alphabetic writing system is extremely economical in terms of the load it exerts on the memory, since there are a relatively small number of symbols to learn. But it requires a great deal of phonological awareness, the ability to break words down into component sounds. The efficiency of an alphabetic system is obvious if you're trying to design a typewriter. But the concept of an alphabetic

cipher is relatively unnatural. It developed later than either of the other writing systems and was invented essentially only once in history, by the ancient Egyptians about 4000 years ago. All the alphabetic systems in use today derive from that initial alphabet.

What's the point of this digression on the history of writing? Again, it is that an alphabetic writing system is in some sense unnatural. It developed late, even within the history of writing. It was not an idea that was come upon by a lot of people in a lot different places. It was invented only once. The fact that alphabetic writing spread to many cultures is attributable to its efficiency, not to its naturalness. These facts strengthen the prediction that reading in an alphabetic writing system is not going to come naturally to every individual. There are lots of reasons to expect that it will be somewhat hard to learn, at least for some people, and that most people will need a little help, in the form of direct instruction, in breaking into the alphabetic code.

The Key to Reading in an Alphabetic Cipher

What is needed to learn to read English, over and above basic oral language skills? The answer most researchers in reading today would give is *phonological awareness*. Phonological awareness is comprised of the ability to break words down into component sounds, to realize that these units of sound can be represented by letters, to learn letter-sound correspondence rules, to analyze words into component sounds (for spelling), and to synthesize sounds represented by letters into words (for reading). Many reading researchers call this awareness of the *alphabetic principle*.

Phonological awareness is not necessarily part of normal language development. Studies of nonliterate adults show that they have limited levels of phonological awareness (Goswami & Bryant, 1990) and their phonemic awareness is clearly and strongly related to their letter knowledge (De Santos Loureiro et al., 2004). However, the following conclusions about the relationship between phonological awareness and reading in school children can be drawn from the research literature (Blachman, 1994; Kahmi, 2009; Swank, 1999; Vellutino et al., 2004):

- There is a significant relationship between phonological awareness and reading. Children who exhibit phonological awareness skills have been shown to learn to read more easily than children who don't (Adams, 1990; Ball & Blachman, 1988; Gillon, 2005b; Kamhi & Catts, 2005a; Serry, Rose, & Liamputtong, 2008; Snow, Burns, & Griffin, 1998; Swank & Larrivee, 1999).
- Performance on phonological awareness tasks in kindergarten and first grade is a strong predictor of later reading achievement (Goswami, 2008; Snow, Burns, & Giffin, 1998).
- Direct teaching of phonological awareness and letter-sound correspondences to children who are not yet reading improves their reading and spelling development more than other forms of reading readiness instruction (Adams, 1997; Ball & Blachman, 1991; Blachman, 1989; Gillon, 2000a, 2005; Hook & Haynes, 2009; Kirk & Gillon, 2007; Snow, Burns, & Griffin, 1998). Moreover, the effects of this training persist in giving children an advantage in reading even 4 years later (Bradley, 1988), and these benefits are strongest for children whose phonological awareness skills start out lowest (Chall, 1997; Lundberg, 1994).
- Phonological awareness teaching works best when combined with explicit instruction in letter-sound correspondences, especially when the two are taught in separate activities (Chall, 1997; Kaderavek & Justice, 2004; van Kleeck, 1995).

What Does It Take to Learn to Read?

Scarborough (2003) has argued that there are two main components, or strands that need to be integrated in order for children to learn to read and write. These are represented in Figure 10-2. One strand includes various aspects of language knowledge that will support reading comprehension; such as basic vocabulary and syntax, the world knowledge children acquire through experience and instruction, higher level language skills such as verbal reasoning and metalinguistics, along with basic knowledge of print concepts and conventions, as well as story schemas. The second strand includes those skills that will support word recognition, such as phonological awareness, letter-sound knowledge and, eventually, fluent and automatic recognition of an increasingly large vocabulary of sight words.

Because all these abilities need not only to be present, but to be integrated in order for fluent reading to develop, it is easy to see why disruption in any one strand can lead to difficulty in the acquisition of the entire process of learning to read. We can also see that some of these strands will be present in most children when they come to school, such as basic vocabulary and syntax; but others will be present only in children who have had literacy socialization experience, such as print concepts and conventions. And we've learned that some of these skills, such as phonological awareness and letter-sound correspondence, will have to be taught directly, even to children with typical development and strong literacy socialization. Of course these things don't happen all at once. There are a series of phases through which children pass in the process of learning to read. Chall (1983) has presented a particularly useful summary of this sequence. Although some writers (e.g., Kamhi & Catts, 2005a) have pointed out problems with stage theories like this one, and more recent examples of stage theories of reading development (e.g., Seymour, 2008) have been proposed, Chall's overview does give us a reasonable view of the kinds of reading skills generally expected at various points in the curriculum. Her sequence is outlined in Table 10-4.

In Chall's "prereading" stage, from 2 to 6 years of age, the child acquires what we've been calling literacy socialization through natural, scaffolded kinds of interactions with adults. In the first reading stage, from about the beginning of the first to the middle of second grade, decoding the print, or the processes involved

TABLE 10-4 Chall's (1983) Stages of Reading Development

Stage	Grade Level	Achievements
Stage 0: Prereading	Pre-K	Literacy socialization
Stage 1: Decoding	1–2	Phonological analysis and segmentation/synthesis in single words
Stage 2: Automaticity	2–4	Fluent reading; greater resources for comprehension available
Stage 3: Reading to Learn	4–8	More complex comprehension, increased rate
Stage 4: Reading for Ideas	8–12	Recognition of differing points of view, use of inferencing
Stage 5: Critical Reading	College	Synthesis of new knowledge, critical thinking

Reading acquisition proceeds through a series of stages.

in word recognition, is the focus. Most of the child's attentional resources are devoted to using letter-sound correspondence rules and phonological synthesis abilities to decipher single words. Comprehension, or attention to meaning, can be limited during this period because so much attention is going into decoding. More advanced comprehension skills emerge toward the end of this period, as the child begins to automatize some of the decoding processes. Of course, the child does not lose any of the language comprehension skills he or she has acquired in oral activities. But decoding requires a lot of attention at first, and children in this phase will not have as many resources available to understand what they read as they have for understanding what they hear.

By stage 2, from late second to fourth grades, reading becomes more fluent, decoding is more automatic, and more attention is available for comprehension. Children's ability to take in what they read becomes more similar to their receptive ability for spoken language. This change rests primarily on the acquisition of *fluency* in reading; the ability to recognize printed words quickly and with little effort. Bashir and Hook (2009) argue that the development of fluency allows the reallocation of cognitive resources from "sounding out" words to using higher language and cognitive processes for comprehension. Fluency, then, is an important bridge between early stages of reading focused on decoding and the later stages in which reading is aimed at gaining meaning from the text.

In Chall's terms, Stage 3, from fourth to eighth grades, marks a major change in the child's reading ability. Now instead of learning to read, the child is reading to learn, able to get new information and derive fuller meaning from print because the decoding process has become well-learned and goes on automatically, below the level of consciousness. This frees a majority of the child's attentional resources to comprehend the text, make inferences, and so on. In Chall's later stages, more sophisticated comprehension skills evolve, in concert with the child's developing intellectual capacity and metacognitive skill. But at all the stages, lower-level decoding skills can be brought to bear when an unfamiliar word is encountered.

This sequence emphasizes the fact that children need different kinds of instruction at different points in development. In the prereading period, they need literacy socialization opportunities, and lots of experience talking about words and sounds. In the decoding phase, phonological awareness activities—breaking words into smaller parts, identifying sounds in words, finding words with the same first and last sound, associating sounds with letters, inventing spelling—and letter-sound correspondence instruction and practice are crucial. But children will continue to need to hear stories and be exposed to literate language, as well as to build a strong oral language base in terms of vocabulary, morphology, sentence, and discourse forms. Once basic decoding skills have been learned, children will need instruction and practice that allows them to develop fluent reading, with automatic word decoding. Snow, Griffin and Burns (2005) recommend use of repeated readings, with guided feedback, along with allowing children to choose reading material of interest to them. LeVasseur, Macarusa, and Shankweiler (2008) advocate the use of visual supports for appropriate prosody in reading materials, such as spaces between phrases, putting clause boundaries at the ends of lines, as another way to enhance fluency. In later phases, once basic decoding has been mastered, phonological awareness and fluency activities can be de-emphasized and focus shifted to explicit instruction in comprehension strategies in both oral and written texts. Catts (1999) argued against using more complex phonological awareness activities (such as sound deletion and manipulation) once basic decoding has been mastered. Instead, he suggests that most reading disabilities "occur in the context of more widespread language deficits" (p. 19). We need to continue to shore up the oral language base for these students, as well as provide them with explicit instruction in strategies for improving their comprehension of both oral and written texts they encounter in school (Mastropieri & Scruggs, 1997; Wallach, Charlton, & Christie, 2009; Westby, 2005).

But what about our children with LLD? Don't their weaknesses in language and metalinguistic awareness dictate a different kind of instructional program? According to the National Research Council (2001) report, children having difficulty learning to read do not, as a rule, require a different kind of instruction from children who are "getting it." Instead, they more often need more exposure and practice to the same basic principles of word identification and comprehension, in individualized, more intensive settings. This conclusion applies to children with specific reading disorders as well as to those from culturally and linguistically different backgrounds. These children are likely not to have an elaborated base in oral language, experience with decontextualized language use, or exposure to literate language genres, metalinguistic skills, or knowledge of letter-sound correspondences. In fact, Warren-Leubecker and Carter (1988) showed that the area of language in which poor children differed most from those from middle-class homes was in phonological awareness, which in turn was the best predictor of reading achievement. Current research advocates tackling these problems head-on with explicit instruction and focused practice in both the basic language skills needed for strong reading comprehension and the kinds of phonological awareness and letter-sound abilities known to support word recognition in children with and without language learning problems (Adams, 1997; Chall, 1997; Gillon, 2000a; Lyon, 1999; Snow, Burns, & Griffin, 1998). Gillon (2002) showed that phonological awareness training led to "sustained growth in phoneme awareness and word recognition" (p. 381) as well as in spelling in children with language impairments. Thus, in RTI environments, children who struggle to acquire basic reading skills will be given, not different, but more intensive doses of the same lessons as children who are acquiring reading skills normally. Tier II instruction will provide this intensified exposure and practice in small group settings that give struggling readers additional opportunities to learn and rehearse basic phonological

awareness, letter-sound correspondence, decoding, sound synthesis, and fluency skills; Tier III instruction will do the same in one-to-one tutoring settings.

The consensus among researchers today is that teaching metalinguistic, phonological awareness, and letter-sound correspondence skills explicitly and providing practice so these skills can become automatized in word recognition activities make better readers (Ehri et al., 2001; Podhajski, Mather, Nathan, & Sammons, 2009). This basic truth has been reaffirmed by Snow's (1998) exhaustive review. The "Great Debate" (Chall, 1996) that resurfaced during the 1990s on the most effective way to teach beginning reading has been resolved: in the early stages, direct instruction in basic decoding skills is crucial to successful reading development for all children. Reading experts today argue for a "balanced" approach to reading instruction; one that provides lots of practice in phonological awareness and letter-sound correspondence in primary grades, but also continues to present meaningful, engaging literature and multiple opportunities for children to continue their oral language growth and their appreciation of the functions of print. Explicit teaching of comprehension and spelling strategies also is important at later stages.

The Role of the School SLP in Literacy Development

What is the role of the school-based SLP in addressing written language issues? SLPs have a very important role to play in fostering balanced literacy instruction, and in supporting RTI in primary classrooms; both in our consultative role with classroom teachers and in our direct work with students who have LLD. This fact is often recognized in schools through the creation of "literacy teams": groups of educators who support the classroom teacher in her primary role as the individual responsible for basic literacy instruction by addressing the needs of children who are struggling to acquire literacy, and using their knowledge of scientifically based reading instruction in making sure all students learn to read and write. Pressures from legislation, such as the No Child Left Behind Act of 2001 (www.ed.gov) have contributed to the effort to provide more resources to teachers to make sure all children acquire proficiency in literacy skills. Because of our knowledge of the oral language bases for literacy, and of the sound structure of English, SLPs are considered important members of school literacy teams. Let's discuss how we can fulfill our roles in the area of literacy, by talking first about the beginning stages of reading, and then about our roles at higher developmental levels.

SLPs' Role in Emergent Literacy and Decoding

Vellutino et al. (1996) report that with well-designed early instruction in phonological awareness and spelling-sound correspondence, all but 3% of children can become successful readers in the primary grades. Yet we know that anywhere from 10% to 40% of children are now failing to meet grade-level expectations in reading, with the highest proportions of failure in poor, urban areas. Catts, Fey, Tomblin, and Zhang (2002) found that children with oral language impairments are six times more likely to have trouble learning to read than are typical peers, and that half the children who struggle with reading in primary grades have language impairments. SLPs can have a positive effect on these dismal statistics by helping both the teachers and the students we work with to participate in reading instruction that follows principles established by scientific research.

ASHA (2006, 2010) advocates several roles for the SLP in literacy instruction in schools. The first is in the provision of indirect services through consultation and collaboration with teachers in developing best practices in evidence-based reading instruction, or in RTI terms, developing high quality Tier I instruction. In these activities, the SLP works with these teachers to organize and implement activities that support literacy for all students throughout the school day (Justice & Kaderavek, 2004). At the preschool and primary level, it is important that we help teachers get away from the idea that "phonics" instruction means worksheets and seat work. Code-emphasis reading programs do not have to be boring lectures. Children love playing with language, as their spontaneous sound and word play attests. There are lots of enjoyable approaches to developing metalinguistic and phonological awareness skills. Examples can be found in Adams, Foorman, Lundberg and Beeler (1998); Blachman (1987); Chaney and Estrin (1987, 1989); Elkonin (1973); Estrin and Chaney (1988); Gillon (2000a); Kaderavek and Justice (2004); Lewkowicz (1980); Sulzby (1980); and Yopp and Yopp (2000). Some of these methods are discussed in Chapter 12. However, because many teachers went through training programs some years ago that de-emphasized phonics and decoding instruction, they may have had very little training on the sound structure of our language (Fillmore & Snow, 2000). Yet, Chall (1997) cites research showing that teachers who do not themselves have adequate knowledge of phonological and phonics rules have students who do less well in reading. One way SLPs can support literacy development is to help these classroom teachers, in in-service and consultative settings, acquire a deeper knowledge of the structure of our language, and to incorporate it into their Tier I instructional plans.

Justice and Kaderavek (2004) suggest a three-pronged approach to addressing literacy for the school SLP during the preschool and primary years. First, in her indirect role, the SLP collaborates with the classroom teacher in creating a print-rich environment in which signs, lists, and labels are placed prominently throughout the classroom and referred to frequently during the day's activities. The SLP also encourages and participates in storybook reading and sharing activities that include talk about the content and structure of books and stories. SLPs can also help embed a rotating set of literacy activities within daily routines, such as having a "post office" play corner in which children are encouraged to "read," and "write," at whatever level they can, and talk about these processes is modeled and encouraged during play.

The second prong involves collaborative direct Tier I instruction in activities for the entire class that focus on phonological awareness, letter-sound correspondence, and phonological analysis and synthesis. While engaging collaboratively in these lessons, the SLP can be alert to those students who seem to be having difficulty, attending less, or making less progress than others. For these students the SLP can provide, either directly or through collaboration with other classroom personnel, Tier II literacy activities with small group follow-up lessons to pre-teach, review, and provide additional practice in the literacy concepts addressed in the classroom instruction. In some cases, students already on the SLP's caseload for other speech and/or language delays will require this tier of instruction, and the SLP can simply add other children who are not on IEPs, but require Tier II support to these small group sessions. Thirdly, Tier III instruction may sometimes occur during the SLP's individual sessions with students already identified with speech/language delays. This approach makes use of dynamic assessment for identifying children at risk for literacy failure, so that

the SLP does not have to screen or assess children separately for phonological awareness or other pre-literacy deficits. Instead, she does this as an ongoing part of her participation in the classroom's daily Tier I instruction. As such, this method provides an efficient way for the SLP to fulfill her role on the literacy team at this level (see Ehren, Montgomery, Rudebusch, & Whitmire, 2006; Justice, McGinty, Guo, & Moore, 2009; Roth & Troia, 2009; Schuele & Larrivee, 2004 for additional suggestions.)

SLPs' Role in Later Literacy Development

Beyond the primary grades, SLPs continue to have important contributions to make to children's literacy acquisition. Four major areas of literacy beyond decoding are identified and defined in Table 10-5. In each of these areas, as in the others we've discussed, SLPs address students' literacy needs through both direct and indirect services. The development of fluency is clearly an area in which oral-written connections can be made by the SLP. We can, first, encourage teachers to incorporate fluency training into Tier I instruction, and use performance in these activities to identify children who may require additional help in this area. As Bashir and Hook (2009) suggest, fluency activities involve multiple rereadings of texts the students are using in the classroom. Tier II and III activities can take place in the context of small-group drama activities, such as having 2 to 3 children at a time act out the text while the SLP and the others in the group read it aloud, having "readers' theater" presentations in which the students take turns reading the same text aloud as if in different moods ("Keisha can read it as if she is happy, then Hector can read it as if he is mad . . ."), or as choral readings for recording and listening to with parents as the child reads the text along with the recording at home. Visual supports such as those suggested by LeVasseur et al. (2008) can also be used.

Enhancement of comprehension skills is an additional area in which SLPs have a role to play in later literacy development. We can follow Kamhi's (2009) and Snyder's (2010) suggestions involving working on comprehension through oral language activities that focus on curricular topics such as science, history, math, and literature. These activities may focus on deepening knowledge of vocabulary found in classroom texts; using paraphrasing activities to help process difficult sentences structures in classroom texts, such as passives and subordinate clauses; as well as using

these texts to focus on expository structures as Wallach et al., (2009) have suggested. We will look at more detailed examples of these methods in Chapters 12 and 14. The point to be made here is that SLPs can contribute to the development of reading comprehension skills by doing what we do best-helping children with oral language, but choosing the content of language activities from the academic curriculum.

Spelling is also an area of literacy where SLPs can have an impact. We'll talk more in Chapter 12 about the SLP's role in spelling development, but in general we can address the spelling needs of children with LLDs, as Apel (2004) and Kirk and Gillon (2009) suggest, using a *word study* orientation. This relies on our expertise in understanding the phonological and morphological structure of words, and providing metalinguistic discussion and strategies to help students move beyond basic phonological awareness to understanding the patterns in the English spelling system. SLPs can also help students at higher grade levels improve written composition skills, as we will discuss in more detail in Chapter 14, by focusing on the pre-writing, or planning aspects of written communication and using oral language strategies to help students plan and organize their writing.

Finally, Sawyer (2010) makes the important point that SLPs have a great deal to contribute to classroom and special education teachers' understanding of the reading process and what it takes to succeed in it. Our deep knowledge of language structure, content, and use can help inform other teachers about best ways to address gaps in their students' reading abilities. Part of our job is to work collaboratively with these other educators to enhance their understanding of the key role language knowledge and skill plays as a foundation for the development of literacy.

CONCLUSIONS

We've seen that success in school, regardless of grade level, requires a vast amount of experience and proficiency with oral language. Some of these oral language skills are part of most children's natural development, but some are higher level skills that require specialized contexts and experiences for their acquisition. As SLPs, our job is to ensure that our clients with LLD have a solid oral language basis and have moved past the developing language phase in their content, form, and use of language. Beyond this, though, we need to be aware of the special discourse requirements of the classroom and of the higher level linguistic requirements of the curriculum. This knowledge leads us to appropriate assessment strategies; we'll know what to look for in terms of problems that can impede the child with LLD. Moreover, understanding the various ways in which oral language supports and interacts with success in school, and particularly with literacy development, can help us develop interventions that contribute to that success for our clients. SLPs are central players in school literacy teams and have roles to play in each tier of RTI instruction for students who struggle with the oral and written language demands of the school setting.

TABLE 10-5	Aspects of Literacy beyond Decoding
Literacy Area	**Definition**
Fluency	The ability to read connected text rapidly, smoothly, effortlessly, and automatically with little conscious attention to the mechanics of reading (Meyer and Felton, 1999, p. 284).
Reading comprehension	The ability to understand draw inferences and conclusions, recall, summarize, paraphrase, and acquire new information from written texts
Spelling	The phonological and orthographic skills that enable conventional alphabetic representations of words
Writing	The planning, production, and editing of written texts

STUDY GUIDE

I. Definitions and Characteristics
   A. What is a learning disability? Reading disorder? Dyslexia?
   B. What kinds of phonological deficits are seen in students with LLD?

C. How do these relate to learning to read?

D. How does the syntax of children with LLD differ from that of children in the developing language phase?

E. What kinds of syntactic and morphological errors are typical of students with LLD? How prevalent are such errors?

F. What are the vocabulary problems of students with LLD, and why do they have them?

G. What is the role of word retrieval in LLD, and what are two alternative explanations of the problem?

H. Describe the social interaction problems in students with LLD.

I. Discuss narrative and expository discourse types. How do these cause problems for students with LLD?

J. Why do students with LLD often have deficits in general knowledge?

K. What is ADHD? What role does this disorder play in language-learning disabilities?

II. Language, Learning, and Reading: What's the Connection?

A. Discuss some of the special properties of classroom discourse and why they may cause problems for some students.

B. What is the "hidden curriculum?"

C. Discuss decontextualized language. How is it acquired? Why is it important?

D. How can classroom discourse create a mismatch for students from different cultural backgrounds?

E. Why are metalinguistic skills needed for school success?

F. What is meta-cognition? Why is it important in school?

G. Describe the continuum of formality of language from oral to literate. Describe how the form, function, and topics of language differ along this continuum.

H. Discuss the current conception of reading as a language-based skill.

I. What are the implications of this conception for understanding deficits in reading?

J. What oral language skills are needed to learn to read? Why can we not expect all children to come to school with these skills?

K. What is the relationship between reading and language comprehension?

L. What is phonological awareness, and how do children attain it?

M. What is literacy socialization?

N. What is the role of metalinguistic awareness in learning to read?

O. Why is learning to read an "unnatural act"?

P. Name and describe four aspects of emergent literacy.

Q. Discuss the three writing systems used throughout the world. What are the advantages and disadvantages of each?

R. Why does the SLP need to understand the reading process?

S. What oral language skills can the SLP work on to build a firm base for literacy in students?

T. Name and describe four aspects of literacy development that emerge after the primary school years.

U. Discuss Chall's stages of reading development.

V. What can the SLP contribute to reading instruction for clients? For all students?

Assessing Students' Language for Learning

Readers of this chapter will be able to do the following:

1. Describe how families participate in educational planning for school-aged children.
2. Discuss the role of responsiveness to intervention (RTI) in identifying students for communication assessment.
3. Define and describe methods for screening at the elementary school level.
4. Discuss methods of referral and case-finding.
5. Discuss the uses of standardized tests at the elementary school level.
6. Describe nonstandardized assessment methods for students in elementary grades.
7. Carry out language analysis procedures for conversation and narratives.
8. Use dynamic and curriculum-based assessment methods.
9. Apply concepts discussed to assessment of students with severe disabilities.

Maria had been doing well in second grade until her bike accident. While riding without a helmet one day, she was struck by a car. She spent 3 days in a coma, and when she first emerged from it, she didn't speak at all. After several weeks in the hospital, where she received physical, occupational, and speech therapy, she was able to go home. She spent several months out of school, receiving home tutoring and more therapy. She returned to school the next year, by which time she had recovered her speech but still had some problems with her gait and fine motor skills. She continued to see the occupational and physical therapists but was thought to be doing all right with her language. She seemed quiet and never caused any trouble. On the playground, she kept to herself and didn't get involved in what the other children were doing. She was meek and somewhat shy, but always eager to please the teacher. She seemed to have regressed somewhat in her reading, which was above grade level before the accident, but she managed to follow the simple, repetitive material used in the reading program in her second-grade class, which she was repeating because she'd missed so much time the previous year. When she spoke, her sentences were short, but that seemed to be more because of her shyness than anything else. When she got to third grade, though, she

suddenly ran into trouble. She couldn't follow directions. She couldn't seem to answer the questions the teacher posed for class discussion. She was unable to read the books used for social studies and science. She began to withdraw, sometimes going for days without saying a word. She complained of stomach aches and often asked to spend time in the nurse's office. The nurse called her family to discuss the problem. They said that Maria had started saying she was "dumb" and didn't want to go to school because she was too "stupid." They reported being very upset to find her crying in bed on school nights. The school nurse suggested to Maria's teacher that Maria be referred for an evaluation of special educational needs.

Maria is another child who seems to have difficulties making the transition from primary to intermediate grades and keeping up with the changes in the curriculum that this transition entails. Although the basic oral language she recovered after her traumatic injury seems to be good enough to get by, Maria has trouble with the more complex language of the intermediate classroom and can't manage the reading requirements of her grade level. Maria's response to these problems is different from Nick's. She retreats rather than becoming aggressive. But the reason for both responses is similar. The demands of the classroom are taxing these students' abilities and making them feel like failures.

When we, as speech-language pathologists (SLPs), assess students like Nick and Maria, we want to bear in mind the issues we discussed in Chapter 10 about the need to look not only at basic oral language skills but also at the specialized abilities that contribute to success in the classroom in general and in reading in particular. In this chapter, we'll talk about assessment issues for students who are beyond the developing language phase, with skills above Brown's stage V. We will focus on children who have mastered the basic vocabulary, sentence structures, and functions of their language but have trouble progressing beyond these basic skills to higher levels of language performance. This chapter and Chapter 12 focus specifically on clients whose developmental levels are commensurate with those of students in the elementary grades. We will be talking about the communicative skills needed for the elementary school years, from kindergarten through fifth or sixth grade when typical children are between 5 and 12 years of age.

Of course, some children at these chronological age levels who are served in schools function at lower levels. Particularly with the push toward inclusion of students with disabilities embodied in the Individuals with Disabilities Education Act (IDEA), clinicians find students in elementary schools who function at the developing,

emerging, or even prelinguistic stages of communication. When these students are included in the caseload of a school SLP, assessment and intervention strategies appropriate for their level of functioning are needed. Information on assessment and intervention strategies for students at these levels of development can be found in Section II.

Although the stage of development we're considering in these chapters usually takes place when children are between 5 and 12 years of age, we may encounter some clients with language-learning disabilities in middle school or even high school who function at this elementary grade level. For these students and for their younger counterparts, the assessment and intervention information presented in this chapter and Chapter 12 is germane. Let's call this phase of language development the "language for learning" period (L4L for short). The L4L stage is when many of the oral language bases for school success, including the knowledge of special classroom-discourse rules, decontextualized language, metalinguistic and phonological awareness, and literacy skills that we talked about in Chapter 10 must be acquired in order for the student to meet the demands of the curriculum.

CHILD AND FAMILY IN THE ASSESSMENT PROCESS

Although IDEA legislation mandates that families be involved in the assessment and intervention process for students with special educational needs, this ideal is not always fully met in practice. Parents may not know that their child has been having difficulty until they are told a referral has been made. Because the assessment often takes place at school, the parent may not have an opportunity to observe it and contribute a family perspective. Clinicians particularly committed to curriculum-based assessment (e.g., Jenkins, Graff, & Miglioretti, 2009; Nelson & Van Meter, 2002; Nelson, 2010) may feel that the teacher has more relevant information to contribute about the student's needs than the family does. However, the principles of family-centered practice are just as relevant for children in the L4L stage as they are for younger clients.

These principles remind us that families need to be involved in each stage of the assessment process, from referral to remedial planning. This means contacting parents as soon as a referral is made, discussing the referral, and learning whether the family shares the referring person's perceptions about the student. A telephone conference can often be beneficial at this stage, using the same communication strategies as those outlined in Chapter 7 for parent contacts. Parental permission for the assessment must be obtained, and parents should be invited to attend any assessment sessions they wish. Parents should be kept informed periodically of the progress of the assessment, if it stretches over a period of time, and should be invited to attend a meeting when the assessment is complete to discuss the evaluation with the team and to provide input in the development of an Individual Educational Plan (IEP).

It is very helpful to families for one member of the assessment team to take on the role of case manager or parent advocate. SLPs are often excellent candidates to play this role, particularly if communication is a major area of deficit for a student. The case manager or parent advocate can ensure that the family stays informed and engaged, gets a chance to ask questions, and contributes to the planning process. The case manager also can check with the parents to make sure that they understand all the jargon being used by the professionals. It is easy for us to forget that not everyone knows all the acronyms (IEP, FAPE, LRE) and jargon that we use in our profession. A simple check with the family every now and then can give them an opportunity to say whatever they need to say. Having one person, with whom an ongoing relationship has been established, to turn to with concerns and questions is comforting for families. Despite their best intentions, the assessment team may seem intimidating, overwhelming, cold, or uncaring to a family that is struggling to find the best way to meet their child's educational needs. If a case manager is not formally assigned to a family as part of the assessment process, the SLP can assume this role on an informal basis. Having someone who makes a special effort to keep in touch with the family and to build a relationship with the child can make all the difference.

One other person deserves to have some input in the assessment process at the L4L stage. That's the student. By the time they are 7 or so, children have a strong need to make some of their own decisions and to function somewhat independently. Students to whom an assessment "just happens" are less likely to give their best performance than are those who feel they have some control in the situation. An SLP can talk with students before assessment begins about why it is taking place, the questions the assessment will attempt to answer, and what to expect. This can give the impression that you see students as people whose opinions and feelings matter. Asking students to talk a little about how they see the situation is another good tactic. You can ask whether they have trouble in school, what they are good at, what they find hard, and in what areas they would like some help. This conversation can serve several purposes. It gives students the feeling that you think they are mature enough to have some say about what goes on, and it provides an initial conversational sample that can help guide you to areas of communicative function that will need to be assessed.

IDENTIFYING STUDENTS FOR COMMUNICATION ASSESSMENT

Screening

One way children make their way to the school SLP is through screenings. These are often conducted upon entrance into the school system for the first time, or at particular grade levels. This sometimes includes screening for hearing, as well. Some school systems use mass screenings in which all children beginning kindergarten are screened during a few designated periods by professionals or paraprofessionals using short standardized instruments, such as the *Fluharty Preschool Speech and Language Screening Test—2nd Edition* (Fluharty, 2000), the *Joliet 3-Minute Speech and Language Screen—Revised* (Kinzler & Johnson, 1993), or *Developmental Indicators for the Assessment of Learning—3rd Edition* (Mardell & Goldenberg, 1998). Some districts use locally developed, informal methods. Other local educational agencies (LEAs) set aside the first week or two of kindergarten for individual screenings. Each new student meets with a teacher or team for a somewhat more intensive screening. These screenings have several possible outcomes. A recommendation to wait a year before entering kindergarten may be given, to let the child mature. Alternatively, students may be placed in a developmental kindergarten program for some preschool-level instruction with the expectation that they will enter regular kindergarten the next year. Screening also can lead to a referral for an assessment in greater depth in one area, such as communication, or by a multidisciplinary team. SLPs often participate in these

screenings and may identify children who will join their caseload as a result. Finally, some schools use a responsiveness to intervention (RTI) approach to identify children with difficulties (see Chapters 3 and 10 for details). Whether the SLP participates directly in screenings or not, it is our responsibility to interpret screening information and contribute to decisions about which children need further assessment.

Many school districts use informal, locally developed methods for screening, particularly for mass kindergarten screenings. Although this practice is widespread, it is not, we would argue, advisable. A screening instrument should have well-documented psychometric properties, because that is the best way to ensure its fairness. Some critics of kindergarten screening have argued that early identification through screening is unfair to minorities, culturally and linguistically different (CLD) children, and those from low-income families (Braddock & McPartland, 1990; Pavri & Fowler, 2001). Although many of these arguments may apply to standardized as well as informal procedures, the issue of unfairness is much more pronounced when screening is done using intuitive or subjective criteria. Using nationally standardized norms, norms developed and tested locally with a relatively large normative sample, or measures that provide evidence of reliability and validity and include children from a range of ethnic and economic backgrounds helps us to guarantee that screening procedures are as fair as we can make them. One example is presented by Massa, Gomes, Tartter, Wolfson, & Halperin (2008), who used the Observational Rating Scale from the Clinical Evaluation of Language Fundamentals-3 (Semel et al., 1995) completed by parents and teachers to screen 7- to 10-year-old children for difficulties in listening, speaking, reading and writing in a culturally diverse urban setting. Results revealed that the general questions posed on this measure (such as "Does you child have trouble with spoken directions?') showed reliability and validity for both parent and teacher responses in identifying language disorders in this population.

In addition to demonstrated reliability and validity and a large and representative norming sample, a screening test should have some additional properties. It should cover a relatively wide range of language behaviors, provide clear scoring with pass/fail criteria, have adequate sensitivity and specificity to accurately identify a large majority of children who have language difficulties, and take a short amount of time (Justice, Invernizzi, & Meier, 2002; Sturner et al., 1994). The only way to find out whether a test meets these standards is to read the manual carefully. We need to look at the norming sample to see whether it contains children such as those on whom we will be using the test. We need to review the items to evaluate their comprehensiveness. We need to look at the scores and statistics provided to determine whether the test is valid and reliable, provides adequate sensitivity and specificity (see Chapter 2), and gives a usable pass/fail standard. We need to try it a few times to see whether it is efficient to use. When we find a test that meets these standards, we can feel confident that our screening will be fair, efficient, and accurate. Some instruments that have been developed for screening communicative skills in school-age children are listed in Appendix 11-1.

Still, the availability of psychometrically sound instruments is a problem. Sturner et al. (1994) found in their review of 51 standardized screening instruments that only six provided adequate validity data. Only nine were found to be adequately brief and comprehensive. Justice, et al. (2002) report that none of the six early literacy screening instruments they examined contained all essential features. Spaulding, Plante, and Farinella (2006) reported

that information on test sensitivity and specificity, which would help clinicians decide how accurately the test identifies children with language disorders, was available for only 20% of the language tests they evaluated, and acceptable accuracy (80% or better) was reported for only 12%. These findings underline the importance of being critical consumers in selecting commercial tests and screening instruments. Just because a test is published does not mean it has adequate psychometric properties. We need to review the tests we use carefully to ensure they are fair, efficient, and effective. Moreover, we should argue for careful consideration of psychometric properties in the selection of any screening instruments our schools use. This can help to ensure that we provide assessment services in a fair and appropriate way.

RTI, Referral, and Case Finding

A second way in which school children get to the SLP for assessment is through teacher referral, because of a perception on the teacher's part that something is not quite right about the child's language, either in the context of a formal RTI system, or in less formal observational situations. Teacher referral is not as simple as it sounds, though. There are lots of reasons why teachers do not refer every child about whom they have concerns. One is that the student's language may sound acceptable to "the naked ear," as we've discussed; that language deficits seem minor in comparison to behavioral, attentional, academic, or social problems the student is experiencing; or that the child's problem is considered to be primarily in the area of reading, rather than oral language. Teachers who identify students as needing support through the RTI process may not consider the role that oral language plays in literacy acquisition, and may provide Tier II and III supports only for phonics and word identification, without considering the need for work on oral language areas such as phonological awareness, vocabulary, and language comprehension. SLPs sometimes provide in-service presentations that "update" faculty on recent findings about language-literacy connections to get this message across.

Another way to optimize the efficacy of teacher referrals, particularly in schools or grade levels where RTI is not being used, is to provide teachers with specific criteria or checklists to use. We can distribute these checklists to classroom teachers and ask them to fill out one for each student in the class who seems to be having difficulty or about whom they have some concern. Damico and Oller (1980) found that encouraging teachers to use pragmatic criteria for referral, rather than criteria based on syntactic and morphological errors, resulted in more accurate referrals. Damico (1985) developed a Clinical Discourse Analysis Worksheet to analyze a speech sample of students with language-learning disorders (LLDs). This worksheet can be modified and used as a pragmatically oriented checklist to be given to teachers as a basis for referring students. One such modification appears in Figure 11-1. Any student for whom a teacher answers "yes" to several (more than four, say) of these questions could be a candidate for assessment in greater depth. Once we identify these students, of course, we can assess them in a variety of areas, including but not limited to pragmatics. Pragmatic criteria for referral, though, seem to be a valid way to identify which students are having problems with the linguistic demands of the classroom. Bishop (2003) developed the Children's Communication Checklist—2 (CCC-2), in order to identify students with specific language disorders and to differentiate problems in language form from those in the area of pragmatics. Botting (2004) showed that the CCC-2 is sensitive to children with a variety of communication impairments. The CCC-2 can also

Student name _____ Grade _____
Teacher _____ Date _____

To the teacher: Please circle the answer to each question that best describes your student's performance in class.

Does the student:

Give insufficient information when giving instructions or directions?	Yes	No
Use nonspecific vocabulary *(thing, stuff, whatchamacallit)*?	Yes	No
Perseverate or provide too much redundancy when talking?	Yes	No
Need a lot of repetition before even simple instructions are understood?	Yes	No
Give inaccurate messages; seem to talk when he or she "doesn't know what he or she is talking about"?	Yes	No
Make rapid and inappropriate changes in conversational topic without cues to the listener?	Yes	No
Seem to have an independent conversational agenda or give inappropriate and unpredictable responses?	Yes	No
Fail to ask relevant questions to clarify unclear messages so that communication frequently breaks down?	Yes	No
Use language that is inappropriate for the social situation?	Yes	No
Produce speech that is frequently disrupted by repetitions, unusual pauses, and hesitations?	Yes	No
Use many false starts, self-repetitions, and revisions in talking?	Yes	No
Produce long pauses or delays before responding?	Yes	No
Lack forethought and planning in telling stories and giving instructions?	Yes	No
Fail to attend to cues for conversational turns, interrupting frequently or failing to hold up his or her end of the conversation?	Yes	No
Use inconsistent or inappropriate eye contact in conversation?	Yes	No
Use inappropriate intonation?	Yes	No

Please use the space below to describe any other concerns you have about this student's communication:

FIGURE 11-1 Pragmatically oriented discourse analysis to be used as a teacher referral form. (Adapted from Damico J. [1985]. Clinical discourse analysis: A functional language assessment technique. In C.S. Simon [Ed.], *Communication skills and classroom success: Assessment of language-learning-disabled students* [pp. 165-206]. San Diego, CA: College-Hill Press.)

serve as tool to help teachers make referrals for students with communication difficulties (Appendix 11-2). *The Pragmatic Language Skills Inventory* (Gilliam & Miller, 2006) is also a useful tool. Additional suggestions for using checklists to identify children in primary grades who may be at risk for literacy problems come from Catts (1997) and Justice et al. (2002). A checklist based on their suggestions is shown in Figure 11-2, which can be used to help first-grade teachers identify students who may have LLD, and can be used as part of the monitoring system for tracking progress of children in RTI classrooms.

Monitoring Progress in RTI

In addition to identifying students with language disorders within the general education population who may not have been previously identified, SLPs in RTI settings also play a role in monitoring progress across the RTI Tiers. As we've seen, in RTI settings, students will be provided with scientifically based literacy instruction in general education at Tier I, and those who experience significant difficulties will receive more intensive, small group instruction at Tier II. Monitoring of progress within these tiers may include commercial reading assessments (Mellard, McKnight, & Woods, 2009), benchmark measures such as the *Phonological Awareness and Literacy Screening* (PALS; Invernizzi & Meier, 2002) to evaluate classroom performance as a whole on specific high-priority reading targets (Justice, 2006), or curriculum-based methods such as the *Dynamic Indicators of Basic Early Literacy Skills* (DIBELS; Kaminski & Good, 1998) to evaluate performance on specific indicators of progress within the

Standardized tests are used to establish eligibility for school-based services.

curriculum. Benchmark measures will usually be administered several times during the school year to track progress of the class as a whole and identify students who fail to achieve predetermined standards. Curriculum-based assessments are typically used more frequently, as often as weekly, to identify children who are not acquiring the specific skills being presented in the curriculum. According to Justice (2006), the benchmark measures differ from curriculum-based measures in that benchmark measures can be used to identify goals for future instruction, such as increasing the number of letter-sound associations known. This level of monitoring is analogous to what SLPs do when we assess children's current level of performance in oral language, and use the information collected to plan an intervention program. Curriculum-based assessments, on the other hand, are often timed and are designed to be quick ("How many letters can a child name in 1 minute?"). Instead of translating directly into instructional goals, these measures are used to track *progress over time,* and to show that particular children have a slower rate of growth than their peers. They

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Screening for Language-Based Reading Disabilities Checklist

Child's name: _____   Birthday: _____
Date completed: _____   Age: _____

This checklist is designed to identify children who are at risk for language-based reading disabilities. It is intended for use with children at the end of kindergarten or beginning of first grade. Each of the descriptors that characterize the child's behavior/history should be checked. A child receiving a substantial number of checks should be consider at-risk for language disability.

Speech sound awareness

_____ Does not understand and enjoy rhymes

_____ Does not easily recognize that words may begin with the same sound

_____ Has difficulty counting the syllables in spoken words

_____ Has problems clapping hands or tapping feet in rhythm with songs and/or rhymes

_____ Demonstrates problems learning sound-letter correspondences

Written language awareness

_____ Does not orient book properly during book-looking

_____ Cannot identify words and letters in a picture book

Letter name knowledge

_____ Cannot recite the alphabet

_____ Cannot identify printed letters when named by teacher ("Where is the A?")

_____ Cannot name letters when asked

Word retrieval

_____ Has difficulty retrieving a specific word (e.g., calls a sheep a "goat" or says "you know, a woolly animal")

_____ Shows poor memory for classmates' names

FIGURE 11-2   Screening for language-based reading disabilities in kindergarten and first grade: A checklist.   (Based on Catts, H. [1997]. The early identification of language-based reading disabilities. *Language, Speech, and Hearing Services in Schools, 28,* 88-89; and Justice, L., Invernizzi, M., & Meier, J. [2002]. Designing and implementing an early literacy screening protocol: Suggestions for the speech-language pathologist. *Language, Speech and Hearing Services in Schools, 33,* 84-101.)

_____ Speech is hesitant, filled with pauses or vocalizations (e.g., "um," "you know")

_____ Frequently uses words lacking specificity (e.g., "stuff," "thing," " what you call it")

Speech production/perception

_____ Has problems saying common words with difficult sound patterns (e.g., *animal, cinnamon, specific*)

_____ Mishears and subsequently mispronounces words or names

_____ Combines sound patterns of similar words (e.g., saying "escavator" for escalator)

_____ Shows frequent slips of the tongue (e.g., saying "brue blush" for blue brush)

Comprehension

_____ Only responds to part of a multiple-element request or instruction

_____ Requests multiple repetitions of instructions/directions with little improvement in comprehension

_____ Fails to understand age-appropriate stories

_____ Lacks understanding of spatial terms, such as left-right, front-back

Expressive language

_____ Talks in short sentences

_____ Makes errors in grammar (e.g., "he goed to the store," "me want that")

_____ Lacks variety in vocabulary (e.g., uses "good" to mean happy, kind, polite)

_____ Has difficulty giving directions or explanations (e.g., may show multiple revisions or dead ends)

_____ Relates stories or events in a disorganized or incomplete manner

_____ May have much to say, but provides little specific detail

Literacy motivation

_____ Does not enjoy classroom story-time; wanders, fails to pay attention to stories read by teacher

_____ Shows little or no engagement in classroom literacy activities, such as writing, book-looking

FIGURE 11-2, cont'd

are similar to the probes an SLP might present within an ongoing intervention program to learn whether or not the child is progressing. Figure 11-3 shows an example of curriculum-based assessment; here, progress monitoring of the number of words read from a standard word list in a first grade classroom shows that Students 10, 11, and 12 are making much slower gains on this measure over the course of the Fall term than their peers. It is this slowed rate of growth that would lead to placement for these children in a Tier II group. Additional information and materials for progress monitoring are available at the National Center on Student Progress Monitoring Web site: www.rti4success.org/chart/progressMonitoring/progressmonitoringtoolschart.htm#.

Fall Progress Monitoring: Words Read
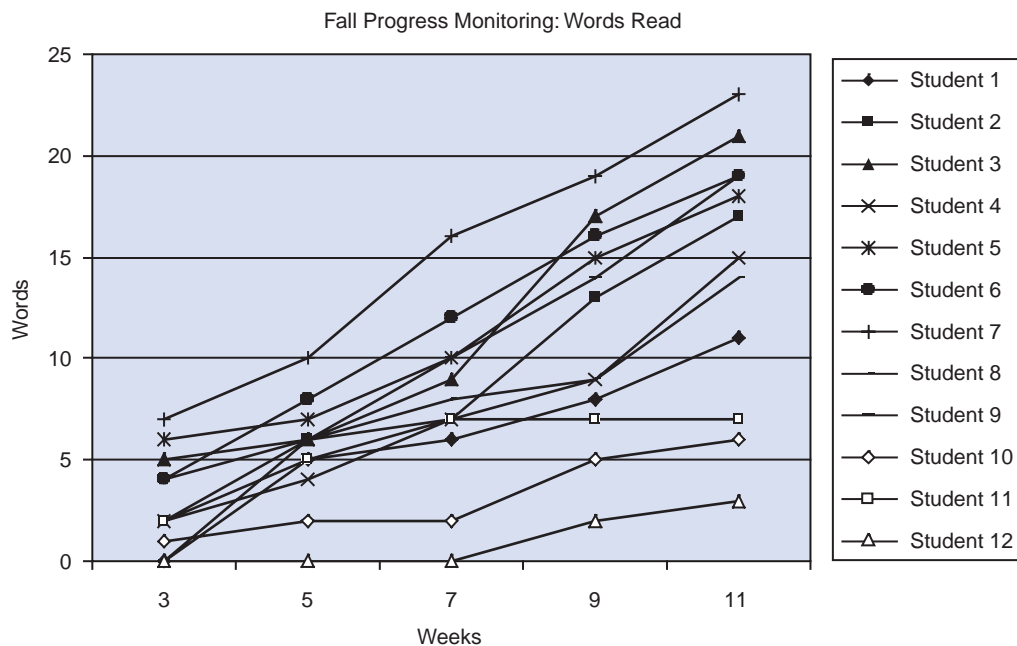
FIGURE 11-3   Fall progress monitoring: Words read.

Once Tier II intervention is initiated, progress would be monitored just as it was in Tier I, using both benchmark and curriculum-based methods. Tier II intervention itself is, in a way, a kind of dynamic assessment (see Chapter 2), in which we provide some diagnostic teaching to determine whether it is sufficient to overcome a child's difficulty. If so, the child may move back into Tier I and be monitored there. Occasional "doses" of Tier II intervention may be sufficient to allow some children to develop proficient reading skills.

For other children, however, Tier II intervention will not be enough. Either because of inherent difficulties such as dyslexia, or because of a severely impoverished basis in oral language and emergent literacy, these children will need to move on to Tier III instruction and/or special education. In these cases, the determination of eligibility for special educational services will generally require more intensive assessment than has been conducted within the RTI framework, although many LEAs allow information from RTI monitoring to contribute to the determination of eligibility for special education.

EVALUATION FOR SPECIAL EDUCATIONAL NEEDS

Using Standardized Tests in the L4L Stage

As we've seen, many students who have trouble with academic work have at least marginally adequate oral language, particularly in the areas usually measured on standardized tests, such as syntax, morphology, and vocabulary. What good are standardized language tests for these students?

School-based clinicians will probably find that some standardized testing is needed in the L4L stage. The reason can be summed up in one word: *eligibility*. Many states require that a student perform below a designated level on some standardized measure to qualify for special educational services, including the services of the SLP. States have differing criteria for eligibility for various kinds of speech-language services, but most include a requirement for some standardized testing. Moore-Brown and Montgomery (2005), for example, give examples of the variety of eligibility criteria used in various states within the United States. These include levels of performance on standardized tests, severity ratings, general indicators of delay, and results of the RTI process. At least one-third of the states reviewed require some form of standardized testing to establish eligibility. When a student has been referred by a teacher or identified as having language deficits as a result of a screening, a first step is often to establish the student's eligibility for services by means of standardized testing. Appendix 11-2 provides a sample of standardized tests developed for students in the L4L period.

If a pragmatically oriented checklist has been used as a referral tool, the clinician may not have much sense of what the student's performance in language form and content might be. To begin to get such a sense, a short conversational interaction, such as the one we talked about for assessing intelligibility for children with developing language in Chapter 8, can be used. By talking to the student informally for a brief time (say 5 minutes), an SLP can break the ice and give both participants a chance to get to know each other a little. The SLP also can get a feel for what the child's linguistic abilities and disabilities might be. This brief conversational sample can help point us toward the assessment instruments that will help establish the student's eligibility for services.

Children who show articulation errors, syntactic and morphological mistakes, or evidence of word-finding or vocabulary problems in the conversation may be evaluated with tests that tap these areas to establish eligibility. It may be, though, that the student's language form and content appear adequate to the "naked ear" or that the problems heard are not specific to one area but seem to involve a more generalized restriction of speech, conceptual

content, organization, or pragmatic appropriateness. If this is the case, we will want to use a more broad-based approach to evaluation. Three types of standardized tests can be used to affect this approach: comprehensive language batteries, tests of pragmatics, and tests of learning-related language skills.

Comprehensive batteries are commonly used in the assessment of students with LLD. Most states allow children to qualify for services if they score below a certain level on some subtests of a standardized battery or if they score below criterion on one subtest of a similar area on two standardized batteries. In these cases, batteries that look at a broad spectrum of abilities will be most useful in identifying students, like many of our clients with LLD, who perform adequately in some aspects of language but have difficulty in a few areas that are interfering with their achievement in school. Some examples of test batteries that can be used in this way include *Clinical Evaluation of Language Fundamentals—4* (Semel, Wiig, & Secord, 2003; which also contains a checklist for assessing pragmatics), *Comprehensive Assessment of Spoken Language* (Carrow-Woolfolk, 1999b), *Test of Language Development—3—Primary and Intermediate* (Newcomer & Hammill, 1997), and the *Utah Test of Language Development—4* (Mecham, 2003). These batteries can sample a range of oral language abilities, in the hope of identifying specific areas in which students are having problems that will qualify them for services, as well as pointing out areas of strength.

As we saw in Chapter 10, students with LLD commonly have pragmatic deficits, and some have their primary deficits in this area. Standardized tests of pragmatics, then, can be useful for establishing eligibility. As we discussed earlier, using a standardized test to assess pragmatic function is something like using a sound-level meter to assess the quality of a symphony. Since pragmatic function is the ability to use language appropriately in real conversation, its assessment in a formal setting is bound to be somewhat limited and artificial. Tests of pragmatics may not be a necessary part of the assessment battery for children at earlier language levels, who will have plenty of deficits in form and content. Still, these tests can be useful for documenting deficits at the L4L stage, when children have outgrown some of the more obvious form and content problems.

Standardized tests of pragmatics in students with LLD most likely will be used to establish eligibility for services. Some students with LLD, as well as high-functioning students with autism spectrum disorders (ASD) will not score low enough on tests of language form and content to qualify for communication intervention. Using a test of pragmatics with these clients may provide information that substantiates our informal assessment of their deficits in pragmatic areas. In other words, we can use standardized tests of pragmatics for the basic purpose for which all standardized tests were designed: to show that a child is different from other children. A few examples of standardized tests in this area include the *Test of Pragmatic Language* (Phelps-Terasaki & Phelps-Gunn, 1992), the *Communication Abilities Diagnostic Test* (Johnston & Johnston, 1999), and *Test of Language Competence Expanded Edition* (Wiig & Secord, 1989). Recently, Young, Diehl, Morris, Hyman, and Bennetto (2005) showed that the *Test of Pragmatic Language* was helpful in identifying pragmatic deficits in students with autism spectrum disorder. Reichow et al. (2008) showed how subtests of the *Comprehensive Assessment of Spoken Language* (Woolfolk, 1999) can also be used in this way. The *Children's Communication Checklist 2,* (Baird, 2003), too, has been shown to be useful for this purpose.

A third type of standardized test also can help assess students that the clinician believes need help with oral language foundations for the classroom. These tests look specifically at learning-related language skills. Some examples of these kinds of tests are the *Comprehensive Test of Phonological Processing* (Wagner, Torgenson, & Rashotte, 1999), the *Language Processing Test—3* (Richard & Hanner, 2005), the *Test of Awareness of Language Segments* (Sawyer, 1987), the *Test of Early Written Language—2* (Herron, Hresko, & Peak, 1996), the *Test of Relational Concepts-Revised* (Edmonston & Thane, 1999), the *Test of Word Finding in Discourse* (German, 1991), and the *Word Test—2—Revised* (Huisingh, Bowers, LoGuidice, & Orman, 2004). These tests specifically tap the language skills that are likely to be less developed in students with LLD. Tests such as these are likely to show that a student with LLD is significantly different from peers in areas of language skills that influence academic performance and can be used to help establish eligibility for services.

CRITERION-REFERENCED ASSESSMENT AND BEHAVIORAL OBSERVATION IN THE L4L STAGE

Once we have established a student's eligibility for services by means of a standardized test, we can go on to the other purposes of assessment: establishing baseline function and identifying targets for intervention. Let's look at the methods available for doing this in the various areas of oral language that we need to evaluate at the L4L stage.

Phonology

Most students with LLD who function at the L4L stage do not make a large number of phonological errors. Some distort a few sounds or retain one or two phonological simplification processes. When this is the case, procedures discussed for the developing language stage can be used to assess these problems. If obvious phonological errors are not evident, though, we may want to know how phonologically "robust" the child's system is. As we've discussed, researchers such as Catts (1986); Dollaghan and Campbell (1998); and Graf Estes, Evans, and Else-Quest (2007) have shown that children with LLD often have trouble with phonologically demanding tasks, such as producing complex, unfamiliar words and phrases, even when their conversational speech is not full of errors. Such vulnerability may indicate problems with phonological awareness as well, as Webster and Plante (1992) suggested. Phonological awareness, as we've seen, is important for literacy acquisition. So part of the oral language assessment of a child with or at risk for LLD, particularly a child in the primary grades or one who is reading on a primary-grade level, should include some index of these higher level phonological skills that serve as the foundation for learning to read.

There are several ways to approach this assessment. The first is to look at production skills in phonologically demanding contexts. Hodson's (1986) Multisyllabic Screening Protocol section of the *Assessment of Phonological Processes—Revised* can be used to measure this aspect of phonological skill. Many standardized tests of phonological awareness also contain subtests that use non-word repetition tasks, since these have been shown to be markers of language impairment (Dollaghan & Campbell, 1998; Graf-Estes et al., 2007), and provide standardized scores. The *Comprehensive Test of Phonological Processing* (Wagner, Torgeson, & Rashotte, 2000) and the *Children's Test of Nonword Repetition* (Gathercole & Baddeley, 1996) are two examples. Appendix 11-3 presents a list of standardized tests of phonological awareness, indicating which contain non-word repetition subtests.

A second way to look at higher level phonological skills in students with LLD is to examine phonological awareness directly. There are a variety of tests of phonological awareness currently on the market. Appendix 11-3 profiles some of these. The pitfall in using these tests is that they can take a good deal of time to deliver a small amount of information (i.e., whether or not the child is at risk for literacy difficulty) that might be inferred as easily from a shorter assessment, information derived from the RTI process, or curriculum-based assessment.

A third approach to assessing higher-level phonological impairments was suggested by the work of Catts, Fey, Zhang, and Tomblin (2002); Powell, Stainthorp, Stuart, Garwood, and Quinlan, (2007); and Swank (1994), who advocate assessment of *rapid automatized naming* (RAN). Bowers and Grieg (2003), Brizzolara et al. (2006), and Wolf et al. (2002) have reviewed evidence showing that RAN, like phonological awareness, is also highly correlated with reading ability. In RAN tasks students are asked to name common objects presented in a series as rapidly as they can. Children also can be asked to produce overlearned series such as days of the week or months of the year. Performance on tasks such as these has been shown to discriminate between good and poor readers. Some standardized tests, such as the *Clinical Evaluation of Language Fundamentals—4* (Semel, Wiig, & Secord, 2003), contain sub-tests that tap this ability.

Despite the importance of identifying risk for reading failure, and the known strong associations among non-word repetition, RAN, phonological awareness, and reading, the main goal of this assessment must always be kept in mind. That goal is to identify children in early primary grades who are *at risk* for reading failure and to provide early, preventive intervention to give them an opportunity to avert this failure. For older students already known to have reading deficits, phonological assessment is less important, and evaluation of other areas of oral language needed to support reading should be our focus. And even for younger children, shorter, informal methods of identifying risk, such as the checklists like the one in Figure 11-2 or suggested by Justice (2006), or simply working with kindergarten and first-grade teachers in monitoring processes like RTI to quickly identify children who are having trouble with standard classroom phonological awareness activities, as Justice and Kaderavek (2004) have suggested, may be just as effective. And when we think about intervening for these problems, Catts (1999a) has reminded us that the aim of these interventions is to teach children to read and spell, not to develop phonological awareness as a "splinter skill." Once basic phoneme segmentation, sound blending, and letter-sound correspondence have been mastered, we should move on to building other aspects of oral language skill to support reading development, such as vocabulary, fluency, text comprehension, and literate language production, rather than continuing to teach more and more advanced phonological awareness skills.

Semantics

Receptive Vocabulary

Most general language batteries have a receptive vocabulary section, usually using a picture-pointing format. If the student scores below the normal range, a problem with receptive vocabulary can be identified. Further evaluation to probe for specific receptive vocabulary items to be targeted in the intervention program should focus on the words the student needs to succeed in the classroom. There are two ways we can accomplish this classroom-based vocabulary assessment.

Instructional Vocabulary

One way is for the clinician to observe in the student's class and note the kinds of spatial, temporal, logical, and directive vocabulary the teacher uses. These can form the basis for a criterion-referenced vocabulary assessment, in which the student is asked to follow directions containing these words, one target word per direction. For example, suppose the teacher typically tells the students, "Write your name in the upper right-hand corner of the paper, write the date below your name, and number your paper to 20 down the left side." The clinician might assess the student's understanding of the vocabulary in these directions by isolating each potential problem word and testing its comprehension in a game-like format, such as the one in Box 11-1. Any words the student has trouble comprehending that are common in the teacher's instructional language could be targeted as part of the intervention program. Alternatively, the teacher could be made aware of the student's difficulty, and consultation suggestions could be made to encourage the use of visual cues along with instructions, additional time for the student to process the instruction, and paraphrasing the instruction to give the student an extra chance to understand it.

Textbook Vocabulary

A second source of potentially problematic vocabulary is the student's classroom texts. If a student has receptive vocabulary deficits identified in the standardized portion of the assessment, we can probe for words in the texts that might be causing problems. We could then focus on expanding the understanding of these words as part of the intervention program.

There are a variety of ways to obtain lists of words from classroom texts to use as vocabulary probes. Many textbooks have glossaries at the end of each chapter or of the book that list words that would be new to most of the book's readers. These can be one source of words to probe for comprehension. Teachers sometimes base spelling lists or other classroom vocabulary work on words drawn from the texts used in class. These lists can be obtained from the teacher and used as the basis for the vocabulary assessment. The clinician also can review the student's homework with an eye toward seeing which words seem to be poorly understood.

We should remember when working with students with LLD that it is not only the technical, content vocabulary of the texts that might cause these students difficulty. More common spatial terms (*above*, *north*); temporal terms (*after*, *following*); and connectives (*however*, *consequently*) also may cause problems. Nelson (2010)

BOX 11-1 Criterion-Referenced Assessment of Classroom Direction Vocabulary

Clinician: Let's pretend you're a soldier. You're a good soldier. You always do what the sergeant says. Here's some paperwork the sergeant wants you to take care of. I'll be the sergeant and give some orders. You follow the sergeant's orders and write what the sergeant says to write on this paper. Listen carefully, now! Here we go!

1. OK, Private, draw a star in an *upper corner* of the paper.
2. Now, Private, draw a tank on the *right-hand side* of the paper.
3. Write today's *date*, Private.
4. Number your paper from 1 to 10.
5. Alright, Private, draw a line down the *left side* of the paper.
6. Now put a square in the *upper left-hand corner*.

suggests having students read aloud from classroom texts and identifying words they mispronounce as potential sources of vocabulary assessment.

Once we have found a list of words in the texts to probe, we need to decide how to assess whether the student understands them. We could ask the student to define them, but providing a definition is a metalinguistic skill that many students with LLD cannot do very well, even when they do know generally what a word means. We could just ask the student whether he or she knows a particular word, but comprehension monitoring deficits may cause problems here. For some nouns, we may be able to ask the student to identify pictures referring to the words in question in the textbook. Words such as *planet*, *solar system*, etc., could be assessed this way. So could geographical terms such as *mountain*, *plateau*, and *piedmont*, which are used in maps or diagrams in social studies texts.

Many of the words we'll want to assess are not easily depicted, though. In such cases, we might ask students to paraphrase a sentence containing the word, or offer several choices and have the student select the best meaning (Nelson, 2010; Ukrainetz, 2007). Alternatively, we could try to get the student to act out or indicate the meaning of the word in some nonverbal way. We might, for example, ask the student to "Show me orbit" with two tennis balls or to "Show me division" with some raisins. For more general assessment, language batteries that include subtests of words that are often difficult for students with LLD can be used. The *Clinical Evaluation of Language Fundamentals—4* (Semel, Wiig, & Secord, 2003) and the *Detroit Tests of Learning Aptitude–Fourth Edition* (Hammill, 1998) are two examples. When students score below the normal range on these subtests, an item analysis can be done as an informal assessment of the specific vocabulary items that are hard for the student to understand. For some of the spatial, temporal, and connective words we are concerned about, we can ask the student to act out several versions of the same sentence that differ only by words in the category being tested. Examples of such sentences for informal assessment are given in Box 11-2.

Expressive Vocabulary

Receptive vocabulary is larger than expressive vocabulary in people of all ages. Some students may be able to glean the meaning of an unknown word from its context but would not be able to use the same word appropriately without a more elaborated understanding of it. We talked in Chapter 8 about the complicated relationship between receptive and expressive vocabulary, and the fact that we may want to examine each aspect of word knowledge somewhat independently. In looking at expressive vocabulary skills in the L4L stage, we generally focus two basic components: lexical diversity and word retrieval.

Lexical Diversity

The ability to use a flexible, precise vocabulary contributes a great deal to the efficiency of our communication. The Type-Token Ratio (TTR; Templin, 1957) is a measure that has been used traditionally to assess lexical diversity. It involves counting the total number of words (tokens) in a 50-utterance speech sample and dividing this number into the number of different words (types) in the sample. Owen and Leonard (2002) showed that children with SLI did not generally differ from same-age peers on this measure. Watkins, Kelly, Harbers, and Hollis (1995) compared the ability of the TTR as opposed to the Number of Different Words (NDW) and number of total words (NTW) in a speech sample to differentiate children with normal and impaired language development. They found that in speech samples of various sizes, the NDW and NTW measures were more

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BOX 11-2 Informal Assessment of Spatial, Temporal, and Connective Terms

SPATIAL TERMS
Materials: a paper with a sticker stuck in the middle, a pencil, a sheet with the directions written on it for the clinician to score as the student makes the dots.

  Make dots *above* the sticker.
  Make dots *below* the sticker.
  Make dots *around* the sticker.
  Make dots to the *right* of the sticker.
  Make dots *beside* the sticker.
  Make dots on the *left-hand side* of the sticker.

TEMPORAL TERMS
Materials: a whistle, bell, or other noisemaker; a sheet with the directions written on it for the clinician to score as the student uses the noisemaker.

  Make a noise *after* I say "Go." (Clinician says "Go" after a pause.)
  Make a noise *before* I say "Go." (Clinician says "Go" after a pause.)
  Make a noise *while* I say "Go." (Clinician says "Go.")
  Make a noise *as* I say "Go." (Clinician says "Go.")
  Make a noise *when* I say "Go." (Clinician says "Go.")

CONNECTIVE TERMS
Materials: a whistle, bell, or other noisemaker; a sheet with the directions written on it for the clinician to score as the student uses the noisemaker.

  Make a noise *if* I say "Go." (Clinician says "Go.")
  Make a noise *although* I say "Go." (Clinician says "Go.")
  Make a noise *unless* I say "Go." (Clinician says "Go.")
  Make a noise *until* I say "Go." (Clinician says "Go" after a pause.)

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sensitive estimates of children's lexical diversity than the TTR. Klee (1992), as well as Tilstra & McMaster (2007), reported that both NDW and NTW increased significantly with age and both differentiated children with normal and impaired language. NDW and NTW produced in a conversational speech sample may, then, be the best means we have available to evaluate children's lexical diversity. These measures can be calculated automatically by computer-assisted speech sample analyses programs such as the Systematic Analysis of Language Transcripts (SALT) (Miller & Chapman, 2006). Leadholm and Miller (1992) presented data on NDW and NTW in the 100-utterance conversational speech samples of typical school-age children in the Madison, Wisconsin, Reference Data Base. These data are summarized in Table 11-1. If NDW and NTW measures are collected from conversational samples of clients' speech and the values computed fall below the normal ranges given in Table 11-1 (provided clients are from a population similar to that of the Reference Data Base), a deficit in lexical diversity could be diagnosed. Intervention could focus on increasing expressive vocabulary by focusing on words necessary for success in the curriculum. Heilmann, Miller, and Nockerts (2010) also discussed methods of investigating vocabulary diversity in narrative language samples.

Word Retrieval

Another aspect of expressive vocabulary that is important to assess in the L4L stage is word retrieval. As we discussed in Chapter 10, word-finding difficulties are very common in students with LLD. One clue to the presence of a word-retrieval problem would be a

TABLE 11-1 Normal Range of Number of Different Words and Number of Total Words in 100-Utterance Speech Samples of Children between 5 and 11 Years

Age	NDW		NTW	
	1 SD–	1 SD+	1 SD–	1 SD+
5-year-olds	156	206	439	602
7-year-olds	173	212	457	622
9-year-olds	183	235	496	687
11-year-olds	191	267	518	868

Normal range = (±1 standard deviation from group mean).
NDW = number of different words; NTW = number of total words.
Adapted from Leadholm, B., & Miller, J. (1992). *Language sample analysis: The Wisconsin guide*. Madison, WI:Wisconsin Department of Public Instruction.

much higher score on a receptive vocabulary test, such as the *Peabody Picture Vocabulary Test—IV* (Dunn & Dunn, 2006), than on an expressive vocabulary test, such as the *Expressive Vocabulary Test—2* (Williams, 2007). Another would be a teacher report of word-finding problems on one of our referral checklists, like the one in Figure 11-1. We also might hear some word-finding problems in our short conversational interaction, with which we began the assessment session.

If we think word retrieval might be a problem, we generally want to establish the fact of the difficulty with a standardized test or a portion of a test that investigates word finding specifically. It is a good idea to document a word-retrieval problem by means of a score on a norm-referenced assessment, rather than making a subjective judgment. Several tests listed in Appendix 11-2, including the *Test of Word Finding in Discourse* (German, 1991), assess word-retrieval skill. Several others, including the *Clinical Evaluation of Language Fundamentals—4* (Semel, Wiig, & Secord, 2003), the *Test of Semantic Skills—Primary* (Bowers, LoGiudice, Orman, & Huisingh, 2002), and the *Language Processing Test—Revised* (Richard & Hanner, 1995), also have subtests that assess word finding, on which item analyses can be done for criterion-referenced assessment. If a word-finding deficit is identified, we want to try to teach some word-finding strategies as part of our intervention program. Chapter 12 will present suggestions for such strategies.

Other Semantic Skills

Brackenbury and Pye (2005) discuss the importance of looking beyond vocabulary when assessing semantic skills. Several other aspects of semantic development that can be considered for assessment are discussed below.

Quick Incidental Learning (Fast Mapping)
The ability to acquire new words quickly, with limited meanings, from very abbreviated exposure, is one of the ways in which children's vocabularies are able to grow so rapidly. Often called quick incidental learning (QUIL), or fast-mapping, this capacity has been shown to be less well developed in children with language disorders (Dollaghan, 1987; Eyer et al., 2002). Many studies of QUIL use nonsense words to determine a child's ability to learn a new word from naturalistic interactions, and this ability is often considered a good way to assess a child's intrinsic language skill, especially in children who are not native speakers of English or who may have impoverished language experience (Branckenbury & Pye, 2005). One way to assess QUIL clinically is to use the

Diagnostic Evaluation of Language Variation (DELV; Seymour, Roeper, & de Villiers, 2005), which contains a QUIL subtest.

Semantic Relations between Clauses
One of the major changes in children's language in the school years is an increase in the use of sentences that contain more than one proposition, or main idea. We examine these kinds of expressions when we look at complex sentence development in our assessment of productive syntax. We also can look at how students attempt to convey semantic relations between propositions, even when they are not using syntactically correct forms to do so. A student who is trying to express a variety of semantic relations between propositions, even with primitive syntactic forms, is showing a readiness to learn complex syntax. A student who is not doing this may need to work on more basic sentence forms and to hear more language in which propositions are conjoined syntactically before making production of complex syntax a goal.

Suppose we do our complex sentence analysis of a speech sample (which we'll discuss in the next section) and find very little use of any syntactically complex forms. We can then look at the sample for evidence of presyntactic expression of semantic relations between propositions. In normal development, children first express these relations by merely juxtaposing two clauses ("Mommy here, Daddy gone"). Later they conjoin with nonspecific conjunctions, primarily *and*. Students with LLD may show this kind of immature attempt at relating ideas. The kinds of relations we would expect to see emerging (Lahey, 1988) include the following:
1. Temporal ("Eat dinner and go to sleep.")
2. Causal ("Go to store and buy shoes.")
3. Conditional ("Eat dinner, go outside.")
4. Epistemic ("I think draw pink.")
5. Notice-perception ("Show me how do a somersault.")
6. Specification ("I have a dog and it's brown.")
7. Adversative ("The girls sit here and the boys sit there.")

If students do not use complex syntax, we can look for presyntactic expression of these semantic relations between propositions in the speech sample. When they are present, they suggest that we teach syntactically correct forms for expressing these same relations. If neither the complex syntax nor the presyntactic expression of semantic relations between clauses is found, we may want to spend time exposing the student to literate language styles that contain complex syntax and provide opportunities for the student to paraphrase the language heard in these sessions. Such exposure may help the student see how ideas are related in language.

Syntax and Morphology

A Strategy for Assessing Receptive Syntax and Morphology

We've talked before about the need to assess syntax and morphology in the receptive and expressive modalities, and why it's important: the fact that children frequently produce sentence forms even when they fail to perform correctly on comprehension tests of these same forms in settings where nonlinguistic cues have been removed (Chapman, 1978; Miller & Paul, 1995). And there's an additional reason: as Scott (2009) shows, children with LLD are often delayed in understanding the kinds of complex sentences found in school reading materials. Identifying and remediating these delays are an excellent way for SLPs to support literacy development in students with LLD. When we help children learn to understand these sentences in oral form, this understanding will support their reading comprehension. So assessing and treating receptive syntactic difficulties in oral formats is an excellent way for the SLP to make a contribution to children's developing literacy.

We've also talked about the importance of assessing comprehension strategies. Paul (2000b) discussed the fact that children with LLD are likely to persist much longer than normally speaking peers in using several types of these strategies, particularly when confronted with complex sentences. Some of the difficulties that students with LLD have in understanding complex language can be traced to this protracted reliance on information other than that contained in the syntax of the sentence. Students at this stage may need to be taught how to get beyond their dependence on these processing shortcuts and to extract the appropriate information from syntactic forms. Sentences particularly vulnerable to this type of misinterpretation by students with LLD include passives ("A student is seen by a teacher" misinterpreted as "student sees teacher"); sentences with relative clauses embedded in the center between the subject noun phrase and the main verb ("The boy *who hit the girl* ran away" misinterpreted as "girl ran away"); and sentences that certain adverbial conjunctions ("Before you eat your dessert, turn off the TV" misinterpreted as "eat dessert then turn off TV").

We've also talked about the need to assess both contextualized and decontextualized language when we look at comprehension skills. We look at the decontextualized examples to determine how much *linguistic* comprehension a child displays and as a way to identify linguistic forms that can cause problems when few other cues are available. We also can look at comprehension in contextualized situations to find out whether a child can take advantage of the nonlinguistic cues in the environment if syntactic understanding is incomplete.

The general strategy for assessing syntactic and morphological comprehension we discussed in Chapter 8 will differ somewhat for children in the L4L period, because standardized tests may not identify all the comprehension deficits that can give students problems in the classroom. So we'll give you a version of the general strategy for assessing grammatical comprehension that can be used in the L4L stage:

1. Use a standardized test of receptive syntax and morphology to determine deficits in this area.

    If the student performs below the normal range, use criterion-referenced decontextualized procedures, such as judgment tasks, to probe forms that appear to be causing trouble on the standardized measure. Look for use of comprehension strategies in responses to these tasks.

    If the student scores within the normal range but teacher referral indicates problems in classroom comprehension, observe teacher language in the classroom and textbook language (as outlined in the vocabulary section earlier in the chapter). Identify syntactic structures that may be causing difficulty. Some likely candidates include complex sentences with adverbial conjunctions (*because, so, after, although, unless*, etc.); sentences with relative clauses; passive sentences; and other sentences with unusual word order, such as pseudoclefts ("The one who lost the wallet was Maria") (Eisenberg, 2007; Wallach & Miller, 1988). Probe comprehension of these structures with criterion-referenced, decontextualized procedures, such as judgment tasks (see Miller & Paul, 1995, for suggestions). Again, look for operation of strategies.

2. If the client performs poorly on the decontextualized criterion-referenced assessments, test the same forms in a contextualized format, providing familiar scripts and nonlinguistic contexts; facial, gestural, and intonational cues; language closely tied to objects in the immediate environment; and expected instructions.

3. If the child does better in this contextualized format, uses typical strategies, or both, then compare performance on comprehension to production. Target forms and structures the child comprehends well but does not produce as initial targets for a production approach. Target structures the child does not comprehend well for focused stimulation or verbal script approaches to work on comprehension and production in tandem.

4. If the child does not do better in the contextualized format and does not use strategies, provide structured input with complexity controlled, using more hybrid and clinician-directed activities for both comprehension and production.

Criterion-Referenced Methods for Assessing Receptive Syntax and Morphology

Now that we've outlined the basic strategy for receptive language assessment in the L4L stage, let's look at some of the methods available for doing both decontextualized and contextualized assessment.

Decontextualized Methods

In Chapter 2, we talked about several basic means for evaluating comprehension in decontextualized settings. These included picture pointing, behavioral compliance, object manipulation, and judgment. We've talked already in Chapter 8 about ways of using some of these methods. These methods will continue to be appropriate for use with students with LLD. In the L4L period, we can add judgment tasks to our repertoire, since school-age children are developmentally ready to make judgments of grammaticality. Judgment tasks are very convenient for assessment, because they don't require picturing or acting out linguistic stimuli. We can simply present a set of sentences and ask the client to judge whether they are in some sense "OK." We can use judgment tasks in a variety of ways to assess several areas of language competence. For the moment, though, let's look at two ways that are well-suited to assessing syntactic comprehension: judgment of semantic acceptability and judgment of appropriate interpretation.

Judgment of Semantic Acceptability

This method involves presenting a series of sentences and having the student tell whether each is "OK" or "silly." Alternatively, we can tell the student that we have two people, one who always says normal things and the other who always says ridiculous things. The "OK" picture can be of an ordinary-looking chap, such as the one in Figure 11-4. The "silly" picture can be a clownlike, silly person, as in Figure 11-5. We can display the pictures and give examples
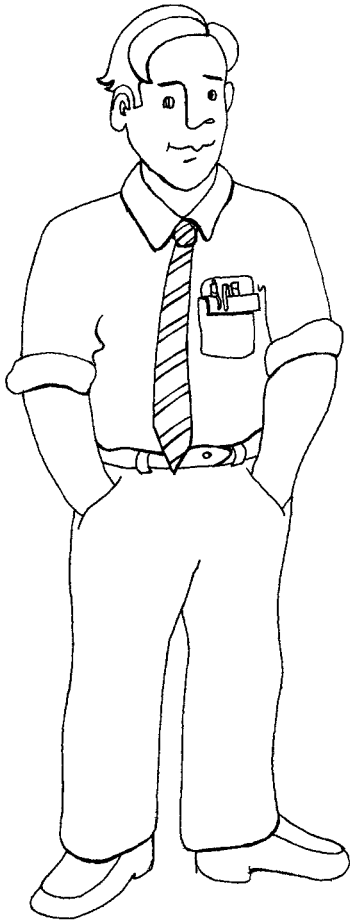
FIGURE 11-4 Norman Normal.

FIGURE 11-5 Chris Crazy.

of OK and silly things each might say. We can then ask the student to point to the picture of the character who would say each sentence. We would then read the student a list of sentences that require him or her to understand a sentence type in order to decide whether a sentence is OK or silly. Passive sentences, for example, like those listed in Box 11-3, can be probed this way.

Judgment of Appropriate Interpretation

A second way to use judgment tasks to assess comprehension in the L4L stage is to offer students two interpretations of a sentence and ask them to decide which is correct; alternatively we can offer one interpretation and ask students to judge whether it is correct. If we are assessing understanding of sentences with adverbial clauses, for example, we can say, "The boy brushed his teeth after he ate his sandwich." We can then mime the two actions in correct order (eat sandwich, brush teeth) and ask, "Did I do it right?" We can then present other similar sentences and offer both correct and incorrect interpretations for the student to judge. Table 11-2 presents an example of this type of assessment for center-embedded relative clause sentences.

Assessing Use of Comprehension Strategies

If students respond incorrectly to these decontextualized comprehension activities, we can look for the use of strategies in their responses. The two types most likely to be used in the L4L period are *probable-event* or *probable-order-of-event strategies* and *word-order* or *order-of-mention strategies*. Evans and MacWhinney (1999) found evidence for the use of both these strategies in school-aged children with language impairments. Probable-event

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BOX 11-3 A Judgment Task for Criterion-Referenced Assessment of Comprehension of Passive Sentences

Here are pictures of two guys: Norman Normal and Chris Crazy. Norman Normal always says normal things like, "I like apples" and "He sees the rain." Chris Crazy always says silly things, like, "Apples like me" and "The rain sees him." I'm going to say some sentences. After each one, you tell me if you think it was said by Norman Normal or Chris Crazy. If it's a normal, OK sentence, you'll say Norman Normal said it. If it's silly, you'll say it was Chris Crazy that said it. Try this one.

 A boy catches a ball.
 A boy is carried by a flower.
 A hot dog is cooked by a girl.
 A bank is robbed by a man.
 A girl is painted by a store.
 An orange is picked by a boy.
 A boy is lifted by a box.
 A car is washed by a girl.
 A cake is carried by a boy.
 A cake is baked by a lady.
 A car is started by a man.
 A man is planted by a flower.
 A ball is kicked by a girl.
 A key is turned by a woman.
 A man is climbed by a fence.
 A ball is dropped by a woman.
 A box is opened by a girl.
 A man is cooked by an egg.

TABLE 11-2   Example of a Judgment of Appropriate Interpretation Activity for Decontextualized, Criterion-Referenced Assessment of Center-Embedded Relative Clauses

Present each sentence, and ask student to answer each question.

Stimulus Sentence	Question	Correct Answer
The boy who chased the cow was wearing a hat.	Was the cow wearing a hat?	No
The girl who rode the pony was named Sally.	Was the pony named Sally?	No
The crook who ran from the police officer was carrying a bag.	Was the crook carrying a bag?	Yes
The woman who lost her dog was wearing a sweater.	Was the dog wearing a sweater?	No
The cat that chased the dog was brown.	Was the dog brown?	No
The cow that bit the goat was called Sadie.	Was the cow called Sadie?	Yes

and probable-order-of-event strategies involve interpreting sentences to mean what we usually expect to happen. This strategy is similar to that used by preschoolers to interpret passive sentences. Preschoolers may correctly interpret "The dog was fed by the boy," for example. They can do this not because they understand passive sentences, but because they rely more on their knowledge of how things usually happen (boys usually feed dogs, rather than *vice versa*) than on syntactic form.

Some students with LLD may continue to use this strategy, even though normally developing children move beyond it by 4 or 5 years of age. Students with LLD also may misunderstand a sentence such as, "Before you wash your hair, dry your face" for the same reason. Ordinarily we would wash our hair before drying our face, but this sentence tells the listener to do something out of the ordinary. The student with LLD may mistakenly depend more on knowledge of the order in which things usually happen than on linguistic form. If a student seems to be having trouble with sentences with adverbial clauses, we can assess use of this strategy by giving several sentences that contain unusual orders of events and have the student act them out. For passives, we can use the assessment in Box 11-3 and note whether the student does more poorly on the improbable-event sentences than the probable-event ones. If so, the probable-event strategy can be seen to operate.

The second kind of strategy we are likely to find in children with LLD is the word-order or order-of-mention strategy. Evans and MacWhinney (1999) and Paul (1990) reported that children with expressive language disorders are especially likely to use this strategy. Normally speaking children move beyond it by about age 7, but students with LLD may still use it into adolescence. We can see this strategy operating in assessments such as those in Table 11-2 and Box 11-3. Students with LLD may consistently misinterpret these sentences. For passives, they may interpret the first noun as the agent of the action, rather than the object, as the passive sentence form requires. "A hot dog is cooked by a girl," for example, will be understood as "hot dog cooks girl." For center-embedded relatives, the last noun-verb-noun sequence may be interpreted as the agent-action-object message of the sentence. So, for instance, "The cow that bit the goat was called Sadie" will be interpreted as "the goat was called Sadie." We'll talk about some techniques for providing intervention for these difficulties in the next chapter.

Assessing Comprehension in Contextualized Settings
We've talked about using nonstandardized assessment both to probe comprehension of specific forms and to look at strategies for comprehending difficult input. For both these purposes we are looking at comprehension in somewhat contrived situations. If we want to know more about how a child responds to language in a more naturalistic setting, we can set up some communicative situations and observe the child's responses. The reason for doing so, again, is as

a contrast to the performance on the decontextualized situations. If a child does just fine on a standardized comprehension test or in decontextualized probes, there is no need to assess comprehension further in a naturalistic setting. But if the child is not so good at responding to language in formal contexts, it would be nice to know whether performance is better in more natural situations.

We know that many of our students with LLD have trouble with comprehension in one more-or-less natural setting: the classroom. Many of them will have found their way to us because of this trouble. We can observe the child in other, less-demanding communicative situations, though. We might ask the child to work with a peer and some materials. We might have the peer give instructions on how to play a board game or complete a craft project. We can observe how well the client comprehends messages in this setting. This kind of interaction can also be a rich source of data on several other aspects of the client's communicative skills, including comprehension monitoring, requests for clarification, and use of other pragmatic skills.

Expressive Syntax

As we discussed when we talked about preschool assessment, standardized tests of expressive language using methods such as sentence repetition can reliably tell when children are different from other children. But they do not necessarily tell us what kinds of errors children make in spontaneous speech. For this reason, when a problem in expressive syntax has been documented by a standardized test, we will want to obtain and analyze a sample of spontaneous speech.

We also may want to look at a sample of spontaneous speech even if the child does not score below the normal range on a standardized test of expressive syntax. The reason is that many of our students with LLD will not make gross errors in syntax and morphology, but their speech may be simpler and less elaborated than that of their peers. Alternatively, it may be more rambling and disorganized. Either type of deficit can cause problems by providing an insufficient base both for the understanding of literate language and for age-appropriate writing skills. For this reason, analyzing the spontaneous speech of students with LLD may be part of the assessment even when the child does not score below the normal range on a test of syntax and morphology.

Collecting a Spontaneous Speech Sample
Evans and Craig (1992) showed that an interview format is a valid, reliable speech sampling context for students with LLD. It requires no props, and in Evans and Craig's study it elicited more advanced language behaviors than did free-play interactions with toys for the 7- to 12-year age group. Evans and Craig suggested using an interview protocol following the format given in Box 11-4 to obtain a conversational sample from children with LLD. Nelson (1998)

School-aged language samples can involve retelling stories from classroom literature selections.

suggested supplementing the interview with "leading questions" designed to elicit an animated, emotional response. Examples of these kinds of questions have been added to the protocol in Box 11-4. Hadley (1998) also presented some alternative protocols for eliciting interview samples from school-age children.

Narrative samples are another way to gather information about a student's expressive abilities (e.g., Throne et al., 2007). Wagner, Nettelbladt, Sahlen, and Nilholm (2000) reported that narrative samples elicited more expanded phrases and grammatical morphemes than conversational samples in young children. Ukrainetz et al. (2005) showed that school-aged children's narratives showed increasing formal complexity with age during the elementary school years. Southwood and Russell (2004) found that free-play speech samples elicited more talk but less complex language than

conversation or narrative, while narratives elicited the longest utterances. These studies suggest that, in order to see the more complex end of the student's language abilities, conversation and narrative are appropriate contexts for eliciting language samples from school-aged students.

Transcribing the Speech Sample

We can use many of the transcription conventions that we discussed for the developing language period when recording a speech sample from a child in the L4L stage. But choosing a segmentation method is important, particularly if we are following children's language growth over time and to avoid skewing the mean length of utterance (MLU) or other analyses by long, run-on sentences strung together with *and*. Reed, MacMillan, and McLeod (2001) examined the effects of varying rules for utterance segmentation from language samples of school-aged children and found that the type of segmentation used on a speech sample did lead to differences in findings. To get around this problem, we can use the T-unit segmentation method developed by Hunt (1965). A *T-unit* is one main clause with all the subordinate clauses and nonclausal phrases attached to or embedded in it. All coordinated clauses are separated into separate T-units, unless they contain a co-referential subject deletion in the second clause ("He goes and loses it"). Clauses that begin with coordinating conjunctions *and, but,* or *or* would be considered to make up a new T-unit.

Suppose a client produced the following response to leading question No. 1 in Box 11-4:

Yeah, my little brother, he's a real pain in the neck and he's always taking my stuff and he never asks first and then he goes and loses it or breaks it and so my mom yells at me when I slug him for it, but sometimes he's not so bad.

Here's how we'd segment this utterance into T-units:
T1: Yeah, my little brother, he's a real pain in the neck.
T2: (and) he's always taking my stuff.
T3: (and) he never asks first.

BOX 11-4 Interview Protocol for Eliciting a Conversational Sample from Students with LLD

INTRODUCTION
"Let's talk a little."

QUESTION 1 (5 MINUTES)
"What can you tell me about your family?"
    (Adult responds to the student with rephrasing of the student's comments or "Really! Tell me more about that.")
    Leading question (to be asked after the student has talked about question 1 for a few minutes):
    "Do you have any brothers and sisters? Do they ever bother your stuff?"

QUESTION 2 (5 MINUTES)
"Are you in school? Tell me about it."
    (Adult responds same as above.)
    Leading question (to be asked after the student has talked about question 2 for a few minutes):
    "Did your teacher ever do anything that really bugged you?"

QUESTION 3 (5 MINUTES)
"What do you do when you're not in school?"
    (Adult responds same as above.)
    Leading questions (to be asked after the student has talked about question 3 for a few minutes):
    "Did you ever get into an argument with a friend?"
    "Do you have a favorite sports team? Tell me about your favorite player."

Adapted from Evans, J., & Craig, H. (1992). Language sample collection and analysis: Interview compared to free play assessment contexts. *Journal of Speech and Hearing Research, 35,* 343-353; leading questions based on Nelson, N. (1998). *Childhood language disorders in context: Infancy through adolescence.* Columbus, OH: Merrill.

T4: (and) then he goes and loses it or breaks it [co-referential subjects deleted from second and third clauses].

T5: (and so) my mom yells at me when I slug him.

T6: (but) sometimes he's not so bad.

Using T-unit segmentation provides a more realistic picture of syntactic units in the L4L phase than does the method we would use for children in the developing language period.

Analyzing the Speech Sample
Analyzing Average T-Unit Length

We can look at MLU per T-unit in children with LLD, just as we looked at MLU per utterance for children with developing language, by counting the number of morphemes in the sample and dividing by the number of T-units. Again, it may not be necessary to compute MLU for every sample we examine. We may decide that MLU is going to be a useful measure, though, perhaps as a way to track progress over a course of intervention. When this is the case, using MLU per T-unit rather than per sentence will provide a more valid assessment of utterance length. Nippold (2007) and Scott (1988) showed that MLU per T-unit increases throughout the school years, but the changes are slow. In spoken language, MLU per T-unit increases from about 7.6 in third grade to about 8.8 in fifth. More changes in MLU per T-unit are seen in writing than in speech during this age range. We should not, then, expect to see dramatic changes, even as a result of intervention, in MLU per T-unit in the spoken language of children in the L4L stage.

A question that arises for samples from school-aged children concerns the unit of analysis for MLU: morpheme or word? Gutierrez-Clennen, Restrepo, Bedore, Pena, and Anderson (2000) report that MLU in words (MLU-w or sometimes called mean length of response, MLR) is highly related to morphosyntactic production in both English and Spanish-speaking children, and Rice, Redmond, and Hoffman (2006) confirmed that MLU in words is reliable and valid index of general language development in school-aged children. Moreover, MLU-w has been used in previous research on changes in sentence length during the school years (Hunt, 1965). For this reason, MLU is usually calculated for words rather than morphemes in children in the L4L stage.

Analyzing Syntactic Forms

When looking at conversational speech in students with LLD, we probably do *not* need to look at the broad range of structures that we examine in the developing language phase. If a student's MLU is less than 4.5 or if we hear omissions of grammatical morphemes, verb markers and auxiliaries, pronoun errors, or problems with negative or interrogative sentences, we can do the same kinds of speech-sample analyses we discussed in Chapter 8. But for many students with LLD, MLU is beyond Brown's stage V, and basic sentence structures have been acquired. Eisenberg's (2007) review suggests that in these cases, we want to look at just three aspects of the child's syntactic production: (1) analysis of errors in morphological and syntactic form, (2) use of complex syntax, and (3) disruptions.

Error Analysis

Scott & Windsor (2000) showed that production of grammatical errors was the measure that was best at distinguishing children with LLD from typical peers in naturalistic language sampling. Especially at the school-age level, the persistence of grammatical errors is an important index of impairment. In addition to errors on grammatical morphemes, Eisenberg (2007) reports that common errors made by students with LLD include omission of verb arguments (such as direct ["He hit Ø"] and indirect objects of verbs ["Give Ø the ball"] and locative elements ["I can't fit it Ø"]), and errors in re-arrangement of words to form sentence variants, such as questions, negative, and passives. If we transcribe the sample or use a computer-assisted format, we can do an error analysis by noting each grammatical error that occurs and making a list of those we find. We also might note whether these errors are consistently used at every opportunity or in every obligatory context or whether there is some correct usage. If we don't transcribe the sample but simply listen to an audiorecording of it some time later, we can make the same kind of list as we listen. An experienced clinician can even make a list of errors in real time during the collection of the interview sample, provided the errors are not too frequent. For beginning clinicians, though, it is better to work from a transcribed or audiorecorded sample. Forms that are in error in the sample can be targeted for intervention. Table 11-3 provides a sample worksheet to be used in this kind of error analysis, with some of the typical errors that may be seen in students with LLD. Clinicians using the form can add any additional error types that appear in a client's speech sample.

Paul, McNamara, Reuler, Roy, and Peterson (2001); Restrepo (1998); as well as Scott and Windsor (2000) reported that number of grammatical errors in speech samples reliably discriminated between language normal and language delayed children whether they were English or Spanish speakers. Paul et al. (2001) showed that no English-speaking 5-year-olds with typical language development produced more than 6 grammatical errors within a 50-utterance spontaneous speech sample, whereas all the children clinically classified as language delayed produced more than 6 errors. Clinicians who use computer-assisted language analysis methods, such as SALT (Miller & Chapman, 2010) or CLAN (MacWhinney, 2009), can have these programs automatically count errors entered during the transcription process.

Complex Sentence Analysis

Most students in the L4L stage will have acquired basic sentence forms. But as Eisenberg (2007) discussed, the students with LLD show less elaboration of syntax and fewer complex forms than peers with typical language. In addition, students with LLD may show limited verb variety and lack of elaboration in noun phrases (Eisenberg, 2007); we will address these forms in chapters on

TABLE 11-3 Sample Score Sheet for Recording Error Analysis from Free Speech Samples

Error Type	# Errors	# Opportunities for Error
Verb tense errors (missing –ed)	//	///
Missing verb arguments ("I told Ø so!)	/	/////
Pronoun errors (me/I)		//////
Missing noun inflections (comparatives)	//	//////
Errors on be forms (is/are)	/	///////
Subject-verb agreement errors (missing third person singular –s)	//	////////
Auxiliary verb errors (don't/doesn't)		/////
Negation errors (nobody/anybody	///	////
Errors in questions (absent auxiliary inversion)	/	////

advanced language (13 and 14). Verb variety can be examined by simply identifying all verbs in a speech sample and looking for the presence of overly general verbs (*go, do*) to the exclusion of others. If verb forms appear to be limited, strategies like the verb elicitation probe discussed in Chapter 8 may be used.

Complex sentences are those that contain more than one verb phrase (Paul, 1981) in embedded or conjoined multiclause utterances. They are used to express specific semantic relations between clauses, such as those we discussed in the semantics section. Their use increases significantly throughout the school years (Schuele & Dykes, 2005) and continues to do so through adolescence, particularly in the context of narratives and written language (Justice et al., 2006; Loban, 1976). Children who are unable to use syntactic means to combine propositions in speech consequently are at a distinct disadvantage in both talking and writing about the abstract, decontextualized content of the classroom.

Paul (1981) has presented a system for analyzing three aspects of *complex sentence* use that can be used with children in the L4L period. For many students in the L4L stage who do not make obvious errors of syntactic form, the complex sentence analysis may be the only evaluation of grammatical production we need to do. To perform this analysis, we first identify each sentence produced by the client that can be considered complex. If this is the only analysis we are doing of the transcript, we do not need to transcribe the entire sample. Instead we can listen to an audiorecording and write down just the sentences we intend to consider in the complex sentence analysis. If the *SALT* (Miller & Chapman, 2010) computer-assisted analysis procedure is used, it can identify complex sentences by means of the conjunctions contained within them and provide a list of all sentences with examples of these conjunctions. Either way, we want to generate a list of complex sentences that appear in the speech sample.

The first aspect of complex sentence use we can examine is the proportion of complex to simple sentences in the sample. Paul (1981) reported that, by the time normally developing children's MLUs reach 5 (at an average age of 4 to 5 years), 20% of the sentences they use in spontaneous speech contain embedded or conjoined clauses. Schuele and Dykes (2005) report a similar finding for a child with language delay. This suggests that one criterion for determining the maturity of a speech sample is to look at the proportion of the sentences that are complex. If we transcribe the entire sample, we can easily compute the percentage of complex sentences that appear. But if we are trying to increase our efficiency in language sampling and are using a "shortcut" of only transcribing the complex utterances, we can estimate this percentage.

One way to perform this estimation is to make a note or hash mark for each T-unit we hear as we listen to the recording of our sample. During the same pass, we can stop the recording to transcribe each complex sentence the sample contains. We can then get an estimate of the total number of T-units in the sample (by adding the number of complex sentences transcribed to the number of hash marks recorded). Then we can divide the number of complex sentences by the total number of T-units to get a percentage. If the percentage for any child in the L4L stage is substantially less than 20%, we can infer that this client is using fewer complex sentences than normally speaking peers and could benefit from intervention to increase speech complexity.

A second aspect of complex sentence analysis concerns the types of complex sentences that appear. This analysis can be done for clients who produce a smaller-than-normal proportion (less than 20%) of complex utterances. Paul (1981) assigned each complex sentence type that appeared in transcripts of normally

developing children's speech to one of Brown's stages, according to the stage at which a majority of normally developing children produced each form. The various types of complex sentences produced by the client can be tallied, or a simplified stage assignment can be made by dividing the complex types into two general groups: those that appear early in development (when MLUs are between 3 and 4) and those that appear later (when MLUs are between 4 and 5). Table 11-4 describes and gives examples of each sentence type in the early and late groups.

Before initiating intervention for use of a particular complex sentence type, though, we will probably want to use elicited production activities to probe for forms that are absent in spontaneous speech. Remember that a speech sample is just that—a *sample* of speech, not necessarily containing all the forms a client can use. Complex sentence forms can be elicited with cloze procedures, in which the clinician produces one clause and asks that client to "finish the sentence or thought" (e.g., "I think . . . ," "Mary wants to . . . ," "I know where . . . "). An alternative procedure is to ask the client to make up a sentence with *that, if,* or *when,* and so on, to probe conjunction use or to make up a sentence with *know, need to, know what to, wants me to,* or a similar construction to probe use of various complex sentence types. Eisenberg (2005) suggests using simple stories to elicit complex sentences. An example of this procedure appears in Box 11-5.

If a genuine deficit in the use of certain complex sentence types is seen in spontaneous speech and confirmed through elicited production procedures, we can examine the speech sample to see what kinds of complex sentences are in evidence. If the student is using only forms that are in the Early group in Table 11-4, we can develop intervention that attempts to elicit some of the more advanced forms. We can provide intensified input by means of literature-based script therapy that gives examples of the use of some of these forms. If the student is using a few forms from both the Early and Later groups, we may want to work on eliciting new forms in the Early group first. We can again target production as well as provide input in script-based formats to help the student to understand and use these structures. We'll talk about some specific methods for targeting complex sentences in our next chapter.

If a student is using hardly any syntactically well-formed versions of complex sentences, we can do the analysis of semantic relations between clauses that we talked about earlier. This analysis can be used to identify the relations the student is already expressing in less mature ways. Syntactic forms for expressing these same relations can then be incorporated into the intervention program.

The third area of complex sentence production we may want to look at concerns the use of conjunctions. By the end of the preschool period, normally developing children are using an average of six to eight different conjunctions in a 15-minute speech sample, including *and, if, because, when,* and *so* (Paul, 1981). If we find, in looking at the complex sentences of children in the L4L stage, that fewer than six different conjunctions appear in samples of this size, we can again probe for conjunction use with elicited production procedures. Again, this can be done by simply asking children to produce sentences that contain words such as *but, after,* or *either*. If the deficit is confirmed, we can target these early developing conjunctions that are not found in the transcript as part of the intervention program. If the semantic relational analysis shows that students are juxtaposing clauses without any explicit conjunctions, we can provide intervention to elicit use of these early developing conjunctions for expressing the semantic relations between clauses that the students are already encoding presyntactically.

TABLE 11-4 Complex Sentence Types Divided into Early- and Late-Appearing Groups

Sentence Type	Description	Example
EARLY GROUP (FIRST APPEAR IN NORMAL DEVELOPMENT WHEN MLU IS BETWEEN 3 AND 4)		
Simple infinitive	*Not* an early developing catenative such as *gonna, wanna, gotta, sposta, hafta, let's,* or *lemme; to* is present; subject is the same as main sentence, so it is deleted.	"He has to move." "She wants to get out."
Full propositional complements	Headed by "cognitive" verbs, such as *think, guess, wish, know, hope, wonder;* may or may not contain the conjunction *that*.	"I think that we have some." "Pretend you said it."
Simple *wh*-clause	Marked by conjunctions *what, who, where, when, why, how;* do *not* contain an infinitive *to* marker.	"I know what we could do." "Look how big I am."
Simple conjoinings	Two clauses joined by a conjunction, either coordinating (*and, but, so,* etc.) or subordinating (*because, after,* etc.)	"Close the gate so he can't get out." "I eat ice cream 'cause I like it."
Multiple embeddings	Sentences containing more than one embedded clause; one may include a catenative.	"It's gonna start to fall." "I think we gotta pour some water on it."
Embedded and conjoined	Sentences containing both an embedded and a conjoined clause; the embedding may be a catenative.	"It's not a bulldozer 'cause it doesn't have a scooper thing to scoop with." "He wants to stay at home and I don't know why."
LATER GROUP (FIRST APPEAR IN NORMAL DEVELOPMENT WHEN MLU IS BETWEEN 4 AND 5)		
Infinitive clauses with different subjects	The embedded clause has a subject different from the main clause, so it is expressed.	"I want it to go chug." "Dad made this for me to drive."
Relative clauses	Function as adjectives; specify nouns; may or may not be marked with *which* or *that*.	"That's not the kind that I like." "They're boys that I know."
Gerunds	*-ing* forms used as noun clauses.	"I felt like turning it." "They can hear us talking on the recorder."
wh-infinitives	Marked by conjunctions *what, who, where, when,* and *to*.	"I know what to do." "You know how to make one."
Unmarked infinitives	Headed by *make, help, watch,* or *let* with no *to* marker.	"Watch me jump." "Help me pick these up."

Adapted from Paul, R. (1981). Analyzing complex sentence development. In J.F. Miller (Ed.), *Assessing language production in children: Experimental procedures* (pp. 36-40). Needham Heights, MA: Allyn and Bacon.

BOX 11-5 Eisenberg (2005) Elicitation Technique for Complex Sentence Production

The student is presented with a simple story, accompanied by appropriate toy figures. Each story consists of several simple sentences so that sentences with embedded clauses are not modeled. The SLP tells the story while simultaneously demonstrating the actions with toy figures. At the end of each story, the SLP states the sentence subject and main verb, then asks the child to complete the story and restarts the target sentence, producing just the subject with rising intonation, obligating production of the main verb. The examiner then has the child act out the utterance by saying "Now show me."
Example:
SLP: "SpongeBob and Patrick are sitting at the Krusty Krab when Squidward walks in. Squidward looks tired. He looks for a chair but can't find one.
SpongeBob wants Patrick to stand up so Squidward can sit down.
SpongeBob says, 'Stand up, Patrick!'
You finish the story: SpongeBob . . . ?" (wants/tells Patrick to stand up)

Box 11-6 presents a portion of a speech sample from a 9-year-old student. Try practicing an analysis of complex sentences on this sample and determine whether a deficit in complex sentence use is seen. Our analysis of the sample appears in Appendix 11-4.

Disruptions

Dollaghan and Campbell (1992) pointed out that many descriptions of children with LLD refer to their *disruptions in speech,* or "getting tangled up" when they try to talk. Guo, Tomblin, and Samelson (2008) showed that children with SLI did produce more disruptions in their speech than age peers, though not more than children matched for language level. In some cases these disruptions are the most prominent feature of a student's expressive language disorder. Dollaghan and Campbell suggested looking in detail at speech disruptions as a way to quantify otherwise vague impressions of "tangled speech." They suggested further that we use the analysis of disruptions only for those clients whose perceived deficits in expressive language cannot be reduced to semantic, syntactic, or phonological difficulties. For these clients, whose production problems are otherwise difficult to quantify, a detailed analysis of speech disruptions can help both to make deficits more explicit and to identify strategies for intervention.

BOX 11-6   Portion of a Speech Sample Derived from an Interview of a 9-Year-Old Student

T1. I got two brothers.
T2. (and) one of them, Marco, is a real pain.
T3. He never lets me play his video games,
T4. (and) he never wants to play two players, and just keeps playing and playing
T5. (and) he never dies or anything!
T6. I can get onto the eighth level when I get to play for long enough.
T7. I hardly ever do, because my dumb big brother always hogs it when I want to play.
T8. He knows why to be nice sometimes, because he always gives me his basketball cards when he gets doubles
T9. (and) I think I know why he does it.
T10. He wants to get Mom to take us to the card store.
T11. She'll only go when I ask her.
T12. See, this card store has all kinds of stuff that's real expensive
T13. (and) she hates it when we take all our money and spend it there
T14. She'll go when I ask because I never have as much money as Marco
T15. (and) she doesn't think it'll be too bad
T16. (and then) Marco says he wants to come, too,
T17. (and) she can't say "no" because she already said she'd take me!
T18. See, sharing the cards that he has doubles of with me means he can get to the store more often.

Work by Rispoli, Hadley, and Holt (2008) suggests that an important distinction to be made in examining disruptions is to differentiate between *stalls* (disruptions that interrupt the flow of speech, but do not change the lexical, morphological, syntactic, semantic, or phonological material of the sentence) and *revisions* (changes of lexical and morphological material and major changes in syntactic structure). Examples of stalls include filled pauses, silent pauses, and repetition. Revisions, on the other hand, include lexical, grammatical, or phonological changes, as well as combinations of these and "orphans" defined in Box 11-7.

Dollaghan and Campbell found that the average number of disruptions, including both stalls and revisions, in the spontaneous speech of typical students in 100-word speech samples (from which mazed words were excluded) was 5.31 (with a standard deviation of 1.82). These findings suggest that students who produce *more than eight* disruptions in speech samples of this size are producing speech that is significantly "tangled." Intervention for students with frequent speech disruptions can include using self-monitoring strategies to help students become aware of their own disruptions, metacognitive strategies to help them plan speech before they begin talking, and teaching them to use "editing expressions"—such as "Let me try that again"—when they get tangled.

Pragmatics

Remember that pragmatics is the area in which we are likely to find many of the communication problems of students with LLD. For students at the L4L stage, we want to assess pragmatic skills in three of the major discourse types we identified in Chapter 10: conversation,

classroom discourse, and narrative. We'll expand our discussion to include expository and persuasive texts when we discuss advanced language in Chapters 13 and 14.

Pragmatics in Conversation

When we examine a student's skill in using conversational language, there are three major areas to think about.
1. An appropriately broad range of *communicative intentions,* or functions of communication.
2. Whether the student can *modify communicative style,* or register, for different interactive situations.
3. How the student can *manage discourse* turns, topics, and breakdowns.

We can use some of the assessments we discussed for the developing language period to get a general overview. Prutting and Kirchner's *Pragmatic Protocol* (1983), in Figure 8-17 is a good assessment tool to use at the L4L stage as well as at earlier levels. Damaico's *Systematic Observation of Communicative Interaction* (SOCI; Damico, Oller, & Tetnowski, 1999) is another tool that may be used. Let's look at some additional methods for assessing each of these areas of pragmatic skill.

Communicative Intentions

One important question to ask concerns the range and maturity of communicative functions expressed by students with LLD. Tough (1977) examined the kinds of communicative functions expressed by typical children between 5 and 7 years old. These functions, according to Chapman (1981), reflect the cognitive changes going on during the early school years. Such changes include an increased ability to monitor one's own behavior, to reason, to relate events and ideas to each other, and to engage in complex imaginative play. Students at the L4L stage should be showing evidence of at least some of these intentions, in addition to the basic assertive and responsive intentions in Fey's scheme. These advanced intentions can be observed in an interview, free play, or a peer interactional sample and can be coded in real time or from an audiorecording. The intentions identified by Tough appear in Table 11-5. When there is a dearth of these advanced intentions in the communication of a student with LLD, new forms and meanings taught in intervention should be modeled for the student to express these kinds of intentions. Role-playing and other contexts that provide opportunities for students to use both pre-existing and newly learned language forms to serve these communicative functions also can be included in the intervention program.

Assessing Communicative Intentions

The use of more advanced intentions may be more evident in interactions with peers than with adults. For young school-aged children, observing a peer interaction around a pretend activity or interactive game can provide an opportunity to the clinician to tally the number of different intentions listed in Table 11-5 that are observed. For older students, giving a pair of peers a problem to solve, such as how to create a greeting card from a given set of materials, or how to construct a building with a set of building materials may be used in the same way. Alternatively, we can ask the client and peer to take turns explaining to each other how to play a game that each already knows but is not known by the partner.

Contextual Variation

Part of pragmatic skill is the ability to use the context of the communicative situation to decide how to say what we want to say. We use information about our listeners when we make these decisions, as well as information about the nonlinguistic context. Children talk differently to their teachers than they do to their peers and differently yet to their younger siblings, reflecting knowledge of the

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BOX 11-7   System for Analyzing Speech Disruptions

1. Collect a speech sample, using a question or interview format.
2. Segment the sample into T-units.
3. Transcribe all words, portions of words, unglossable speechlike sounds, and silent pauses of more than 2 seconds in length.
4. Identify verbal mazes (false starts, repetitions, and revisions). Count the number of words *not* within mazes in the transcript. This is the "number of unmazed words" to be used to compute the percentage of disruptions in Step 6.
5. Identify each disruption in the transcript and count the frequency of each type of disruption and the total number of disruptions.

DISRUPTION TYPES
Pauses
Filled: Nonlexical, one-syllable filler vocalizations, such as *um* or *er*
Silent: Silent intervals of 2 or more seconds in length
Pause strings: More than one silent or filled pause in succession ("He *(um)* [pause] said I could go")
Repetitions
Forward: Speaker repeats an incomplete linguistic unit and goes on to complete it following the repetition ("She she said I can go")
Exact: Speaker repeats a linguistic unit that has already been completed ("She said I can go I can go").
Backward: Speaker inserts an additional word or words before the repeated unit without changing the unit itself ("She said I think she said I can go").
Revisions
Recognizable modifications of a linguistic unit already produced by the speaker. They can be used to correct overt errors, add information, delete information, or for unknown reasons.

They may involve lexical, grammatical, or phonological changes or some combination of these. *Examples:*
   "I have two sipter, sisters."
   "My older brother, my brother likes baseball."
   "My brother, I mean my sister is here."
   "I have a brother, two brothers."
Orphans
Linguistic units with no identifiable relationship to other units. *Examples* (in square brackets):
   "I saved up [in] all my allowance."
   "And [in] that was my car."
   "And [spuh, in] that's her date."
6. Divide the frequency of disruptions by the number of unmazed words in the sample (from step 4). Multiply by 100 to get the percentage of occurrence of disruptions per 100 unmazed words.
7. Determine whether there are more than seven or eight disruptions per 100 unmazed words to decide whether the student's speech is significantly "tangled."
8. Look for unusual types of disruptions. Also, inspect for patterns with respect to where disruptions occur. For example: (a) Do revisions seem to cluster in utterances that are longer than the speaker's average T-unit length or in complex sentences? If so, work on improving skills in complex syntax may be warranted. Part of the intervention monitoring could include analysis of speech to determine whether disruptions in targeted forms decrease as forms become well-learned. (b) Do most revisions seem to result from a need to correct errors or add or delete information? In this case, metacognitive strategies to improve planning skills may be useful. (c) Are revisions primarily phonological? This may indicate wordretrieval problems. Intervention might focus on developing word-finding strategies, using both semantic and phonological retrieval strategies.

Adapted from Dollaghan, C., & Campbell, T. (1992). A procedure for classifying disruptions in spontaneous language samples. *Topics in Language Disorders, 12,* 56-68.

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different age, status, and communicative competencies of these various listeners. We also talk differently depending on who has more rights in the context. We ask for a pencil differently, for example, depending on whether the pencil belongs to us and we want it returned or it belongs to the listener and we want to borrow it. And we talk differently in different nonlinguistic contexts, depending on how formal we perceive them to be. We might talk to a student one way in the classroom and another way if we meet her in the ladies' room. These kinds of changes are called *register variation*.

Other changes involve knowledge of what our listeners know and don't know. We would describe a baseball game differently to someone who knew a lot about baseball than to someone who didn't. Similarly, you would describe your master's thesis on alaryngeal speech differently to your parents than to an otolaryngologist. These kinds of contextual variation depend on our assessment of our audience's state of background knowledge, or *presupposition*. Skills in register variation and presupposition constitute one aspect of our communicative competence.

Assessing Register Variation
We can assess register variation by setting up role-playing situations in which we ask students to express the same basic communicative intent in several different contexts. We also can assess their understanding of register changes in the same activity by displaying several different ways to convey an intention and seeing

whether they can match each with an appropriate context. It is especially helpful in our remedial planning if we choose contexts that relate to the child's performance in school. Although we know normally developing children use a different register in talking to younger children, for example (as do most children with language impairments [Fey & Leonard, 1984]), this type of variation may not be very important for success in school. The kinds of variations needed for school success are more likely to include politeness variations and variations based on rights, social status, and degree of formality. Figure 11-6 gives some example role-playing activities that can be used to assess register variation in students with LLD.

If an assessment like this indicates that the student has difficulty making and understanding changes in speech style for different situations, remedial activities that target newly learned forms and meanings in a variety of situational contexts can be included in the remedial program. The clinician can model the appropriate use of these forms in various contexts and can work with the student to identify and practice use of these forms and meanings in a variety of contexts important in the client's social environment.

Assessing Presuppositional Skill
Many of the assessment activities proposed by Roth and Spekman (1984a, b) and summarized in Table 8-13 also will be useful for assessing presuppositional skills in students in the

TABLE 11-5 Cognitive Uses of Language of Young School-Age Children

Major Function	Use		Examples
Directive	Self-directing	Monitoring actions	Child accompanies actions with words.
		Focusing control	"It won't turn. I need help."
		Forward planning	"I'm gonna cut this clay into two, then I'll flatten it."
	Other-directing	Demonstrating	"Put yours here, like this."
		Instructing	"Be careful, don't push it."
		Forward planning	"You'll need another block to finish it."
		Anticipating collaboration	"We're gonna have a crash! Make yours go fast so they can crash good!"
Interpretive	Reporting on present or past events	Labeling	"That's a cowboy; that's a sheriff."
		Elaborating	"We went to the beach, and it was too cold to go swimming, so we picked up stones and seashells."
		Associating	"I got one, but it's not like that one."
		Recognizing incongruity	"That house is too small for this doll."
		Awareness of sequence	"We went on vacation, and I got chicken pox, then Bob got them."
	Reasoning	Recognizing cause	"The ice cream got soft 'cause we forgot to put it in the fridge."
		Recognizing principles	"People don't like it if you take their stuff."
Projective	Predicting	Forecasting events	"My dad's gonna build me a playhouse."
		Anticipating consequences	"My mom'll be mad if I get home late."
		Surveying alternatives	"We could take a train or a car to my Grandma's."
		Forecasting possibilities	"If my thermos is broken, the milk'll leak all over my lunch."
		Recognizing problems and predicting solutions	"My zipper's broke; maybe my dad can fix it with a wrench."
	Empathetic	Projecting into others' feelings and experiences	"She doesn't like his teasing, and she's crying 'cause she didn't like it."
		Anticipating reactions of others	"She won't like that!"
	Imagining	Renaming	"This'll be the house."
		Commentary on play	On toy phone: "Doctor, my baby's sick!"
		Building scene	"This is such a big hospital. Will my baby be OK?"
		Role-playing	Playing doctor: "Now, now, Mrs. Jones, I'll take good care of your baby."
Relational	Self-maintaining	Express need	"Watch me! I can do it!"
		Protect self-interest	"That's mine! Give it back!"
		Justify	"I want red so I can draw a fire engine."
		Criticize	"I don't like your picture."
		Threaten	"Give me that or I'll hit you!"
	Interactional	Self-emphasize	"I'm the one that's the mommy."
		Other-recognizing	"Please give me my car back now."

List presented by Tough, J. (1977). *The development of meaning*. New York: Halsted Press; cited in Chapman, R. (1981). Exploring children's communicative intents. In J. Miller (Ed.), *Assessing language production in children*. Needham Heights, MA: Allyn and Bacon.

L4L stage. As outlined in the table, one activity is to have clients describe a sequence of pictures, each of which changes by one detail. We can note whether they use *ellipsis,* that is, whether they delete redundant information ("In this picture a boy is riding a bike; in this one he's not" ["riding a bike" is deleted since it is redundant]). We also can note whether clients use pronouns for nouns in subsequent pictures ("In this picture a girl is riding a bike; in this one *she's* walking"). And we can look to see whether they use indefinite articles (*a, an*) first and definite articles (*the*) to describe the same picture later in the sequence. ("In this picture a dog is running; in the next one *the* dog's sitting"). The peer interaction we discussed earlier, in which one student instructs another in a game or project, also can yield useful information. For looking at presuppositional skill, we would want to ask the student with LLD to explain something to the normally developing peer.

Barrier games also are useful contexts for assessing the ability to tell a listener what he or she needs to know in a situation. This type of assessment is called a *referential communication task*. Referential communication might involve choosing a large blue circle from an array of blocks of various colors, sizes, and shapes. If the student told the listener to find a circle or a "blue one," and other round or blue blocks were available, an error in presuppositional encoding could be identified. If the student made these kinds of errors consistently, a presuppositional deficit could be inferred. Lloyd (1994) provided additional suggestions for assessing referential communication skills.

Many barrier game sets are available commercially, including *Barrier Games for Better Communication* (Deal & Hanuscin, 1999), *Creatures and Critters Barrier Games* (Marquis, 2005), and *Barrier Games with Unisets* (Marquis & Blog, 1993). They also can easily be assembled by the clinician, by gathering matching

Expressive Activities

Have the student role-play producing each speech act in each context. Record the student's utterance, and make a judgment as to whether it is appropriate for each context.

Speech act	Context	Student utterance	Appropriate?
Request ice cream	1. Mother 2. Friend who has money to spend on the way home from school 3. Brother who took cone for a taste and won't give it back		
Greet	1. Principal 2. Friend 3. Grandparent		
Persuade	1. Father to give advance on allowance 2. Friend to lend a favorite sweater 3. Teacher to postpone a quiz		
Request information	1. From a teacher about a homework assignment 2. From a librarian at the town library 3. From a friend about a baseball game		

Receptive Activities

Ask the student to judge each speech act you produce according to whether it is appropriate in each context. If the student judges the act to be inappropriate, ask him or her to produce a better version.

Context	Speech act	Student judgment of appropriateness
Student requests a baseball from a friend	"Hey, dude, can I borrow your ball?"	
Teacher requests a pencil from a student	"May I please use your pencil?"	
Student requests a cookie in the cafeteria	"Give me that cookie right away!"	
Student greets a teacher	"How do you do, Ms. Hernandez?"	
Principal greets a student	"Good morning, James. How are you today?"	
Student greets a friend	"Hey, man, how's it going?"	
Student tries to get a teacher to lend a book from the class library	"Please, Ms. Jansen, I'll be especially careful with it. I'll bring it right back tomorrow!"	
Student tries to get a friend to give him a ride on the back of his bike	"You better let me ride on the back. I'm telling you, you better or else!"	
Student tries to get parent to increase allowance	"I want more money! I need it! I have to have it."	
Student asks teacher to repeat page numbers of math assignment	"I'm sorry. I didn't hear you. Could you say it again?"	
Student asks librarian to help find a book	"So where is it? Is it over here?"	
Student asks friend for the time	"Excuse me, Kim, but might I trouble you to ask the time, please?"	

FIGURE 11-6   An example worksheet for use with role-playing activities to assess register variation skills in students with LLD.

sets of objects or pictures. Barrier games also are useful for looking at the ways in which the client can improve unclear messages in response to requests for clarification from the clinician and at whether the client can request clarification in response to purposefully unclear messages from the clinician.

Discourse Management

The ability to orchestrate turns and topics and to repair breakdowns in conversation constitutes the realm of discourse management. The peer interaction we discussed before is a good context for looking at a student's ability to initiate a topic, begin a conversation, maintain a topic, and respond to requests for clarification. Having the student with LLD explain a game, recipe, or topic to a peer is

another way to gather these kinds of data on discourse management. Brinton and Fujiki (1989, 1994) and Gruenewald and Pollack (1990) also provided methods that can be used in assessing discourse skills in school-aged children.

Although we are interested in all aspects of a client's discourse-management skill, the special discourse requirements of the classroom are particularly important. We talked in detail in the last chapter about what these requirements are. Peets (2009) studied LLD children's verbal productivity and complexity, self-monitoring strategies, and turn-taking patterns in four typical contexts of the classroom, including both instructional and peer-interactional settings. She found that samples gathered from several contexts

provided a more comprehensive view of children's strengths and weaknesses than any one sample can provide. She suggested that contexts chosen for assessment represent the range of demands that are encountered in the classroom. These contexts might include peer interactions, such as cooperative learning groups, and several kinds of teacher-led formats, such as whole-class and small group instruction, and monologues related during "sharing time." Let's look now at some methods we might use to assess a student's competence with classroom discourse.

Figure 11-7 presents a checklist developed by Bedrosian (1985) to look at a client's skill in discourse management. The clinician can use the checklist to rate an observation of either conversational or classroom discourse. Ideally, the clinician would use the checklist to observe several different interactional situations, including clinician-client, client-peer, and client-teacher in a one-to-one setting, as well as observing the client in classroom discussion or peer group project. The clinician can then look across these contexts to identify problems or areas of strength. When difficulties in discourse management are identified, the particular contexts that are problematic can be incorporated into the intervention program. If classroom discourse is affected, the clinician can work with the teacher to find ways to make the "hidden curriculum" more explicit to the student and to facilitate more successful classroom interaction skills.

Pragmatics of Narrative

We talked in the last chapter about the importance of narrative skills in the acquisition of literacy and for success in school generally. Narrative skills are another area of discourse we want to address in the student with LLD in the L4L period. We can examine both comprehension and production of narrative discourse.

Comprehension and Inferencing

Understanding stories involves having expectations, or scripts, for how they will proceed. In other words, understanding and processing stories requires some knowledge of *story grammar*. But it also involves something more. Not everything that happens in stories is stated explicitly. Part of understanding a story is being able to infer some of this implicit information. In assessing how students make sense of stories, we need to look at both literal and inferential comprehension.

Literal story comprehension can be assessed by adapting a variety of materials designed to evaluate reading comprehension. The *Gray Silent Reading Tests—4th Edition* (Wiederholt & Bryant, 2000), the *Woodcock Reading Mastery Tests—Normative Update* (Woodcock, 1998), and the *Test of Reading Comprehension— Fourth Edition* (TORC-4; Brown, Wiederholt, & Hammill, 2009) are just three examples. Many such materials can be obtained from the school reading specialist. Alternatively, classroom reading material can be used. Either way, we can assess narrative comprehension by reading a story or passage to the client. Using commercial or clinician-created comprehension probes, we can have the student respond to orally presented questions about the setting, names and roles of characters, sequence of events, outcome, and resolution of the story.

Inferential comprehension can be assessed informally by asking students to explain why characters behaved as they did, to state what the character's goals and motivations were, and to talk about how characters felt at different points in the story. Some commercial reading tests include questions on inferential comprehension. Examples include *The Test of Narrative Language* (Gillam & Pearson, 2004), *The Qualitative Reading Inventory—3* (Leslie & Caldwell, 2001), and the *Flynt-Cooter Reading Inventory for the Classroom* (Flynt & Cooter, 2004). Westby (2005) suggested using

"trickster tales," in which characters attempt to deceive others, as a good way to get at inferencing ability in children in later elementary grades. Some examples of trickster tales include *Miss Nelson Is Missing* (Allard & Marshall, 1977), *Stone Soup* (Brown, 1947), and folktales such as Uncle Remus or Anansi the Spider stories. Another way to assess inferential comprehension is to stop the story at several points and ask the student to tell what will happen next. Norbury and Bishop (2003) found that students with a variety of communication disorders could make inferences in stories, but these were not always relevant to the story context, and Cain, Oakhill, and Elbro (2003) report that children with LLD were impaired in their ability to integrate information within a text in order to infer meaning of novel words. Trabasso & Wiley (2005) reported that children with LLD are capable of making inferences in story comprehension tasks, but they do not always marshal these abilities spontaneously during reading, as typical readers do. If inferential skills seem lacking, some dynamic assessment techniques can be used. These would involve actively coaching students to take pieces of information in the story and put them together to draw a conclusion. If the student does better with this kind of coaching, it can be expanded and intensified in the intervention program.

Narrative Production

Fey, Catts, Proctor-Williams, Tomblin, and Zhang (2004) reported in a large study of narrative production in school-aged children that story production tasks were found to be highly educationally relevant and should play a significant role in the evaluation of children with developmental LLD. Studies have shown narrative assessment to be sensitive to both pragmatic (Botting, 2002) and structural aspects of children's language abilities (Norbury & Bishop, 2003), and to show areas of deficit even when standardized tests do not (Manhardt & Rescorla, 2002). Hadley (1998) showed that students are more likely to show maze behaviors and to make errors in morphological marking in narrative contexts than they are in conversation. Guiterrez-Clennen and DeCurtis (2001) found that narratives collected in the native language can be used to identify disorders in children who do not speak English, although it is important to be aware of the ways in which narratives in different cultures vary (McCabe & Bliss, 2003). Narrative tasks, then, tend to be better at revealing the linguistic vulnerabilities in children with LLD than simpler conversational activities, and they continue to do so throughout the school years (Boudreau, 2008). That's one reason why assessing narrative production is an important part of the evaluation of school-age clients. There are a variety of ways to elicit narrative samples from students. Hughes, McGillivray, and Schmidek (1997) identified three types of narratives that are appropriate as assessment contexts for children in the L4L stage:

- *Personal narratives*. These involve asking the child to recount a salient personal experience. Suggestions for eliciting these include asking students to tell about a time when they were hurt, scared, or solved a problem.
- *Script narratives*. These require students to relate a routine series of events. Often it helps to give the student a reason for producing the script. For example, we can ask students to pretend they are explaining to a new student what happens in gym class or to a foreign visitor how to order food in a fast food restaurant.
- *Fictional narratives*. Children can be asked to generate a story, such as "Goldilocks and the Three Bears" or describe the plot of a TV show or movie they've watched. Alternatively, the clinician can tell a story, with or without pictorial support, and ask the student to retell it. Story generation is usually more

Name of client: _____

Date of interaction: _____

Type of participant interaction: _____

Type of setting: _____

Length of interaction: _____

Instructions: Check the appropriate skill descriptor that follows:

	Yes	No	Sometimes	NA
I. Topic initiations				
A. Frequency of client's topic initiations in comparison to the other participant(s) (check one).				
1. None				
2. Less than				
3. Approximately equal to				
4. More than				
B. Subject matter of topic initiations:				
1. Able to get attention of listener				
2. Repeats old topics on a daily basis				
3. Initiates new topics on a daily basis				
4. Able to greet others				
5. Able to express departures when leaving				
6. Able to make introductions				
7. Able to initiate needs				
8. Able to initiate questions:				
a. Requests for information				
b. Requests for repetition or clarification				
c. Requests for action				
d. Requests for permission				
9. Talks mostly about self				
10. Talks about the other, as well as self				
11. Talks about referents in the past				
12. Talks about referents in the future				
13. Talks about referents in the present				
14. Talks about fantasy-related referents				
15. Uses people's names appropriately				
16. Uses noise or sound-word play in appropriate situations				

FIGURE 11-7 Discourse skills checklist: Molar analysis. (Used with permission from Bedrosian, J. [1985]. An approach to developing conversational competence. In D. Ripich and F. Spinelli [Eds.], *School discourse problems* [p. 239]. San Diego, CA: College-Hill Press.)

	Yes	No	Sometimes	NA
II. MAINTAINING TOPICS				
A. Able to keep a topic going				
1. Responds to questions				
2. Acknowledges topic (e.g., "Uh-huh")				
3. Offers new information that is related				
4. Requests more information about a topic				
5. Able to request repetition or clarification if message is not clear				
6. Able to repeat or answer questions about what another has talked about				
7. Agrees with others				
8. Disagrees with others				
B. Not able to keep a topic going				
1. Intentionally evades or ignores a question				
2. Initiates a topic immediately following a topic initiation by a prior speaker				
3. Engages in monologues when in a group				
III. USE OF EYE CONTACT				
A. Able to use eye contact to designate a listener in a group when initiating a topic				
B. Uses eye contact while listening				
IV. TURN-TAKING				
A. Is easily interrupted				
B. Interrupts others				
C. Answers questions for others				
D. Has long speaking turns				
E. Designates turns for others in a group				
F. Sensitive to listener cues (e.g., can tell if listener is interested or bored)				
G. Excuses self when interrupting				
V. POLITENESS				
A. Able to make indirect requests				
B. Uses commands				
C. Uses politeness markers of "Please," "Thank you," "Excuse me"				
VI. OBSERVATION OF NONVERBAL BEHAVIORS				
A. Stands or sits too close to people when talking				
B. Stands or sits too far away from people when talking				
C. Stands or sits at appropriate social distances when talking				
D. Uses nonverbal head nods to acknowledge				
E. Uses nonverbal means of getting attention to initiate a topic (e.g., taps on shoulder, points)				

FIGURE 11-7, cont'd

difficult, but it is considered more representative. In either the generation or retelling task, visual stimuli in the form of single pictures, series of pictures, film strips or videos can be used. Providing visual support generally makes either type of fictional narrative task easier. Westby (1989b) advocated having students provide the narration for a wordless picture book, such as *A Boy, a Dog, and a Frog* (Mayer, 1967) or from a short video, such as one of the Max the Mouse series (Society for Visual Education, 1989).

Hughes, McGillivray, and Schmidek (1997) provide extensive guidance in eliciting, transcribing, segmenting, and analyzing language samples. They also provide numerous practice exercises to help clinicians refine their skills in narrative assessment. Gillam and Pearson's (2004) *Test of Narrative Language* employs stories with a variety of formats, such as those listed above.

Justice et al. (2006) and Paul, Hernandez, Taylor, and Johnson (1996) found in their research on children's narratives that three characteristics distinguished the narratives of children with language disorders from those of their normally speaking peers:

1. Overall maturity of narrative, sometimes referred to as *story macrostructure,* as indexed by the degree of organization and number and type of story grammar elements included in the story, a well as the story's cohesion (Heilmann, Miller, Nockerts, & Dunaway, 2009).

2. *Story microstructure*, including measures of productivity (measures of word output, lexical diversity, and T-unit output) and complexity (measures of mean length of T-units in words and proportion of complex T-units) of words and sentences produced in the story.

3. Use of precise and diverse vocabulary, a literate language style, advanced episodic structure and linguistic highlighting of the crux, or high point, of the story to create a comprehensible and interesting tale. Ukrainetz and Gillam (2009) refer to this aspect of narrative skill as "*artful storytelling.*" Let's see how we might assess each of these areas to learn more about a client's narrative ability.

Narrative Macrostructure

There are a variety of means of assessing overall level of narrative maturity in the transcriptions of story samples we collect from students with LLD. We've already discussed Applebee's (1978) system. *The Strong Narrative Assessment Procedure* (SNAP; Strong, 1998), Renfrew's *Bus Story Language Test* (Cowley & Glasgow, 1997; Renfrew, 1991), and the *Test of Narrative Language* (TNL; Gillam & Pearson, 2004) are commercially available materials that include detailed instructions for administration and scoring, as well as norm-referenced scores. Lahey's (1988) scheme for analyzing story macrostructure appears in Box 11-8. Hughes, McGillivray, and Schmidek (1997), Johnston (1982), McCabe and Rollins (1994), and Peterson and McCabe (1983) provided additional examples. Westby (2005)

BOX 11-8   Levels of Narrative Development

ADDITIVE CHAIN
Propositions in the text are essentially independent so that they can be moved around within the text without changing the meaning. For narratives at this level, the following questions can be asked:
> Was there more than a listing?
> Were there any actions?
> Was there a theme such as a repetition of an action, person, or setting?
> Did some of the propositions describe a person or place?

TEMPORAL CHAIN
Some of the propositions are sequentially related, so rearranging them would change the order of events in the story, but there is no cause-effect relation among them.

CAUSAL CHAIN
A problem is described to which other propositions are causally related by enabling or causing other states or events. There is only one such unit in the story. For narratives at this level, the following questions should be asked:
> Was the story a statement of a problem and some aspect of consequence with much information omitted, such as plans, goals, and resolution?
> Was the causal chain automatic and not related to goals or plans?
> Was the causal chain free of an obstacle between the problem and resolution?
> Did an obstacle intervene in the process of trying to reach a goal?

MULTIPLE CAUSAL CHAIN
The story includes more than one causal chain or episode. For narratives at this level, the following questions should be asked:
> Were the episodes related in an additive or temporal fashion, but not causally linked?
> Did any of the episodes provide the cause, effect, or motivation for another episode?

FOR STORIES AT THE CAUSAL CHAIN LEVEL OR ABOVE, NOTE SUBCATEGORIES CONTAINED IN THE STORY
Initiating event or complication
> Setting
> Reaction (plans, goals of characters)
> Internal response (changes of state or thought of characters)
> Attempt (to solve the problem posed in the initiating event)
> Consequence or resolution (achievement of characters' goals)

Adapted from Lahey, M. (1988). *Language disorders and language development*. New York: Macmillan Publishing.

proposed a decision-tree structure for assessing the maturity of narrative organization and provided detailed instructions for assigning narrative stage using this method. Her decision tree appears in Figure 11-8. We also looked at the scheme based on Klecan-Aker and Kelty (1990) and Paul, Laszlo, and McFarland's (1992) adaptation of Applebee's (1978) narrative stages in Box 10-4. This method can also be used to rate the maturity of narrative organization. A modification of the simplified method of story macrostructure assessment, developed specifically for use with Mayer's frog stories was used in a study by Norbury and Bishop (2003) and appears in Figure 11-9. Pedersen, Gillam, and Gillam (2008) introduced the *Index of Narrative Complexity*. McFadden and Gillam (1996) also provide a
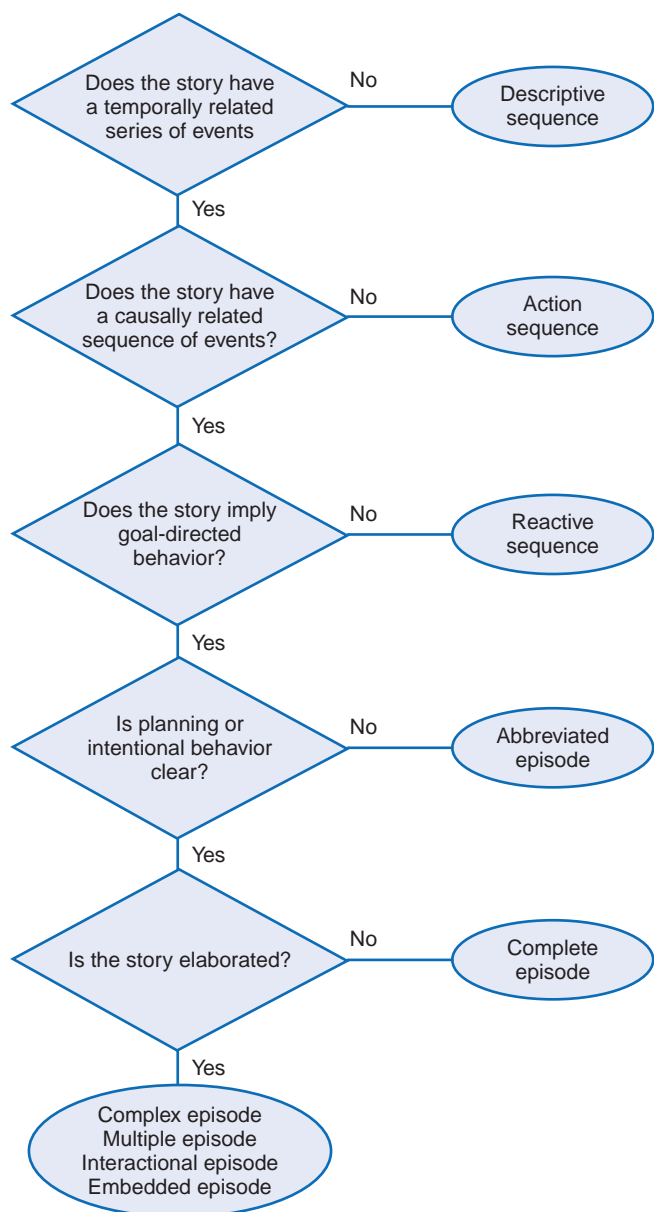
FIGURE 11-8 Story grammar decision tree. (Used with permission from Westby, C. [2005]. Assessing and remediating text comprehension problems [pp. 157-232]. In H. Catts and A. Kamhi [Eds.], *Language and Reading Disabilities* (2nd ed.). Boston: Allyn & Bacon [p. 181].)

scheme for measuring overall narrative quality, using a set of rubrics and anchor stories. They reported that this scheme correlated moderately well with other text-level measures of narrative maturity. Their rubrics appear in Box 11-9. Hughes, McGillivray, and Schmidek (1997) suggest developing local anchor stories by collecting narratives from children with a range of abilities and grade levels in a particular school. The clinician can then meet with teachers to rate sets of stories and identify weak, adequate, good, and strong stories for each grade level. These collaboratively established anchor stories can serve as a basis for narrative assessment. In addition, Heilman et al. (2009) provide a Narrative Scoring Scheme (NSS) for children's story retelling, shown in Table 11-6, which their research finds to be significantly related to other narrative scores and to be relatively efficient for documenting children's narrative structure development in a retell task. This approach uses rubrics (minimal, emerging, and proficient) to evaluate each of seven aspects of the macrostructure of a child's story. It can be used to identify a client's baseline level of functioning in narrative production, and to track improvements in one or more of these areas following a targeted intervention.

Cohesion in Narrative

Cohesive ties are linguistic markers that bind sentences together to make them an integrated discourse unit rather than a series of unrelated utterances. Markers used for this purpose include pronouns; conjunctions; conjunctive adverbs (*nevertheless, on the other hand*); ellipsis (deleting redundant information); and the definite article *the*. Cain (2003) found there were significant differences in cohesion abilities between students with LLD and those with normal achievement. Liles (1985) provided a detailed system for scoring cohesion in narrative samples, based on Halliday and Hasan's (1976) taxonomy. She defined cohesive markers as linguistic forms whose meanings cannot be interpreted without reference to information outside the sentence or clause in which the marker occurs. Cohesive markers signal listeners to "search" outside the sentence to complete its meaning. For clinical purposes, her system can be adapted, using the guidelines in Box 11-10. Beliavsky (2003) reported that kindergarten children showed up to 40% inappropriate or ambiguous use of cohesion in stories, but by first grade these levels had dropped to below 15%, and remained similar through the fourth grade. These findings, in conjunction with those reported by Paul, Hernandez, Taylor, and Johnson (1996) suggest that grade school children who produce narratives with fewer than 70% complete cohesive ties could be considered as having difficulty in producing a cohesive text. Remedial activities that focus on linking propositions in discourse with complete cohesive markers would be a way to address this deficit.

Narrative Microstructure

In addition to the higher level organization and cohesion present in a client's story production, the vocabulary and sentence structures used also contribute to the story's maturity. This aspect of narrative production is referred to as narrative *microstructure*. Justice et al. (2006) have developed a system for scoring narrative microstructure, based on the analysis of transcripts entered into the SALT computer program (Miller & Chapman, 2003). The following measures, which can be automatically computed once the transcript has been input to the SALT program, were found in their study to be the strongest indicators of productivity and complexity:

- Number of different words
- Total number of words

	Definition	Example	Potential points	Normal range for 8 to 10 year old with typical development	Points earned
Global structure					
Initiating event	Problem that provides motivation for story	Boy wants to catch frog	1 for mention of characters 1 for problem	1.7-1.9	
Attempts	Things characters do to solve the initial problem	Boy attempts to catch frog with net; catches his dog by mistake	1 for each attempt reported	1.6-1.8	
Resolution	Satisfactory end to story that resolves initial problem	Frog follows boy home; he's happy when they're together	1 for mention of intention of action 1 for feelings of character	1.2-1.4	
Local structure Length	Total number of sentences in child's story	The boy went to the pond.	One point for each sentence	25-48	
Syntax	1. Number of complex sentences in story	Subordinate clauses (*When the boy saw the frog, he ran toward it.*) Complement clauses (*The boy wished he could catch the frog.*) Verb complements (*The boy was trying to catch the frog.*) Full passive sentences (*The dog was caught by the net.*)	One point for each complex sentence	2.3-8.8	
	2. Number of tense marking errors	He look_ in the water	One point for each error	0-1	
Semantics	Number of pieces of relevant information provided	1. Boys goes to pond 2. Boy's dog goes along	One point for each proposition	40-55	
Cohesion	Use of ambiguous pronouns	The boy and the frog looked at each other. *He* was mad.	One point for each ambiguous pronoun	0-3	
Mental state verbs	Use of verbs to describe thinking or talking	*Think, know, remember, forget, say, tell*	One point per mental verb	4.3-15.4	
Emotional terms	Use of words to describe emotions or internal states	The boy was sad.	One point per emotion term	0-3.6	

FIGURE 11-9   Narrative assessment scoresheet adapted from Norebury and Bishop (2003), using Mayer's (1967) *A Boy, a Dog, and a Frog*.   (Adapted from Norbury and Bishop [2003]. Narrative skills of children with communication impairments. *International Journal of Language and Communication Disorders, 38,* 287–313.)

BOX 11-9   Scoring Rubrics for Narratives

Weak: Narrative consists of descriptions and poorly organized, uninteresting stories.
Adequate: Stories take one of four forms:
   An account of events without a high point or climax.
   A minimal narrative without elaboration.
   A story without a resolution.
   A confusing narrative with some strong descriptive elements.
Good: Narratives are captivating stories that contain problems and resolutions, but they may contain organizational weaknesses.
Strong: Narratives are easily understood and contain clear, integrated story lines; elaboration; interesting word choices; and some captivating features, such as a climax or plot twist or compelling personal voice.

Adapted from McFadden, T., & Gillam, R. (1996). An examination of the quality of narratives produced by children with language disorders. *Language, Speech, and Hearing Services in Schools, 27,* 48-56.

TABLE 11-6 Heilman et al. Narrative Scoring Scheme

Characteristic	Proficient	Emerging	Minimal/Immature
Introduction	1. **Setting:** States general place and provides some detail about the settng (e.g., reference to the time of the setting, daytime, bedtime, season Setting elements are stated at appropriate place in story 2. **Characters:** Main characters are introduced with some description or detail provided	1. **Setting:** States general setting but provides no detail Description or elements of story are given intermittently through story May provide description of specific element of setting (e.g., "The frog is in the jar.") **OR** 2. **Characters:** Characters of story are mentioned with no detail or description	Launches into story with no attempt to provide the setting
Character Development	Main character(s) and *all* supporting character(s) are mentioned Throughout story it is clear child can discriminate between main and supporting characters (e.g., more description of, emphasis upon main characters) Child narrates in first person using character voice (e.g., "'You get out of my tree,' said the owl.")	Both main and active supporting characters are mentioned Main characters are not clearly distinguished from supporting characters	Inconsistent mention of involved or active characters Character(s) necessary for advancing the plot are not present
Mental States	Mental states of main and supporting characters are expressed when necessary for plot development and advancement A variety of mental state words are used	Some use of mental state words to help develop character(s) A limited number of mental state words used inconsistently throughout the story	No use of mental state words to develop character(s)
Referencing	Provides necessary antecedents to pronouns References are clear throughout story	Inconsistent use of referents/antecedents	Excessive use of pronouns No verbal clarifiers used Child is unaware listener is confused
Conflict Resolution	Clearly states all conflicts and resolutions critical to advancing the plot of the story	Underdeveloped description of conflicts and resolutions critical to advancing the plot of the story **OR** Not all conflicts and resolutions critical to advancing the plot are present	Random resolution(s) stated with no mention of cause or conflict **OR** Conflict mentioned without resolution **OR** Many conflicts and resolutions critical to advancing the plot are not present
Cohesion	Events follow a logical order Critical events are included while less emphasis is placed on minor events Smooth transitions are provided between events	Events follow a logical order Excessive detail or emphasis provided on minor events, leading the listener astray **OR** Transitions to next event unclear **OR** Minimal detail given for critical events **OR** Equal emphasis on all events	No use of smooth transitions
Conclusion	Story is clearly wrapped up using general concluding statements such as "and they were together again, happy as can be."	Specific event is concluded, but no general statement made as to the conclusion of the whole story	Stops narrating and listener may need to ask if that is the end

Scoring: Each characteristic receives a scaled score 0-5. Proficient characteristics = 5, Emerging = 3, Minimal/Immature = 1. Scores in between (e.g., 2, 4) are undefined; use judgment. Scores of 0, NA are defined below. A composite is scored by adding the total of the characteristic scores. Highest score = 35.
A score of 0 is given for Child Errors (i.e., telling the wrong story, conversing with examiner, not completing/refusing task, using wrong language creating inability of scorer to comprehend story in target language, abandoned utterances, unintelligibility, poor performance, components of rubric are in imitation-only.
A score of NA (non-applicable) is given for Mechanical/Examiner/Operator Errors (i.e., interference from background noise, issues with recording (cut-offs, interruptions), examiner quitting before child does, examiner not following protocol, examiner asking overly specific or leading questions rather than open-ended questions or prompts).
From Heilman et al. (2009). Properties of the narrative scoring scheme using narrative retells in young children. *American Journal of Speech-Language Pathology, 19,* 154-166. Used with permission.

BOX 11-10 A Procedure for Scoring Cohesive Adequacy in Narrative Samples

1. Transcribe the narrative sample.
2. Read through the transcript once.
3. Read the transcript again. This time, underline each pronoun, conjunction, conjunctive adverb, elliptical utterance, or article that refers to information *outside* the sentence or clause in which it is used.

EXAMPLES
Pronoun: "There's a frog. *He* jumps off the lily pad."
   Conjunction: "The frog wants to follow the boy, *but* the boy goes too fast."
   Conjunctive adverb: "The frog was lonesome. *Still*, he wouldn't let the boy catch him."
   Elliptical utterance: "The boy tried to catch the frog, but he couldn't" ("*catch the frog*" is deleted).
   Article: "A frog was in the pond. And a boy wanted to catch *the* frog."
4. For each tie, make a judgment as to whether it is complete.

Complete ties are those that refer to information outside the sentence or clause that is easily found and is unambiguous.

EXAMPLE
"The frog wanted to go with the boy and his dog. So *he* followed *them*."

Incomplete ties are those that refer to information that is not provided or missing from the text, or to information that is ambiguous.

EXAMPLES
Missing: "The frog was hopping. Then he tripped over *it*."
   Ambiguous: "The boy was chasing the dog and the dog was chasing the frog. And *he* caught *him*."
5. Count the total number of cohesive markers in the sample. Then count the number of complete ties. Divide the number of complete ties by the total number of cohesive markers. If this proportion is less than 70%, a cohesive deficit can be inferred.

Adapted from Liles, B. (1985). Cohesion in the narratives of normal and language-disordered children. *Journal of Speech and Hearing Research, 28,* 123-133.

- Total number of T-units in the narrative
- Average number of words per T-unit (MLT-W)
- Total number of T-units containing an independent clause and at least one dependent clause (i.e., number of complex sentences)
- Proportion of T-units that contain an independent and dependent clause (i.e., proportion of complex sentences)

Table 11-7 provides the means and standard deviations for oral stories produced in response to a single picture taken from the *Test of Narrative Language* (Gilliam & Pearson, 2004) by each age group from 5 to 12 years for each microstructure measure, as reported by Justice et al. (2006). These values can serve as a basis of comparison when evaluating narrative samples from children in the L4L stage.

Assessing Written Narrative

Many of the procedures described here can be applied to both spoken and written narratives. Nelson and Van Meter (2007) reported on written narratives produced by typically developing elementary school students in response to an open-ended prompt ("You know something about stories. Stories have a problem. They tell what happened and how the story ended. Your story can be real or imaginary"). They assessed word, sentence, and discourse-level measures in stories written by children in grades 1 through 5. The values they reported for typically developing students appear in Table 11-8. These can serve as rough guide for expectations for written narratives in the elementary grades, to help determine whether a student is falling below average for grade level, as well as to track progress toward grade-appropriate writing.

TABLE 11-7 Means (and Standard Deviations) for Selected Narrative Microstructure Measures by Age Group for Typically Developing Children

Age	TNW	NDW	Length	MLT-W	# Complex
5	66 (47)	39 (20)	8.5 (5.4)	6.8 (1.7)	3.1 (3.2)
6	77 (54)	43 (22)	9.6 (6.0)	7.5 (1.6)	3.5 (2.8)
7	96 (74)	52 (28)	11.3 (9.1)	8.5 (3.8)	4.6 (4.3)
8	137 (77)	69 (27)	15.8 (8.9)	8.1 (1.4)	7.6 (5.2)
9	162 (96)	79 (30)	17.3 (9.6)	8.4 (1.4)	8.9 (6.1)
10	237 (196)	101 (49)	21.5 (14.5)	8.9 (2.1)	12. (9.8)
11	167 (70)	84 (27)	18.8 (8.2)	8.7 (1.4)	9.2(4.3)
12	148 (95)	67 (36)	14.6 (8.7)	8.8 (1.9)	7.3 (4.4)

TNW: Total number of words
NDW: Number of different words
Length: Number of T-units
MLT-W: Average T-unit length in words
Complex: number of T-units containing 2 or more clauses
(Adapted from Justice et al. (2006). The index of narrative microstructure: A clinical tool for analyzing school-age children's narrative performances. *American Journal of Speech-Language Pathology, 15*(2), 177-191. Used with permission)

TABLE 11-8   Average range ($+/-$ 1 SD) Values for Written Language Samples

	Grade	1	2	3	4	5
Word level	NDW	13–32	13–48	30–71	40–92	44–130
	% Correct Spelling	80–90	84–95	78–97	94–99	94–98
Sentence level	MLU/T-unit	5–7	6–8	6–10	6–10	7–10
	Total # of conjunctions	0–3	0–7	0–17	4–17	0–25
	Types of conjunctions	0–3	0–3	1–4	2–5	2–6
	Grammatical errors	0–1	0–1	0–1	0–1	0–1
	% Simple correct	33–94	5–65	15–64	15–66	29–57
	% Complex correct	4–41	1–56	8–55	17–57	21–62
Merge	Total Words	19–50	15–81	34–145	63–187	50–295
	Total T-units	4–8	4–14	4–20	8–25	5–39
	Narrative Level*	0.9–3.4	1.4–3.8	2.0–4.7	2.0–6.0	1.7–5.3

* Narrative macrostructure scores:
1 = description of people, places, events without sequence or plot (heap)
2 = series of actions linked sequentially but with limited causality (temporal sequence)
3 = series of actions related causally but with no goals or plans (causal sequence)
4 = story with problem and goal but no clear ending (abbreviated episode)
5 = story with problem, stated goals, plans to solve problems, logical ending (complete episode)
6 = multiple or embedded episodes
Adapted from Nelson & Van Meter (2007). Measuring written language ability in narrative samples. *Reading and Writing Quarterly, 23,* 287-309.

A second approach to analyzing written narratives is suggested by Scott and Nelson (2009). They suggest, rather than having children write original stories, they be given stories containing simple sentences, and asked to rewrite them into a story that "sounds better." By examining the student's rewrite for the presence of simple sentences combined into complex ones, the clinician can form a qualitative assessment of the student's ability to use complex syntax adaptively.

"Artful" Storytelling

What if an older elementary school student with LLD produces stories with adequate microstructure, macrostructure and cohesion, yet we still get the feeling that the stories are not quite what they should be? Good stories contain more than just complete sentences, episodes, and cohesive ties; they have what Peterson and McCabe (1983) called "sparkle." Several elements contribute to the degree of artfulness in storytelling: the richness of the vocabulary, the complexity of the episodes in the story, the creation of a "high point" to stress the story's climax, and the use of a literate language style. We only want to assess these aspects if narrative macrostructure, cohesion, and microstructure are found to be adequate, yet the older client's stories still seem lacking in some way. If deficits in microstructure, macrostructure, and cohesion are identified, it will not be necessary to carry the assessment further, since these more basic elements of story generation need to be addressed before we make any attempt to add "sparkle" to the student's stories.

Greenhalgh and Strong (2001) reported that simply counting the number of different words in a child's narrative did not provide a valid measure of lexical richness. This trait can be measured, however, by looking at the number of *unusual* words a child produces within a sample. Heilmann, Miller, and Nockerts (2010) developed a measure of vocabulary richness specifically for Mayer's frog stories that can be computed using the SALT program for stories told in either English or Spanish. A reference database specific to this analysis is also available from the SALT program (www. languageanalysislab.com).

Although we know that children begin using true narratives at 5 to 7 years of age, narrative development is by no means complete at this age. There are two ways in which narratives become elaborated during these years. The first has to do with the complexity of the episodes within the story. Hughes, McGillivray, and Schmidek (1997) identified the following four levels of episode complexity beyond the basic true narrative (Table 11-9):

- *Multiple episodes.* More than one complete episode, each of which contains an initiating event, action, consequence, and reaction, is included in the story. For example, a child might tell a story about a trip to the doctor, which is preceded by a story of how he got sick.
- *Complex episodes.* These contain obstacles that complicate the solution or the main character's ability to carry out the plan developed in the story. For example, a girl might tell a story about how she wanted to get a horse, made a plan to earn the necessary money, met with opposition from her parents, but managed to overcome the opposition and achieve her goal.
- *Embedded episodes.* One episode occurs within another in the story. For example, a story about how a bride found her ideal wedding dress might have the story of how she met her groom embedded within it.
- *Interactive episodes.* The narrative tells the story from two different points of view. For example, the story of how the bride and groom met is told separately from each participant's perspective.

The second change in narrative structure involves the inclusion of an increasingly elaborated high point, or climax to the story. McCabe (1995) and Ukrainetz et al. (2005) suggested using high point analysis to look at these higher level elaborations in the stories of school-age children and provide detailed descriptions of the categories for analysis. Table 11-10 summarizes the stages of high point development. Ukrainetz and Gillam (2009) reported that this kind of analysis is sensitive to both age- and language-level

TABLE 11-9   A Summary of Later Stages of Narrative Development

Developmental Level (yr)	High Point Analysis Level	Narrative Level	Story Structure
6	Beginning use of high point resolutions	True narrative	Mostly abbreviated episodes
7–8	Use of introducers and codas		Mostly complete episodes, including goals, internal motivations, and reactions
11		Complex narratives	Multiple episodes
			Complex episodes
13	Stories have elaborated high points, including several high point elements		Embedded episodes
			Interactive episodes

Adapted from Hughes, D.,McGillivray, L., & Schmidek, M. (1997). *Guide to narrative language*. Eau Claire, WI: Thinking Publications.

TABLE 11-10   Aspects of High Point Analysis

High Point Element	Description	Example
Introducer	Occurs at beginning; gives an overview of the story; serves to get listener's attention.	"You'll never guess what happened on my block last night!"
Orientation	Gives background and setting information.	"My buddy Malcolm, him and me were sittin' around on the stoop after dinner."
Complicating action	Shows how action proceeds to the high point.	"We didn't know it, but something had scared his dog, and it came rushing up to where we were and started barking like crazy at me."
Evaluation	Gives an assessment or emotional comment about the high point.	"I was really scared because he looked like he might not stop. He was growling and coming closer. Malcolm yelled for me to take off my red cap. I did, and all of a sudden he got quiet."
Resolution	Finishes off the event, and resolves any complications.	"He got the dog calmed down and explained that when the dog was upset, he went crazy if he saw someone wearing something red, because once a man in a red uniform had hit him with a stick."
Coda	Closes the story and connects the ending to the present context.	"I was real glad I'd gotten my cap off in time."

Adapted from McCabe, A. (1995). Evaluating narrative discourse skills. In K. Cole, P. Dale, & D. Thal (Eds.). *Assessment of communication and language* (pp. 121-141). Baltimore, MD: Paul H. Brookes; Hughes, D.,McGillivray, L., & Schmidek, M. (1997). *Guide to narrative language.* Eau Claire, WI: Thinking Publications.

differences in school-aged children, and suggest providing guidance in more artful storytelling for children with LLD.

The final aspect of artful storytelling refers to the sophistication of linguistic forms used to tell the story. Westby (2005) identified four elements that provide an index of literary language style in narratives. These are given in Box 11-11. Each element that appears in the story sample can be counted, and any of the four that appear rarely or not at all can be targeted for attention in the intervention program. Eisenberg et al. (2008) found that even 5-year-olds produced some complex noun phrases in their oral narratives. Greenhalgh and Strong (2001) found that measures of conjunctions and elaborated noun phrases differentiated children with LLD from those with typical development. The values Greenhalgh and Strong reported for literate

language items seen in the narratives of typically developing children between 7 and 10 years of age appear in Table 11-11. These values suggest that students who produce fewer than the lower limit of these ranges should be considered to be using few literate language markers. It is important to note, though, that in elementary students some of these markers are used relatively rarely, and their use is dependent on context.

Why not try your hand at some narrative analysis? Use the narrative sample in Box 11-12, which was collected from a first grader, using Renfrew's (1991) story retelling task. Use the criteria we talked about earlier to assess narrative macrostructure. Use Box 11-10 to guide a cohesion assessment. Assess artfulness by looking for literary language style features listed in Box 11-11. Evaluate each aspect of this client's narrative and decide whether

Elements of Literary Language Style

Conjunctions. *And* and *then* are excluded. Other conjunctions, such as (but not limited to) *when, since, so, as a result, if, until, however, before, after, while, because, therefore, however, although,* etc., are counted.

   Elaborated noun phrases. Count noun phrases with more than two modifiers preceding the noun *(the two big dogs)* or with qualifiers such as prepositional phrases and relative clauses following the noun *(the big dog in the pet store; the boy who has a fishnet).*

   Mental and linguistic verbs. Count verbs that denote cognitive *(think, wish, know, forget)* or linguistic *(say, promise, report, exclaim)* processes.

   Adverbs. Count all adverbs, but note especially those that code aspects of tone, attitude, and manner that would be conveyed by stress and intonation in conversation *(angrily, hotly, ominously, threateningly).*

Adapted from Westby, C. (1998). Communicative refinement in school age and adolescence. In W. Hayes & B. Shulman (Eds.). *Communication development: Foundations, processes, and clinical applications* (pp. 311-360). Baltimore, MD: Williams & Wilkins.

you would include narrative activities in your intervention program. You'll find our evaluation of the story in Appendix 11-5. Some additional sources for narrative assessment ideas include Gillam, McFadden, and van Kleeck (1995); Hoffman (2009); Pena et al. (2006); Naremore, Densmore, and Harman (1995); Scott and Windsor (2000); Strong (1998); and Thorne et al. (2007).

Assessing the "Metas"

Metalinguistic Awareness

We've talked at length about the importance of metalinguistic awareness in both classroom discourse and the acquisition of literacy. Schuele and van Kleeck (1987) discussed several aspects of metalinguistic awareness that contribute to school success. These include consciousness of words, ability to segment words into sentences, and phonological awareness. Kamhi (1987) pointed out some additional metalinguistic skills of the L4L period. These are making judgments about language form and content (as in editing), analyzing language into linguistic units (such as analyzing words into syllables), manipulating these units (as in producing pig Latin), and understanding and producing

language play (such as riddles, puns, and rhymes). Nelson (2010) and Wallach and Miller (1988) discussed the role of metapragmatic abilities: the ability to talk about appropriate uses of language in social situations.

We've already looked at some methods of assessing phonological awareness. These skills will be important to assess, particularly in children who are having trouble learning to read. Other aspects of metalinguistic awareness can be assessed simply by asking questions such as those in Box 11-13, drawn from Westby (2005). Justice, Skibbe, and Ezell (2007) also suggest determining whether children can use metalinguistic vocabulary (*read, word, spell*) and talk about print ("The letters in this book are big!").

Curriculum-based assessment (Nelson, 1998; 2010) can be particularly useful for assessing metalinguistic skills in the context of editing. The clinician can work with a client in the classroom to edit a writing assignment. Metalinguistic abilities to recognize and correct errors in the student's own writing can be clearly seen in this context. Deficits identified can be addressed in intervention activities that focus on editing.

Metapragmatic skills can be assessed in conversation with the client about rules for various discourse contexts. We might ask the student how the rules for asking for something politely differ from the rules for asking for something during an argument. It may be especially important to assess a student's awareness of the interactional expectations of the classroom. Difficulty with this kind of activity may suggest a need for the clinician to exert extra effort to make the "hidden curriculum" explicit for the client and to talk explicitly about how classroom discourse differs from that in other settings. Creaghead and Tattershall (1991) and Westby (2007) suggested questions such as those in Box 11-14 to assess metapragmatic knowledge of classroom discourse rules.

If a student in the L4L stage has difficulty with these kinds of metalinguistic activities, a metalinguistic component should be a strong part of the intervention program. Metalinguistic activities are useful, though, for all students in the L4L stage. Metalinguistic skill is learned, remember, primarily through interactions that focus on communication itself and that use literate language styles. Many children with normal basic language skills have limited experience with metalinguistic awareness, so even children without identified language disorders can learn from these activities. Metalinguistic activities make especially good classroom collaborative lessons, because students with and without basic language deficits can benefit from them. We'll discuss some ideas for metalinguistic intervention activities in the next chapter.

TABLE 11-11   Group Mean and Standard Deviation Values for Literate Language Use by 7- to 10-Year-Olds with Typical Development

Literate Language Form	Mean (and SD) Per T-Unit	Number To Be Expected/50 T-Unit Sample*
Conjunctions	0.24 (0.2)	2–22
Elaborated noun phrases	0.17 (0.1)	3–13
Mental and linguistic verbs	0.11 (0.10)	1–10
Adverbs	0.008 (0.02)	0–2

*Based on multiplying ±1 SD from mean values × 50 T-units.
Adapted from Greenhalgh, K., & Strong, C. (2001). Literate language features in spoken narratives of children with typical language and children with language impairments. *Language, Speech and Hearing Services in Schools, 32,* 114-135.

BOX 11-12 Narrative Sample from Story Retelling Task from a First Grader

T1: Once there was a man who was driving a bus.
T2: And the bus ran away.
T3: And the bus went on to the grass.
T4: But the bus and the train made faces at each other.
T5: And they couldn't because the train went in a tunnel and into a town.
T6: And then they went into the country and jumped over a fence and went up a hill.
T7: And it couldn't find its brakes because it didn't know how to.
T8: And it fell into the water.
T9: And then the owner came and called a crane to pull it out.
T10: And then they drove away.

Adapted from Renfrew, C. (1991). *The bus story: A test of continuous speech* (ed. 2) Old Headington, Oxford, England: C. Renfrew.

BOX 11-13 Sample Questions for Assessing Metalinguistic Skills

Do you know what a word is? Tell me three words.

I'm going to say a sentence. You tell me how many words are in it.

I've written a sentence on this paper. Can you circle the first word in it? The last word? How many words are in this sentence?

Max hates grapes, but he hates apples. Does that make sense? Why not?

How many syllables are in these words? Clap once for each syllable.

I'm going to say some things, and I want you to tell me whether each is a word or not:

car
cag
if
bune
this
girl
an
yours
trup

I'm going to say some words, and I want you to tell me if they are long words or short words, and tell me why:

Alligator (long word, long referent)
Spaghetti (long word, long referent)
Train (short word, long referent)
Banana (long word, long referent)
Hose (short word, long referent)
Toe (short word, short referent)
Fly (short word, short referent)
Do you know any jokes? Tell me one. I don't get it. Why is that funny?
What does *run* mean? Can it mean anything else?

Adapted from Westby, C. (1998a). Communicative refinement in school age and adolescence. In W. Hayes & B. Shulman (Eds.). *Communication development: Foundations, processes, and clinical applications* (pp. 311-360). Baltimore, MD: Williams & Wilkins; Westby, C. (2005). Assessing and facilitating text comprehension problems. In H. Catts & A. Kahmi (Eds.) *Language and reading disabilities* (2nd ed., pp. 157-232). Boston: Allyn & Bacon.

BOX 11-14 Suggestions for Assessing Metapragmatic Knowledge of Classroom Discourse Rules

"What is the most important thing you should always say in class?"

"How do you know when it's time for recess?"

"When is it OK to talk aloud without raising your hand in class?"

"When is it all right to ask the teacher a question?"

"What does your teacher say when she's angry?"

"What does your teacher do when it's time for a lesson to start?"

"What's the first thing you're supposed to do when school starts?"

"How do you know when your teacher is saying something really important?"

"How do you know when your teacher is making a joke?"

"What's the most important thing you should always do in school? What should you never do?"

"What's the last thing you should do at the end of the day before you leave school?"

"What does your teacher expect you to do if you are confused?"

"What does your teacher expect when she gives you an assignment?"

Adapted from Creaghead, N., & Tattershall, S. (1991). Observation and assessment of classroom discourse skills. In C. Simon (Ed.), *Communication skills and classroom success* (pp. 105-134). San Diego, CA: College-Hill Press; Westby, C. (2007). There's more to passing than knowing the answers: Learning to do school. In T. Ukrainetz (Ed.). *Contextualized language intervention* (pp. 319-388). Eau Claire, WI: Thinking Publications/Pro-Ed.

Metacognitive Skills

Westby (2005) identified two aspects of metacognitive skills:
- *Self-regulation*: the ability to plan, organize, and execute actions efficiently using consciously selected strategies.
- *Self-assessment*: understanding of the thinking process and the ability to consciously consider and reflect on knowledge and understanding of one's self and others.

Both of these abilities represent great stumbling blocks for many students with LLD, and they represent an area in which to consider assessment and intervention activities. Informal assessment of these abilities can often be accomplished in curriculum-based activities. Nelson (2010), for example, suggests asking students in engaged in an academic activity, "What's your goal here?" and evaluating the extent to which the child can articulate the aim of an activity. Another method of assessing these skills is through activities like those used in Theory of Mind research (Baron-Cohen, 2000; Wellman, 1985). Activities based on this research are provided in Table 11-12, which are passed by 80% of typically developing children at age 7. The *Developmental Evaluation of Language Variation* (DELV; Seymour et al., 2005) also has a Theory of mind subtest. Volds and Horton (2008) also provide a summary of standard tests of executive function often used by psychologists to assess areas of mental activity including decision making, planning, inhibition, development of plans of action. Clinicians who have concerns about their clients' functioning in these areas may consider a referral for executive function assessment to a school psychologist.

TABLE 11-12 Theory of Mind Assessments for Metacognitive Skills

Task	Procedure
Know-remember	Child sees item hidden in one of two containers; after brief delay child is asked to find item, and is asked, "Did you know where it was? Did you guess where it was? Did you remember where it was?"
Guess	Child does not see where item is hidden, but must make a choice between two containers to find it. Child is asked, "Did you know where it was? Did you guess where it was? Did you remember where it was?"
Forget	Child watches toy who sees his coat put in one of two closets and is asked, "Does he know were his coat is? Why do you say he knows?" Later the character comes back to get his coat and looks in the wrong closet. Child is asked, "Did he know where his coat was? Did he remember? Did he forget? Why do you say he forgot?"

Adapted from Baron-Cohen, S. (2000). Theory of mind and autism: A fifteen year review. In S. Baron-Cohen, H. Tager-Flusberg, & D. J. Cohen (Eds.). *Understanding other minds: Perspectives from developmental cognitive neuroscience* (pp. 1-20). Oxford University Press; Wellman, H. (1985). The origins of metacognition. In D. Forrest-Pressley, G. MacKinnon, & T. Waller (Eds.). *Metacognition, cognition and human performance* (pp. 1-31). Orlando: Academic Press.

Barrier games can be used to assess self-appraisal of comprehension, as discussed earlier. The clinician can give purposefully unclear messages or can mumble essential parts of the message to see whether the student asks for clarification. The peer interaction activity, with the normally developing peer providing instructions for playing a game or doing a project, also can give us a glimpse at the ability of a client to monitor his understanding and ability to complete a task. Teacher interviews also can supply information on a student's metacognitive abilities. We can ask the teacher whether students ask appropriate questions about assignments, whether they give a signal when they have difficulty understanding, and how the teacher knows that students do not understand a direction or discussion. Think-aloud protocols are another way to get a window on the child's cognitive process. Here we present a children with a task and ask them to "think out loud" for us as they complete it, saying aloud each step in the completion of the task. We will discuss think-aloud methods more fully under dynamic and curriculum-based assessment and talk about intervention techniques for these abilities in the next chapter.

Assessment of school-aged children includes curricular materials.

Curriculum-Based Language Assessment

Nelson (2010), Nelson and Van Meter (2002), and Norris and Hoffman (1993) advocated using curriculum-based language assessment to observe how the student uses language in learning

Collaborative intervention involves learning about the demands of the curriculum.

the curriculum of the classroom. Many of the criterion-referenced assessment techniques discussed in this chapter can be done in the context of curriculum-based assessment. The tools of this type of assessment include artifact analysis, onlooker observation, and dynamic assessment. We'll look at each type, and talk about how to use it to assess one area of the curriculum that is often difficult for students with LLD: spelling.

Artifact Analysis

Artifacts, or products of the student's regular curricular activities, such as homework assignments, written work done in class, or projects completed independently or in cooperative learning groups can be examined as a form of *functional assessment*— a way to look at how the student uses communication in real, relevant situations. The clinician can look at these materials for evidence of various communicative skills, such as level of narrative development, literate language style, and use of cohesion. This analysis also can be used to document change in an intervention program. Artifact analysis done for this purpose is often referred to as *portfolio assessment*. Kratcoski (1998) discussed several ways we can use portfolio assessment as a tool for examining functional communication in school settings. She

suggested collecting the following artifacts to include in a student's portfolio:

- Initial referral forms
- Language samples
- Narrative samples
- Observation notes
- Samples of student work that address questions such as:
    - What are the strengths/needs demonstrated in the assignment?
    - What strategies are evident in the student's approach to the task?
    - What are the language demands of this assignment?
    - How did the student meet these demands?
- Teacher interviews
- Student interviews
- Parent interviews
- Test results

Often, students are encouraged to make their own choices of their best samples to be included in the portfolio. The student and teacher or clinician evaluate the collected work together, using it to document changes in the student's work over the course of the intervention period. The artifacts are evaluated to identify areas in which goals have been met or work has substantially improved and to look at areas that need additional attention in the next cycle of intervention. Hillmer and Holmes (2007) provide helpful guidance for assembling student portfolios.

Using portfolio assessment to assess spelling, the clinician would first ask the student to assemble writing samples or spelling tests at the beginning of the intervention period. The clinician might discuss these with the student, ask what was hard about the words he or she had to spell, which he or she was sure and unsure of, how hard spelling is for the student. If spelling is identified by either the student or the teacher as an area of weakness, the clinician may focus on spelling as one aspect of an intervention program, and use periodic collection of classroom writing samples or spelling tests to track the student's progress. At each collection point, the clinician can help the student compare recent work with earlier samples to celebrate progress, and identify new goals for intervention. At the end of the course of intervention, the student may include samples of "best work" both to demonstrate progress and to document current strengths and weaknesses. In an RTI context, a portfolio like this could be used to identify a child's need for Tier II or III intervention for spelling, if significant progress is not seen in the samples in the portfolio over the course of a period of Tier I instruction.

Onlooker Observation

Observation of this kind involves watching, from a distance, as the student participates in classroom activities. Onlooker observation is valuable, for example, for assessing adherence to classroom discourse rules or use of communicative intentions. In most cases, it will be helpful to develop a recording form to guide this assessment. Creation of such a form will also help the clinician focus on the elements of the child's behavior that are central to the assessment. To use our spelling example, again, a clinician might develop a form like the one in Box 11-15. Here the observation shows that the student's responses are impaired by his ability to keep up with the teacher's dictation of the test material. The clinician might decide, as a result of this assessment, to give the child the same test in a quieter environment at a slower pace to determine whether such modifications would improve his performance. If so, these modifications in delivery of the test might be suggested to the teacher. If they do not make

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BOX 11-15 Worksheet for Guiding Onlooker Assessment of Spelling

SETTING:
Weekly spelling test

ASSIGNMENT:
Spell words spoken by teacher from list she gave out earlier in the week

CLIENT RESPONSE TO WORD #1:
Writes, erases

CLIENT RESPONSE TO WORD #2:
Continues to erase, does not start writing word #2

CLIENT RESPONSE TO WORD #3:
Looks around, sees what others are doing; writes, then erases

CLIENT RESPONSE TO WORD #4:
Drops pencil, picks it up, begins to write

CLIENT RESPONSE TO WORD #5:
Crosses out several words

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a difference, Tier II instruction, or individual intervention for spelling may be warranted.

Dynamic Assessment

In the context of curriculum-based assessment, this involves the clinician's working side by side with a student, using scaffolding techniques to facilitate the student's participation in a classroom activity. For this reason, it is sometimes called *participant observation* (Nelson, 2010). It allows the clinician to observe whether the student succeeds more fully with the scaffolding than without it. If the student does better with a little help from the clinician, then the skill being facilitated would be seen as within the student's zone of proximal development, one that the student is ready to learn in an intervention program. Elliot (2003) argued that the primary purpose of dynamic assessment should be the identification of strategies that will help the child to succeed in the curriculum. As such, dynamic assessment makes a lot of sense as a tool for RTI, deciding whether a child is likely to benefit from a relatively less intensive form of instruction at Tier II, or is more likely to need a longer, more individualized course of special education to acquire the target skill. Gillam and Justice (2010) suggest the use of dynamic assessment methods as a means of progress monitoring in classrooms using RTI, in order to track students' development in targeted skills to help decide which need to move to Tiers with higher levels of support.

Pêna (1996) discussed a variety of dynamic language assessment methods that can be adapted for participant observation in the classroom. These include the following:

- *Diagnostic teaching.* A child is given a difficult task, and then the clinician gives contextual support and cues. The clinician observes how the child responds to the cues; how much support, context, or prompting is needed to elicit the desired response. This information is used to develop a remedial plan. For example, we might give the child a writing task. Once the student does it without help, we see how providing a picture

cue helps or how using another student's work as an example improves performance. After trying several such supports, we would choose the most effective for our continued intervention with the student.

- *Successive cuing.* Several levels of cues are provided, and the clinician observes which is most effective. For example, in helping a student with word-finding difficulties acquire new words from the classroom curriculum, we might give the student a list to learn, and then ask the student to produce the words in a cloze activity. When the student gets stuck, we could sometimes offer a semantic cue, sometimes a phonological one, sometimes both. We could then assess what cues helped most. The intervention program would then develop self-cuing strategies for these supports.
- *Mediated learning experience.* This approach involves helping the student invoke metacognitive strategies. Students are given a task, such as finding synonyms for words. They are given mediation that explains the goal of the task (e.g., "We want to be able to have lots of different words to use for describing objects, events, and feelings."). Students are given strategies for finding synonyms, such as categorization, and comparing words and their meanings. They then are asked to find synonyms independently for a new set of words. The clinician observes whether the student independently invokes the strategies taught in completing the task with the new words. An example of a think-aloud protocol that might be used in this way appears in Table 11-13.

To use the example of spelling as a target for dynamic assessment, a clinician might adapt a procedure derived from Larsen and Nippold (2007) as a diagnostic teaching approach. This adaptation appears in Box 11-16. Like the previous examples, the results of this assessment can help determine whether a spelling difficulty in present. It can also help to show whether a brief, low-intensity intervention, comparable to Tier II, is sufficient to overcome the difficulty, or whether more individualized special education will be necessary. Diagnostic teaching can also identify specific strategies that will be helpful to a student, as, for example, the procedure in Box 11-16 could be used to determine not only how quickly a student responds to scaffolding but whether the particular scaffold provided—in this case, morphological analysis—is useful.

CONSIDERATIONS FOR OLDER, SEVERELY AFFECTED STUDENTS AT THE L4L STAGE

Some adolescents and young adults with moderate to severe impairments may function at the L4L stage, with oral language commensurate with the early elementary grade levels and minimal reading or writing skills. For these students, assessment concerns are similar to those for younger students with LLD, but a few special considerations may be necessary. These students may not be participating in a regular curriculum and may be engaged in primarily vocational or independent-living programs. They will probably already be identified as eligible for services, so very little if any standardized testing is needed. Most assessment methods will be observational or criterion-referenced.

For these older clients, using chronologically age-appropriate materials and evaluating functional communicative needs are the paramount assessment concerns, just as they were for adolescents

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TABLE 11-13 An Example of Dynamic Assessment of Metacognition with a Think-Aloud Protocol

Present student with task, such as reading a section of the classroom social studies textbook and answering the questions at the end.

Present Prompts	Observe Strategies
What do you think this section will be about?	Scans text
How do you know?	Looks at title, headings
	Looks at pictures
	Identifies words
After student reads a portion, stop him and ask,	
Why did X (event) happen?	Prediction based on prior knowledge
Why do you think that?	Prediction based on cues in text
How could you find out if you don't know?	Rereads to find answer
	Looks ahead to find answer in text
Choose a word that is likely to be unfamiliar to student.	
What do you think *mesa* means here?	Uses contextual cues
How could you tell?	Suggests using dictionary
	Suggests teacher or other resource
	Relates to personal experience
Select a point that is not stated explicitly.	
Why do you think the soldiers retreated to the mesa?	Infers based on text cues
Why did you decide that?	Infers based on prior knowledge
	Relates personal experience
	Draws analogy
	Rereads
Direct student to answer questions about section.	
What is your plan for answering the questions?	Provides a sequence of actions
What will you do if you don't know an answer?	Attempts to integrate information from text, illustrations, etc.
Do you think all the answers will be found in what you read?	Refers to differences between fact and opinion
	Refers to prior knowledge

BOX 11-16 A Procedure for Diagnostic Teaching of Spelling, Derived from Larsen & Nippold's (2007) Dynamic Assessment Procedure

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Clinician: "I am going to say some words and your job will be to tell me how you think we spell them. If some of the words are hard, I'll give you some help. Are you ready?"

PROMPT #1:
"Tell me how to spell *remake*." [use a word within the client's grade level expectations]
A. If the client answers correctly, the examiner goes to Prompt #2.
B. If the client does not respond or answers incorrectly, the examiner goes to Prompt #3.

PROMPT #2:
"How did you know that?"
A. If the client's explanation refers to the individual morphemes, the examiner goes to the next word.
B. If the client's explanation does not refer to the individual morphemes, the examiner goes to Prompt #3.

PROMPT #3:
"Does the word *remake* have any smaller parts?"
"What are those parts?"
A. If the client answers correctly, the examiner asks, "Now can you tell me how to spell it?"

B. If the client does not respond or answers incorrectly, the examiner goes to Prompt #4.

PROMPT #4:
"The smaller parts in this word are *re* and *make*. Now can you tell me how to spell it?"
A. If the client answers correctly, the examiner goes to the next word.
B. If the client does not respond or answers incorrectly, the examiner goes to Prompt #5.

PROMPT #5:
"Let's think about the sounds in the part/prefix *re*. What sounds do you hear; can you write them?"
A. If the client answers correctly, the examiner goes to the next part of the word.
B. If the client does not respond or answers incorrectly, the examiner goes to Prompt #6.

PROMPT #6:
"Which of these choices gives the correct spelling of *re*? (examiner presents three choices): (a) be; (b) ro; (c) re.

Adapted from Larsen & Nippold (2007). Morphological analysis in school-age children: Dynamic assessment of a word-learning strategy. *Language, Speech, and Hearing Sevices in Schools, 38*(3), 201-212.

Curriculum-based assessment is appropriate for adolescents at the L4L stage.

with developing language. When we do criterion-referenced or observational assessments for the older, moderately to severely impaired client, we want to use situations and props that are fitting for a person of this age, such as materials from the client's occupational training program or objects from self-care and daily living activities that the client is learning to perform independently, or from leisure activities in which the client likes to engage.

There also may be some "fine points" of the language system, such as complex sentences or mature narratives, that the young adult with moderate to severe impairment will never master. When this is the case, we would not want to withhold teaching other important skills that are usually thought of as more advanced than these, just as we would not do so for clients with developing language. McCormick (1997a) reminds us that the premises of ecological assessment include the following:
• There are no minimal criteria or prerequisites for communication intervention. Any student with difficulty communicating can benefit from instruction and should have the opportunity to participate in classroom and social interactions. This is true regardless of whether the student's IQ is within or below the normal range.
• The focus of intervention should be providing whatever supports students need to participate in school and other important environments.

Ecological inventories such as those used for adolescents with developing language can also help us with older clients at the L4L stage to determine what communicative skills are needed to succeed in the client's daily environments. For some children, these environments will be regular classrooms, in which they are included for some or all of their instruction. McCormick (2003) outlined the steps we can use in the process of creating an ecological assessment, both for inclusion in regular educational settings, as well as for more community-referenced environments. These are summarized in Table 11-14.

For clients with very few reading and writing skills, for example, we might use an ecological inventory to determine what their literacy needs are in school, work, or independent living. These skills could be targeted even if reading and writing skills in general are at very low levels. Similarly, an ecological inventory of the client's school or work setting could be done to determine the discourse situations and rules the client must deal with on a day-to-day

TABLE 11-14 Steps in the Process of Ecological Assessment

Step	Procedures	Outcome
1. Get to know the client.	Interview parents to learn about case history, their fears and dreams, the student's strengths and needs; observe student in classroom and other relevant settings.	Picture of student's strengths, needs, and preferences; a vision statement
2. List activities and routines in a typical day in this setting.	Compile the student's weekly schedule, observe the client in several environments, determine demands of each.	Schedule of weekly activities; a prioritized list of environments and their requirements
3. State goals, and list key activities/routines and set priorities among them.	Identify broad goals; then list 3 or 4 activities or routines that need to be mastered in order to accomplish each goal.	List of broad goals for 3–5 priority activities
4. Observe and record behaviors of typical participants or conduct interviews to determine the expectations of each activity.	Do observations and interviews to determine component skills and concepts for each activity.	List of what typical students do to accomplish each activity
5. Observe the student in each activity.	Record observations and describe what the client currently does in the activity—the degree to which he or she shows the skills necessary for participation.	Description of student's present level of performance
6. Compare the student's behavior to expectations. Note discrepancies.	Compare client's performance in each activity to expectations/desired performance.	Description of the behaviors/skills student needs to learn to participate in each priority activity
7. Identify the language/communication skills needed to achieve expectations.	Identify reasons why activities are not successfully performed (e.g., lack of skills, knowledge, strategies; interfering behaviors; instructional problem; environmental obstacles).	List of the language/communication skills student needs to learn and what may be interfering with current performance
8. Identify communication skills not currently demonstrated.	Give behavioral objectives for each activity.	List of instructional objectives for each goal above
9. Outline communication goals for each activity.	Identify physical and instructional modifications, adaptations, and supports needed. Determine an instructional focus for each objective.	List of needed modifications, adaptations, supports, and instructional objectives for each goal
10. Develop an IEP for these goals.	Plan who, when, and how each objective will be achieved.	List of environmental adaptations, resources, supports, and instructional priorities for each goal

Adapted from McCormick, L. (2003). Ecological assessment and planning. In L. McCormick, D. Loeb, & R. Schiefelbusch (Eds.). *Supporting children with communication difficulties in inclusive settings* (pp. 235-258). Boston: Allyn & Bacon.

basis. These particular discourse needs could be addressed in the intervention program.

For students using augmentative or alternative communication (AAC) devices, the development of literacy continues to be an especially important goal, since AAC devices that use some form of the printed word provide the most viable means of communication for these students. Fallon, Light, McNaughton, Drager, and Hammer (2004) have shown that these students can acquire literacy skills, and such skills make an important contribution to their ability to communicate with the broadest range of interlocutors. Light and McNaughton (1993) have suggested that there are two crucial pieces to literacy programs for AAC students at the L4L level: developing appropriate expectations and fostering functional literacy.

The research of Blischak, Shah, Lombardino, and Chiarella (2004) and Fallon et al. (2004) suggests that traditional direct instruction that includes work on both oral language bases in vocabulary knowledge, as well as work on phonological awareness and guided practice in single word reading is effective with these students, as it is with typical children. Paul (1998) has reviewed

literature showing that literacy development in children who use AAC benefits from the use of communication devices with voice output. Erickson, Koppenhaver, Yoder, and Nance (1997) report that voice output devices can benefit both literacy and general communication in these children. It is thought that these devices help their users match auditory images to intended meanings and improve their phonological awareness. This, as we know, is an important foundation for reading.

If children have not yet had the opportunity to use voice-output AAC devices when literacy emergence seems near, these opportunities should be provided, if at all possible. New technology is making these resources more readily available, with voice-output software now easily and cheaply accessible on smart phones and notepad computers. These resources can be tested for use with a particular client, using a diagnostic teaching approach, to determine whether there is a good fit. Onlooker assessment will also be an important element in the AAC assessment to determine whether the client is using his or her device in the classroom setting and, if not, what might be getting in the way. Procedures for fostering functional literacy in these students are discussed in more detail in Chapter 12.

CONSIDERATIONS FOR SPEAKERS WITH ASD AT THE L4L STAGE

Many speakers with autism spectrum disorders are included in mainstream classrooms today, and many can benefit from or even excel at the academic curriculum. Still, it is important to remember, as we saw in Chapter 4, that even high functioning individuals with ASD can have a range of language skills, from superior to more like those of children with LLD. For speakers with ASD, then, we will need to do the same sorts of evaluation of language skills that we do for other children with special needs, in order to establish baseline function and identify appropriate goals for intervention. However, there is one wrinkle: children with ASD will have their most significant impairments, and in some cases their only impairments, in the area of pragmatics. Many will achieve scores within the normal range on most standardized language tests, which typically focus on knowledge and use of basic words and sentences, and for this reason, it may be difficult to establish eligibility for language services. There are tests designed to measure pragmatics, such as the *Test of Language Competence* (TLC; Wiig & Secord, 1989), the *Test of Problem Solving* (Zachman, Huisingh, Barrett, Orman, & LoGiudia, 1994), the *Test of Pragmatic Skills* (Shulman, 1985), and the *Test of Pragmatic Language* (Phelps-Terasaki & Phelps-Gunn, 1992), as well as those that have subtests focused on pragmatics, such as the *Comprehensive Assessment of Spoken Language* (CASL; Carrow-Woolfolk, 1999b) and the *Diagnostic Evaluation of Language Variation* (DELV; Seymour, Roeper, & de Villiers, 2005). But, as we've seen, testing pragmatic function is difficult, because the very structure of the testing situations makes it different enough from real interaction to render the results invalid much of the time. Many speakers with ASD will score within the normal range on these measures, despite their real-world pragmatic difficulties. Normed checklists can sometimes be used to establish eligibility for services on the basis of pragmatic deficits. Two that have been used extensively with this population are the *Children's Communication Checklist—2* (Bishop, 2003) and the *Vineland Adaptive Behavior Scale—Communication Domain* (Sparrow, Cicchetti, & Balla, 2005). Both these measures are usually sensitive to the pragmatic problems experienced by students with ASD, and can be used to demonstrate that they have significant difficulties in this area, even when they test well on standard instruments. The *Pragmatic Language Skills Inventory* (Gilliam & Miller, 2006) can also be helpful. Timler (2009) suggests that one of the most telling assessments for these students is the use of a language sample taken during a peer interaction. This assessment can focus on the pragmatic skills that appear to be hindering interaction and can serve as a valid basis for developing an individualized pragmatic intervention program.

CONCLUSIONS

Nick and Maria are just two of the kinds of students with LLD that you may encounter in the elementary school. They express their language and learning deficits somewhat differently, and they react emotionally or behaviorally to their difficulties in different ways. Assessing their needs and those of other students at the L4L stage is a somewhat different problem than it was for children at earlier language levels. With younger children, we were looking primarily at deficits in language form and meaning. With students in the L4L stage, we need to investigate how they process and use language in an important but unique communicative environment: that of the classroom. This means that assessment must, to a great extent, focus on that environment. It must attempt to discover errors and gaps in the child's language competence and also to look at mismatches and misperceptions reflected in the student's language performance in this environment. Finally, the clinician needs to look at how a student's oral language processing and use may be affecting the ability to move beyond oral language to the new modalities so necessary for success in school: the acquisition of literacy and literate language.

Let's take Maria as our example this time and see how her clinician might develop an assessment plan to begin to answer these questions and move toward developing an intervention program.

When Mr. McMahon, the school's SLP, circulated a teacher referral form to all the third-, fourth-, and fifth-grade teachers, the third-grade teacher was eager to fill one out for Maria. Mr. McMahon reviewed the form and convinced Maria's teacher and parents to place Maria in Tier II intervention so accommodations might be made for her in class. He observed her during academic subjects, and noted that she did not actively contribute to group activities, and seemed to be lost on many of her assignments. He suggested that, in addition to providing her with some extra small group instruction in Tier II, the teacher also try pairing her with a higher achieving classmate who would help her organize her work and make sure she understood the directions, as well as giving her extra time to complete assignments and respond to questions. After a month, Maria was continuing to have difficulty and to complain of stomachaches and so on. It was decided a full evaluation was necessary.

The school learning disability and reading specialists were part of the assessment team. They arranged a preassessment conference with the teacher and parents to discuss concerns and plan the assessment program. In addition, Mr. McMahon had a talk with Maria. He asked her how she was getting on in school and whether she had any trouble there. He explained that he would like to help her do better and have an easier time in school. At first she was resistant and sullen, but she warmed up after a while and agreed she would like to do better. Mr. McMahon told her about some of the things he would be doing with her and asked if she would agree to help him help her. She said she would, and they made a date to begin the assessment the following week.

Mr. McMahon developed the following plan for Maria's language evaluation:

- Review Medical and Educational History: Obtain the records from Maria's hospital stay following her accident. Note the nature and extent of her injuries, the length of her coma, and her rate of recovery. Study school records from before and after the accident. (She had had standardized achievement testing done in second grade before the accident and again after the accident when she repeated the grade.) This information can show where she had started out academically and what kind of regression, if any, took place.
- Standardized Testing to Establish Eligibility: *Clinical Evaluation of Language Fundamentals—4* (CELF—4) (if Maria

scores within normal range in all areas, give Test of Problem Solving or Test of Word Finding).
- Criterion-referenced assessments and behavioral observation to establish baseline function and identify intervention targets (to be done in the context of regular sessions once eligibility has been established and the student has begun an intervention program): 5-minute conversational speech sample to assess intelligibility, syntactic, errors, and word-finding problems; onlooker assessment in classroom to assess participation.
- Assess Phonological Awareness: *Lindamood Auditory Conceptualization Test—3*.
- If results of the receptive-language sections on the CELF—4 indicate problems, use curriculum-based onlooker assessment of the student's receptive vocabulary and syntax during a time when the teacher is giving instructions to the class. If classroom problems are evident, look for any signs that Maria can monitor her comprehension. Probe further in criterion-referenced assessments, using vocabulary and sentences drawn from teacher's instructional language and textbook material. Again, look for metacognitive as well as comprehension problems. Use both decontextualized (e.g., judgment tasks) and contextualized probes, and look for use of comprehension strategies in the decontextualized examples. Because of history of traumatic brain injury (TBI), expect delayed responses and inconsistent performance. Give extra time to respond, and give items several times if responded to incorrectly at first. Because Maria may do better in the less-distracting atmosphere of an individual assessment, contrast performance observed in the classroom-based onlooker assessment with performance in the individual settings.
- Audiorecord a sample of speech using an interview format. Evaluate the sample for syntactic and morphological errors and complex sentence use. If complex sentences are few, probe for complex forms and conjunctions that don't appear in the sample, using elicited production techniques. Also check for presyntactic semantic relations expressed in the sample. Because of history of TBI, consider analyzing speech disruptions as well.
- Do another curriculum-based onlooker assessment in the classroom, during a class project or discussion. Note Maria's use of advanced communicative intentions and adherence to classroom discourse rules. Because of TBI history, look carefully for difficulty in reading others' non-verbal cues, difficulty in integrating information received, difficulty knowing what aspect of a question needs to be answered, apparent lack of responsiveness that may result from information overload, difficulty in processing a series of directions, and reduced ability to use abstract language. If problems are evident, probe register variation in role-playing situations and presuppositional skills in barrier games. Use this information and that derived from the classroom observation to work with the teacher to develop a pragmatic intervention program to address classroom discourse problems.
- Collect a narrative sample by asking Maria to tell a story from a wordless picture book. Assess level of narrative macrostructure. If structure is immature, assess cohesion. If both areas are weak, address narrative skills in the intervention program.

- Assess metalinguistic skills using curriculum-based artifact assessment. Have Maria bring in a writing sample from class. Go over it together to edit it. Assess whether and how well Maria can attend to metalinguistics in editing. Assess metacognitive skills using dynamic participant observation in the classroom. This area may be of particular importance because of the history of traumatic injury.

Mr. McMahon was able to establish Maria's eligibility for services based on her performance on the CELF—4 as well as her medical history. The family agreed to an IEP that involved direct services by Mr. McMahon and the reading specialist, with consultation from the learning disabilities teacher. Mr. McMahon spent the first 2 weeks of his program completing the assessment plan. When he had accomplished all the assessments, he felt he knew a good deal about Maria and her strengths and needs and also about what her teacher expected from her in the classroom. He felt in a good position to design an intervention program that would address her needs and help her to succeed in the academic environment.

STUDY GUIDE

I. Child and Family in the Assessment Process
  A. Discuss family-centered practice as it relates to the school-age child.
  B. What role should the client have in the assessment process?
  C. What is the role of a case manager in an assessment of a school-age child?

II. Identifying Students for Communication Assessment
  A. Discuss kindergarten screening. How is it best accomplished? What are its advantages and disadvantages?
  B. Discuss criteria for choosing a screening instrument for school-age children.
  C. Describe several methods of case finding for the SLP in an elementary school setting.
  D. Describe the role of assessment in RTI.

III. Using Standardized Tests in the L4L Stage
  A. For what purpose are standardized tests used in the L4L stage?
  B. Why can establishing eligibility sometimes be a problem for children at this stage?
  C. When should standardized tests of pragmatics be used?

IV. Criterion-Referenced Assessment and Behavioral Observation in the L4L Stage
  A. What aspects of phonology are part of the assessment of a child in the L4L stage?
  B. Discuss two methods of assessing phonological awareness.
  C. How can we assess receptive vocabulary using curriculum-based methods? Using other informal methods?
  D. Discuss some aspects of expressive vocabulary that can be assessed with criterion-referenced procedures.
  E. Outline a general strategy for assessing receptive syntax and morphology in the L4L stage.
  F. Discuss some decontextualized methods of criterion-referenced comprehension assessment that are appropriate for children with LLD.

G. How can we assess comprehension strategies in the L4L period?

H. Discuss contextualized comprehension assessment techniques.

I. Outline a strategy for assessing expressive syntax and morphology from a speech sample in children with LLD.

J. Describe how to assess speech disruptions in a spontaneous speech sample. Under what conditions would you do this analysis?

K. Describe the areas of conversational speech that can be assessed in a pragmatic evaluation of students with LLD. Give methods for assessing each.

L. What are some methods for eliciting narrative samples in students with LLD?

M. What aspects of narrative can be assessed in children in the L4L period? Discuss procedures for assessing each.

N. What contributes to "artfulness" in children's stories?

O. Why and how would you assess metalinguistic awareness in students with LLD?

P. How can metapragmatic awareness be assessed? Why would you want to assess it?

Q. Discuss reasons and methods of assessing comprehension monitoring.

R. What are the three types of curriculum-based assessment? Describe how you might use each one as one aspect of the assessment of a student with LLD.

V. Considerations for the Students with ASD and Severe Impairment

A. What are the primary areas of impairment in speakers with ASD?

B. How can ecological inventories be used for students at the L4L stage?

C. Outline the steps in developing an ecological inventory for a student at the L4L stage.

D. What are the main issues to be concerned about for a child with ASD at the L4L stage? How can assessment address these issues?

A Sample of Language Screening Instruments for Grades K-5

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Assessment of Children's Language Comprehension, 1983 Revision (Foster, R., Giddan, J.J., & Stark, J. [1983]. Rolling Meadows, IL: Riverside Publishing)	3–7 yr	Comprehension of word classes and utterances of increasing length and complexity	Normed on 311 individuals. Internal consistency: .80–.86. Administration time: 10–15 min.
Bankson Language Screening Test (Bankson, N.W. [1977]. Baltimore, MD: University Park Press)	4–6;11 yr	Semantics, morphology, syntax, auditory and visual perception	Yields standard and percentile rank scores. Lists 38 of the most discriminating items as appropriate for quick screen, but no norms for this screen. Administration time: 25 min.
Battelle Development Inventory, Second Edition (BDI-2) Screening Test (Newborg, J. [2004]. Itasca, IL: Riverside Publishing)	Birth–7;11 yr	Receptive and expressive language, cognitive, personal and social, adaptive, and motor	See BDI-2 in Table 11-2. Administration time: 10–30 min.
Bilingual Classroom Communication Profile (Roseberry-McKibbin [1993]. Oceanside, CA: Academic Communication Associates)	4–11 yr	Distinguishes between communication differences and communication disorders	Informal screening. Looks at functional structural aspects of language.
Bilingual Vocabulary Assessment Measure (Mattes, L.J. [1995] Oceanside, CA: Academic Communication Associates)	3 yr and above	Expressive vocabulary	Child names common nouns, which are listed in English, French, Italian, and Spanish in manual. A separate form must be ordered for English/Vietnamese. Administration time: 20 min.
Carrow Elicited Language Inventory (CELI) (Carrow, E. [1974]. Austin, TX- Learning Concepts)	3-8 yr	Morphology and syntax including pronouns, prepositions, conjunctions, articles, adverbs, WH questions, negatives, nouns, adjectives, verbs, infinitives, and a gerund	Criterion-referenced. Normed on restricted group (white, middle-class) of 475 children. Test-retest reliability: .98. Interrater reliability: .98–.99. Administration time: 20–30 min.
Children's Communication Checklist, Second Edition (CCC-2) (Bishop, C. [2006]. San Antonio, TX: Pearson Assessment)	4–16 yr	10 areas: speech, syntax, semantics, coherence, inappropriate initiation, stereotyped language, use of context, nonverbal communication, social relations, and interests	Yields standard scores and percentiles for each of the 10 areas. 70-item checklist used to distinguish between children who have a specific language impairment and those who have more of a pragmatic deficit, such as autism. Administration time: 5–15 min.
Clinical Evaluation of Language Fundamentals-4 Screening Test (CELF-4 Screening Test) (Wiig E.H., Secord, W., & Semel, E. [2004]. San Antonio, TX: Psychological Corporation)	5–21;11 yr	Receptive and expressive language, grammatical skills, and semantic skills	Criterion-referenced scores. Administration time: 15 min.

Continued

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Compton Speech and Language Screening Evaluation-Revised Edition (Compton, A. [1999]. San Francisco, CA: Carousel House)	3–6 yr	Expressive language, receptive language, articulation, auditory memory, oral mechanism, and motor coordination	Little statistical data available. Available in Spanish. Administration time: 10 min.
Denver II (Frankenburg, W.K., Archer, P., Bresnick, B., Maschka, P., Edelman, N., & Sharpiro, H. [1990]. Denver, CO: Denver Developmental Materials)	2 wk–6;11 yr	Expressive and receptive vocabulary, concepts, personal/social, fine and gross motor	Yields pass/fail criterion. Standardized on more than 2000 children in Denver (mixed SES, race). Good concurrent validity. Interrater reliability: 0.61–0.79 Available in Spanish. Administration time: 15–20 min.
Developmental Indicators for the Assessment of Learning-Third Edition (DIAL-3) (Mardell-Czudnowski, C., & Goldenberg, D.S. [1998]. Circle Pines, MN: American Guidance Service)	3–6;11 yr	Motor, cognitive/basic concepts, language, self-help, and social	Provides standard deviation and percentile cutoff points by chronological age at 2-month intervals. Normed on 1,560 English speaking and 605 Spanish-speaking children throughout the United States. Yields standard and percentile rank scores. English and Spanish materials included in one kit. Scoring software available. Administration time: 20–30 min.
Developmental Indicators for the Assessment of Learning-Speed DIAL (Mardell-Czudnowski, C., & Goldenberg, D.S. [1998]. Circle Pines, MN: American Guidance Service)	3–6;11 yr	Language, motor, and cognitive/basic concepts	Shortened version of *DIAL-3*. English and Spanish materials included in one kit. Normed on same population of *DIAL-3*. Administration time: 15–20 min.
Developmental Profile- Third Edition (DP-3) (Alpern, G.D. [2007]. Los Angeles, CA: Western Psychological Services)	Birth–12;11 yr	Expressive and receptive language, adaptive behavior, and social emotional, cognitive, and physical abilities	Yields standard, percentile rank, and age equivalent scores. Normed on 2,216 typically developing children. Parent/caregiver checklist available when interview is not possible. Administration time: 20-40 min.
Developmental Sentence Analysis (Lee, L. [1974]. Evanston, IL: Northwestern University Press)	2–6 yr	Syntax and morphology	Clinical manual for assessing grammatical structure of spontaneous language.
Diagnostic Evaluation of Language Variation, Screening Test (DELV-Screening Test) (Seymour, H.N., Roeper, T.W., & de Villiers, J. [2005]. San Antonio, TX: Psychological Corporation)	Language variation status: 4–12;11 yr. Variation status: 4–9;11 yr.	Comprehensive speech and language, including pragmatics, syntax, semantics, and phonology	Criterion referenced scoring. Yields degree of language variation and degree of risk for a language disorder. Web-based product training. Administration time: 15–20 min.
Dos Amigos Verbal Language Scales-1996 Version (DAVLS-1996) (Critchlow, D.E. [1996]. Novato, CA: Academic Therapy Publications)	5–13 yr	Semantics	Criterion referenced. Gives information to compare a child's development in Spanish and English and determine mixed language proficiency, language dominance, or if remediation is necessary. Administration time: 20 min. by an examiner fluent in both languages.
Fluharty Preschool Speech and Language Screening Test-Second Edition (FPSLST-2) (Fluharty, H.B. [2000]. Austin, TX: Pro-Ed)	3–6;11 yr	Receptive language, expressive language, and articulation	Administration time: 10 min.

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Joliet 3-Minute Speech and Language Screen (Revised) (Kinzler, M.C., & Johnson, C.C. [1993]. San Antonio, TX: Harcourt Assessment)	K, 2nd and 5th grades	Expressive syntax, receptive vocabulary, articulation, voice, and fluency	Provides pass/fail, cutoff score for each grade. Standardized on 2, 587 children from three different SES and ethnic backgrounds. Has computer program for record keeping. Administration tine: 3 min.
Kaufman Survey of Early Academic and Language Skills (K-SEALS) (Kaufman, A.S., & Kaufman, N.L. [1993] Circle Pines, MN: AGS.Publishing/Pearson Assessments)	3–6:11 yr	Receptive language, expressive language, numerical skills articulation	Yields standard, percentile rank, and age-equivalent scores, and descriptive categories. Internal consistency for subtests: .88 to .94. Test-retest reliability for subtests: .87 to .92. Administration time: 15–25 min.
Kindergarten Language Screening Test, Second Edition (KLST-2) (Gauthier, S.V. & Madison, C.L. [1998] Austin, TX: Pro-Ed)	3;6-6:11 yr	Receptive and expressive language including question and command comprehension, sentence repetition, object comparison and contrasting, spontaneous speech, and preschool knowledge	Yields standard and percentile rank scores. Normed on 154 kindergartners. Test-retest reliability: 0.87. Administration time: 5 min.
Phonemic-Awareness Skills Screening (PASS) (Crumrine, L., & Lonegan, H. [2000]. Austin, TX: Pro-Ed)	1st and 2nd grades	Phonemic and phonological awareness including rhyming, sentence segmentation, blending syllable segmentation, deletion, phoneme isolation, phoneme segmentation, and substitution	Criterion referenced with cutoff scores based on a sample of 166 students. Administration time: 15 min.
Pragmatic Communication Skills Protocol (Academic Communication Associates [1989]. Oceanside, CA: Academic Communication Associates)	3–11 yr	Pragmatics	Observations of child's use of language are recorded. Administration time: 20 min.
Pragmatic Language Observation Scale (Newcomer, P.L., & Hammill [2009]. Austin, TX: Hammill Institute on Disabilities)	8–17;11 yr	Expressive language and pragmatics	Norm-referenced teachers' rating scale. Normed on 994 persons in 15 states. Administration time: 5–10 min.
Pre-Reading Inventory of Phonological Awareness (PIPA) (Dodd, B., Crosbie, S., McIntosh, B., Teitzel, T., & Ozanne, A. [2003]. San Antonio, TX: Pearson)	4–6:11 yr	Phonological Awareness	Yields percentile ranges for 6-mth intervals. Can be administered by speech-language pathologists, teachers, and paraprofessionals. Administration time: 25–30 min.
Preschool Language Scale-4 Screening Test (PLS-4 Screening Test) (Zimmerman, I. L., Steiner, V. G., & Pond, R. E. [2005]. San Antonio, TX, Psychological Corporation)	3–6:11 yr	Receptive and expressive language, articulation, voice, fluency, and pragmatics	Norm-based criterion-referenced scores for language and articulation. Descriptive information for social/interpersonal, communication skills, fluency and voice. Administration time: 5–10 min.
The Primary Language Screen (TPLS) (Eger, D. L. [1990]. Norcross, GA: Speech Bin)	Ages 5-7 yr Grades K-1st	Receptive and expressive language and speech skills	Individual or group administration. Administration time: 5–10 min.
Screening Kit of Language Development (SKOLD) (Bliss, L.S., & Allen, D.V. [1983]. East Aurora, NY: Slosson Educational Publications)	2-5 yr	Vocabulary, comprehension, story completion, sentence repetition, auditory comprehension (commands).	Normed for Standard and "Black English." Administration time: 15 min.

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Selective Auditory Attention Test (SAAT) (Cherry, R. [1980]. St. Louis, Missouri: Auditec)	4–9 years	Auditory processing	Closed-set picture point task. Words in quiet and words with a competing message presented. Administration time: 15–20 min.
Slosson Auditory Perceptual Skill Screener (SAPSS). (Erford, B. T. [2005]. East Aurora, NY: Slosson Educational Publications)	5–10 years	Auditory processing and auditory perception	Administration time: 15 min.
Speech-Ease Screening Inventory (SESI) (Speech-Ease [1985]. Austin, TX: Pro-Ed)	K-1st grade	Articulation, language association, auditory recall, expressive vocabulary, and concept development	Has optional section with similarities and differences and language sample. Administration time: 7–10 min.
Test of Auditory Analysis Skills (TAAS). (Rosner, J. [1979]. Novato, CA: Academic Therapy)	5–8 years	Auditory sequencing, phonemic analysis and synthesis skills with single word phonetic deletion (beginning sound, ending sound, or part of a blend)	Criterion-referenced. Administration time: 3 min.
Wepman's Auditory Discrimination Test (ADT), Second Edition (Wepman, J.M, & Reynolds, W.M. [1986]. Los Angeles, CA: Western Psychological Services)	4–8 yr	Auditory discrimination	Normative sample approx. 2,000 children. Yields standard and percentile rank scores. Administration: 5 min.
The WH Question Comprehension Test (Vicker, B. [2002]. Bloomington, Indiana: Indiana Resource Center for Autism)	4 yr–adults with cognitive impairments	WH question form comprehension	Designed for use within the classroom and other settings. Designed for use with speakers with autism spectrum disorders, Down syndrome, and language difficulties. Administration time: 20–30 min.
The Wilson Syntax Screening Test (Wilson, M.S. [2000]. San Antonio, TX: Psychological Corporation)	Pre-K–Kindergarten	Screening for children with specific language impairments	20-Item screener that uses 20 grammatical markers. Administration time: 2–4 min.
Woodcock-Munoz Language Survey-Revised (Woodcock, R.W., Munoz-Sanoval, A.F., Ruef, M.L., & Alvardo, C.G. [2005]. Rolling Meadows, IL: Riverside Publishing)	2;5 yr–adult	Oral language, reading, and writing in the areas of picture vocabulary, verbal analogies, letter-word recognition, and dictation	Establishes language proficiency in English and Spanish. Administration time: 25 min.

A Sample of Language Assessment Tools for Grades K-5

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Assessing and Teaching Phonological Knowledge (Munro, J. [1998]. Victoria, Australia: Australian Council for Educational Research Press)	First 3 years of school and older children experiencing reading difficulties	Phonological awareness including sound patterns in words, segmentation, sound blending, sound manipulation, and phonemic recoding	Administration time: variable
Assessing Semantic Skills through Everyday Themes (ASSET) (Barrett, M., Zachnwn, L., & Huisingh, R. [1988]. East Moline, IL: LinguiSystems)	3–9;11 yr	Receptive and expressive semantics including labels, categories, attributes, functions, and definitions	Test designed around six common everyday life themes. Normed on 706 school-age children.
Assessment and Treatment of Narrative Skills: What's the Story? (Apel, K., & Masterson, J. [1998]. Rockville, MD: American Speech-Language-Hearing Association)	School-age	Narrative	4-hr videotape and manual. This CE course examines procedures, strategies, and ideas for evaluating and treating narrative deficiencies in school-age children with language-learning impairments
Assessment, Evaluation, and Programming System for Infants and Children, Second Edition (AEPS-2) (Briker, D. [2002]. Baltimore, MD: Paul H. Brookes Publishing)	Birth–6 years	Social communication, social development, cognitive, adaptive, fine motor, and gross motor	Administration time: varies
Assessment of Comprehension and Expression 6–11 (ACE 6–11) (Adams, C., Coke, R., Crutchley, A., Hesketh, A., & Reeves, D. [2001]. Berkshire, UK: NFER-Nelson)	6–11;11 yr	Receptive and expressive language including sentence comprehension, inferential comprehension, naming, syntactic formulation, semantic decisions, non-literal comprehension, and narrative	Administration time: 30–45 min.
Assessment of Literacy and Language (ALL) (Lombardino, L. J., Lieberman, R. J., & Brown, J.C. [2005]. San Antonio, TX: Psychological Corporation)	Preschool-1st grage	Spoken language, written language, language compre-hension, semantics, syntax, phonological awareness, alphabetic principles/phonics, and concepts about print	Subtests correspond with Reading First Program instructional components. Administration time: 60 min or less.
Aston Index-Revised (Newton, M., & Thomson, M.E. [1982]. Wisbech, Cambridgeshire, UK: LDA)	5–14 yr	Receptive language, written language, reading, visual perception, auditory discrimination	Index contains 16 tests. Picture recognition scale: criterion-referenced. Vocabulary Scale: norm-referenced. Auditory Sequential Memory Scale: Criterion-referenced.
Auditory Perception Test for the Hearing Impaired, Revised (APT/HI) (Allen, S.G. [2008]. San Diego, CA: Plural Publishing)	5 yr and up	Linguistic processing, suprasegmental processing, speech decoding	Profiles allow for pre- and post-treatment comparison. Can be used with children who have other auditory processing difficulties, although designed for those with hearing impairment. Includes CD. Administration time: 30 min.

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Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Auditory Processing Abilities Test (APAT) (Ross-Swain, D., & Long, N. [2004]. Novato, CA: Academic Therapy Publications)	5–12;11 yr	Auditory processing including linguistic processing and auditory memory	Administration time: 45 min.
Bader Reading and Language Inventory-6th Edition (Bader, L. [2008]. Upper Saddle River, NJ: Prentice Hall)	K–12 and adult	Inventory of tests to assess reading and language abilities	Graded reading passages for all ages and skill levels. Pre-literacy tests, including cloze tests to assess knowledge of semantics and syntactic processing, phonics, and structural analysis. Interest and attitude section to determine type of environment student might flourish most in. Emphasis on portfolio assessment. Includes an ESL test.
Bankson Language Test-Second Edition (BLT-2) (Bankson, N.W. [1990]. Austin, TX: Pro-Ed)	3–6;11 yr	Semantics, syntax, morphology, pragmatics	Yields standard and percentile rank scores. Standardized on more than 1,200 children in 19 states in the United States. Administration tine: 10–15 min.
Battelle Developmental Inventory-Second Edition (BDI-2) (Newborg, J. [2004]. Itasca, IL: Riverside Publishing)	Birth–7;11 yr	Speech and language, social/emotional, cognitive, motoric skills, learning, and hearing	Normative data gathered from over 2,500 children. Yields standard, age equivalent scores. BDI-2 Spanish also available. Scoring CD and Web-based computer scoring available. Administration time: 1–2 hr.
Bilingual Syntax Measure II (Burt, M.K., & Dulay, H.C. [1978]. San Antonio, TX: Pearson)	6–11;11 yr	Receptive and expressive language including sentence comprehension, inferential comprehension, naming, syntactic formulation, semantic decisions, non-literal comprehension, and narrative	
Bilingual Verbal Ability Tests (BVAT) Normative Update Edition (Munoz-Sandoval, A.F., Cummins, J., Alvarado, C.G., & Ruef M.L. [2005] Itasca, IL: Riverside Publishing)	5 yr–adult	Overall verbal ability	For bilingual individuals. Norm-referenced. Provides assessment in 17 languages (Arabic, Chinese, French, German, Haitian-Creole, Hindi, Hmong, Italian, Japanese, Korean, Navajo, Polish, Portuguese, Russian, Spanish, Turkish, and Vietnamese) plus English. Computerized scoring available. Administration time: 20–30 min.
Boehm Test of Basic Concepts-Third Edition (Boehm-3) (Boehm, A.E. [2000]. San Antonio, TX: Psychological Corporation)	K-2nd grade	Receptive language concepts	Yields percentile scores and performance ranges. Separate fall and spring norms to evaluate progress in beginning and ending of school year Normed on 6000 students in Fall 2000 and 4000 students in Spring 2000. Spanish edition available: normed on 300 children for each term from bilingual classroom as in the United States. Provides norms for English and Spanish speakers. Administration time: 15–25 min individual and 30–45 min classroom

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Bracken Basic Concept Scale- Expressive (BBCS-E) (Bracken, B.A. [2006] San Antonio, TX: Pearson)	3–6;11 yr	Receptive and expressive language, cognitive development, and school readiness	Yields scaled, composite, percentile, and age-equivalent scores and descriptive classification. Normed on 750 children including those with language and learning impairments. Spanish (criterion-referenced) version available. Scoring software (Bracken Scoring Assistant available). Administration time: 20–25 min.
Bracken Basic Concept Scale-Third Edition: Receptive (BBCS-3:R) (Bracken, B.A. [2006] San Antonio, TX: Pearson)	3–6;11 yr	Expressive and receptive language, cognitive development, school readiness	Yields scaled, composite, percentile, and age-equivalent scores and descriptive classification. Normed on 750 children including those with language and learning impairments. Spanish (criterion-referenced) version available. Scoring and reporting software (Bracken Scoring Assistant available). Administration time: 10–15 min.
Carolina Picture Vocabulary Test (CPVT) (Layton, T.L., & Holmes, D.W. [1985]. Austin, TX: Pro-Ed)	4–11;5 yr	Receptive sign vocabulary	Designed for deaf and hearing impaired. Yields scale scores, percentile ranks, and age equivalents. Standardized on 767 children who use manual sign. Administration time: 10–15 min.
Children's Communication Checklist, Second Edition (CCC-2) (Bishop, C. [2003]. San Antonio, TX: Pearson)	4–16 yr	10 areas: speech, syntax, semantics, coherence, inappropriate initiation, stereotyped language, use of context, nonverbal communication, social relations, and interests	Standard scores and percentiles for each of the 10 areas. 70-item checklist used to distinguish between children who have a specific language impairment from those who have more of a pragmatic deficit, such as autism. Administration time: 5–15 min.
Clinical Evaluation of Language Fundamentals-Fourth Edition (CELF-4) (Semel, E., Wiig E.H., & Secord, W. [2004]. San Antonio, TX: Pearson)	5–21 yr	Semantics, syntax, memory, receptive and expressive composite, and pragmatics checklist	Yields, standard, percentile, age-equivalent scores. Normed on 2,650 students in regular and special education and students with language disorders (4%). Scoring Assistant available for calculating scores and generating customizable reports of test results. Training CD available. Administration time: 30–60 min.

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Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Clinical Evaluation of Language Fundamentals-Fourth Edition, Spanish (CELF-4 Spanish) (Semel, E., Wiig E.H., & Secord, W. [2006]. San Antonio, Pearson)	5–21;11 yr	Semantics, syntax, memory, receptive and expressive composite, and pragmatics checklist	Designed as a parallel test to the CELF-4 for Spanish speakers living in the United States. Normed on Spanish speakers in the U.S. of the following descents: Caribbean (from Puerto Rico, Dominican Republic, and Cuba)—25%; Central and South American—28%; and Mexican—46%. Includes appropriate grammatical forms and familiar themes for Spanish-speaking students. Yields, standard, percentile, age-equivalent scores. Scoring Assistant provides reports for parents in both Spanish and English. Administration time: 20–60 min.
Communication Abilities Diagnostic Test (CADeT) (Johnston, E.B. & Johnston, A.V. (1990). Austin, TX: Pro-Ed)	3–9 yr	Syntax, semantics, pragmatics	Yields standard scores, percentile ranks. Normed on over 1000 nationwide. Administration time: 30–45 min.
Comprehensive Assessment of Spoken Language (CASL) (Carrow-Woolfolk, E. [1999]. Circle Pines, IL: American Guidance Services)	3;9–21;11 yr	Language processing (lexical/semantic, syntactic, supralinguistic, and pragmatic)	Designed for measuring language delay, expressive language disorders, dyslexia, and aphasia. Computerized scoring available. Administration time (for core battery): 30–45 min.
Comprehensive Receptive and Expressive Vocabulary Test-Second Edition (CREVT-2) (Wallace, G., & Hammill, D.D. [2002] Austin, TX: Pro-Ed)	4–89;11 yr	Receptive and expressive vocabulary	Highlights discrepancies between receptive and expressive vocabulary. Allows for documentation of oral vocabulary progress post-intervention. Provides measurement of oral vocabulary for research studies. Administration time: 20–30 min.
Comprehensive Test of Phonological Processing (CTOPP) (Wagner, R., Torgesen, J., & Rashotte, C. [1999]. Austin, TX: Pro-Ed)	5–24 yr	Phonological processing including phonological awareness, phonological memory, and rapid naming	Two versions: Ages 5–6 and Ages 7–24. Yields standard, percentile rank, and age- and grade-equivalent scores. Administration time: 30 min.
Computerized Profiling 9.7.0 (CP 9.7.0) (Long, S.H., & Fey, M.E. [2005]. Cleveland, OH: Case Western Reserve University)	All ages	Semantics, syntax, phonology, prosody, pragmatics, and narrative	Various approaches used for computerized analysis of language samples. Programs for scoring African American Vernacular English. Administration time: variable
Criterion Referenced Inventory of Language (CRIL) (Wigg, E. (1990). San Antonio, TX: Pearson)	4–13 yr	Pragmatics, semantics, syntax, and morphology	Criterion-referenced language probes. Administration untimed.
Detroit Tests of Learning Aptitude-Primary, Third Edition (DTLA-P:3) (Hammill, D.D., & Bryant, B.R. [2005]. Austin, TX: Pro-Ed)	3–9;11 yr	Domains: linguistic, cognitive, attentional, and motoric	Yields standard, percentile, and age-equivalent scores. Presents construct validity and reliability. Administration time: 15–45 min.
A Developmental Assessment for Students with Severe Disabilities-Second Edition (DASH-2) (Dykers, M.K., & Erin, J. [1999]. Austin, TX: Pro-Ed)	Birth–6;11 yr	Receptive and expressive language, activities of daily living, social-emotional, sensory motor, and basic academic skills	Criterion-referenced. Administration time: 20–30 min.

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Developmental Profile- Third Edition, DP-3 (Alpern, G.D. [2007]. Los Angeles, CA: Western Psychological Services)	Birth–12;11 yr	Expressive and receptive language, and adaptive behavior, and social emotional, cognitive, and physical abilities	Yields standard, percentile rank, and age-equivalent scores. Normed on 2,216 typically developing children. Parent/caregiver checklist available when interview is not possible. Administration time: 20–40 min.
Developmental Test of Auditory Perception (DTAP) (Reynolds, C.R., Voress, J.K., & Pearson, N.A. [2008]. Austin, TX: Pro-Ed)	6-18;11 yr	Auditory perception including phonemes in isolation, word discrimination, rhyming sounds, tonal patterns, and environmental sounds	Yields standard and percentile rank scores and descriptive categories/severity levels. Normed on 1,920 children and teens in 13 states. Includes two Auditory Perception Indexes: Language and Nonlanguage. Administration time: 30 min.
Diagnostic Evaluation of Language Variation (DELV-Criterion Referenced) (Seymour, H.N., Roeper, T.W., & de Villiers, J. [2005]. San Antonio, TX: Pearson)	4–9 yr	Comprehensive speech and language, including pragmatics, syntax, semantics, and phonology	Helps distinguish language differences from language disorders. Criterion referenced scoring. Administration time: 45–50 min.
Diagnostic Evaluation of Language Variation (DELV-Norm Referenced) (Seymour, H.N., Roeper, T.W., & de Villiers, J. [2005]. San Antonio, TX: Pearson)	4–9;11 yr	Comprehensive speech and language, including pragmatics, syntax, semantics, and phonology	Helps distinguish language differences from language disorders. Domain scaled scores, composite standard scores, percentile ranks, and age equivalents. Normed on national sample of 900 children. Web-based product training. Administration time: 45–50 min.
Differential Screening Test for Processing (Richard, G. J., & Ferre, J. [2006]. East Moline, IL: LinguiSystems)	6–12 yr Grades 1–7	Processing including acoustic skills (dichotic digits, temporal patterning, auditory discrimination), acoustic-linguistic skills (phonemic manipulation, phonic manipulation), and linguistic skills (antonyms, prosodic interpretation, language organization)	Normed on 509 subjects from across the United States in regular and special education and across socioeconomic levels. Administration time: 35 min.
Dynamic Assessment and Intervention: Improving Children's Narrative Abilities (Miller, L., Gillam, R., & Peña, E. [2001]. Austin, TX: Pro-Ed)	School-age	Narrative	Uses wordless picture books. Allows determination of students' responses to different types of supports.
The elementary HELP Test (Lazzari, A.M. [1996]. East Moline, IL: LinguiSystems)	6–11 yr	Expressive language, including semantics, general and specific vocabulary, word order, question grammar, and defining	Normed on 2,131 students. Yields standard, percentile rank, and age-equivalent scores. Correlates with the HELP series therapy materials for oral and written practice. Administration time 25–30 min.
Emerging Literacy & Language Assessment (ELLA) (Wiig, E., & Secord, W. [2006]. Greenville, SC: Super Duper Publications)	Ages 4;6–9;11 yr	Emerging literacy and language including phonological awareness, sign and symbol recognition, reading comprehension, rapid naming, word associations, and story retell	Yields standard, percentile rank, and age-equivalent scores. Normed on over 1,200 children in 40 states in the United States including those receiving reading remediation and those with language and learning disorders. Administration time: 30–45 minutes (ages 4;6-5; 5 yr); 1 hr (ages 5;6-9;11 yr)

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Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Evaluating Acquired Skills in Communication-Third Edition (EASIC-3) (Marcott, A. [2009]. Austin TX: Pro-Ed)	3 mo–6;3 yr	Semantics, syntax, morphology, and pragmatics	Designed for used with children with severe cognitive and language disorders. Profile allows for comparison of performance over time. Developmental age charts included. Criterion-referenced. Administration time: 15–30 min.
Evaluating Communicative Competence, Revised 2nd Edition (Simon, C.S. [1994]. Tempe, AZ: Communi-Cog Publications)	10–18 yr	Language processing, metalinguistic skills, and functional uses of language	Criterion-referenced. Administration time: 45 min.
The Expression Connection (Klecan-Aker, J.S., & Brueggeman, L. [1991]. Norcross , GA: Speech Bin)	6–12 yr	Narrative skills	Criterion referenced. Administration time: 1–20 min.
The Expressive Language Test (Huisingh, R., Bowers, L., LoGiudice, C., & Orman, J. [1998]. East Moline, IL: LinguiSystems.	5–11;11 yr	Expressive language, including sequencing, metalinguistics, grammar and syntax, concepts, categorizing, and describing	Normed on 2,666 children. Yields standard, percentile ranks, and age equivalent scores. Manual includes an extensive section of remediation suggestions specific to each subtest. Administration time: 40–45 min.
Expressive One-Word Picture Vocabulary Test-2000 Edition (Brownell, R., (Ed.) [2000]. Novato, CA: Academic Therapy Publications)	2–18 yr	Expressive vocabulary	Norming sample related to ROWPVT. Yields standard, percentile, age-equivalent scores. Administration time: 20 min.
Expressive One-Word Picture Vocabulary Test: Spanish-Bilingual Edition (EOWPVT-SBE) (Brownell, R., (Ed.) [2000]. Novato, CA: Academic Therapy Publications)	4–12 yr	Expressive vocabulary	For speakers who are bilingual in Spanish and English. National norming sample of Spanish-bilingual individuals. Designed to reveal total acquired vocabulary, as examinees may respond in either language. Administration time: 30–45 min.
Expressive Vocabulary Test-Second Edition (EVT-2) (Williams, K.T. [2007]. San Antonio, TX: Pearson)	2–90+ yr	Expressive vocabulary and word retrieval	Normed on over 4,000 people. Yields age- and grade-based standard scores, growth scale values, percentiles, normal curve equivalents, stanines, and age- and grade-equivalents. ASSIST software and reporting software available. Administration time: 10–20 min.
Functional Communication Profile-Revised (FCP-R) (Kleinman, L.I. [2003]. East Moline, IL: LinguiSystems)	3 yr–adult	Receptive, expressive, and pragmatic/social language, speech, voice, oral, fluency, non-oral communication, sensory/motor/behavior, and attentiveness.	Appropriate in any setting: school, hospital, and immediate care facilities. No scoring system. Reporting software available. Administration time: 40–90 min.
Grammatical Analysis of Elicited Language-Pre-Sentence Level (GAEL-P) (Moog, J.S., Kozak, V.J., Geers, A.E. [1983]. St. Louis, MO: Central Institute for the Deaf)	3–6 yr	Syntax, language processing and language production	Imitation and prompting used to elicit simple & complex utterances. Appropriate for use with individuals with language impairments, learning disabilities, hearing impairments, autism, and aphasia.

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Illinois Test of Psycholinguistic Abilities-Third Edition (ITP-3) (Hammill, D.D., Mather, N., & Roberts, R. [2001]. Austin: TX: Pro-Ed)	5-12;11 yr	Spoken and written vocabulary, spelling, rhyming, sentence sequencing, grammar, and phonology	Provides general language, spoken language, and written language composite scores. Includes software for scoring and reporting. Administration time: 45 min–1 hr.
Language Assessment Scales-Oral (LAS-O) (Duncan, S.E., & De Avila, E.A. [1990]. Monterey, CA: CTB/McGraw-Hill)	Grades 1–12	Assesses listening and speaking in limited or non-English speakers	Available in English and Spanish. Designed for bilingual or ESL program placement. Administration untimed.
Language Assessment Scales-Reading and Writing (LAS R/W) (Duncan, S.E., & De Avila E.A. [1994]. Monterey, CA: CTB/McGraw-Hill)	Grades 2–12	Assesses reading and writing in limited or non-English speakers	Available in English and Spanish. Designed for bilingual or ESL program placement. Administration untimed.
Language Processing Test 3: Elementary (LPT 3: Elementary) (Richard, G. J. & Hanner, M. A. [2005] East Moline, IL: LinguiSystems)	5–11;11 yr; grades K-6	Labeling, stating function, associations, categorization, similarities, differences, multiple meanings, and attributes	Yields standard, percentile rank, and age-equivalent scores. Normative sample of 1,313 subjects. Test-retest coefficients for test score range from .69 to .92 across age levels. Administration time: 35 min.
Lindamood Auditory Conceptualization Test-3rd Edition (LAC-3) Lindamood, C.H., & Lindamood, P.C. [2004]. Austin, TX: Pro-Ed)	5–18;11 yr	Phonological analysis	Provides standard scores, percentile ranks, age and grade equivalents. Has English and Spanish versions. Administration time: 20–30 min.
The Listening Test.) Barrett, M., Huisingh. R., Bowers, L., LoGiudice, C., & Orman, J. [1992]. East Moline, IL: LinguiSystems)	6–11;11 yr	Listening and comprehension skills including the following areas: main idea, details, concepts, reasoning, and story comprehension	Designed to rate listening performance within the classroom setting. Administration time: 35 min.
Montgomery Assessment of Vocabulary Acquisition (MAVA) (Montgomery, J.K. [2008]. Greenville, SC: Super Duper Publications)	3–12;11 yr	Receptive and expressive vocabulary	Evaluates knowledge of basic (tier one), high frequency (tier two), and curriculum-based (tier three) words. Yields standard, percentile rank, age equivalent scores. Receptive test normed on over 1,300 children. Expressive test normed on over 1,200 children. Test-retest, inter-rater reliability, and concurrent validity all over .90. Includes an online qualitative response analyzer. Administration time: 30 min.
Oral Communication Battery (OCB) (Peins, M., & Knolmayer Glazewski, B. [1997]. Oceanside, CA: Academic Communication Associates)	3–8yr	Phonology, syntax, semantics, morphology, pragmatics, following directions, storytelling, word and sentence comprehension, voice, fluency, articulation/phonology, and phonological awareness	Informal assessment tool. Vocabulary measures are included in English and Spanish.

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Oral and Written Language Scales (OWLS) (Carrow-Woolfolk, E. [1996]. Circle Pines, MN: American Guidance Service)	3–21;11 yr (listening comprehension/ oral expression; 5–21;11 yr (written expression)	Receptive and expressive language and written language skills	Contains 3 scales: Listening Comprehension, Oral Expression, and Written Expression. Age-based raw scores can be converted to standard scores, percentile ranks, normal curve equivalents, stanines, and age-equivalents. Administration time: Listening Comprehension Scale, 5–15 min; Oral Expression Scale: 10–25 min.
The Oral Language Acquisition Inventory (OLAI) (Gentile, L. [2003]. Carlsbad, CA: Dominie Press)	Pre-K–3rd grade	Repeated sentences, sentence transformations, story reconstruction, narrative comprehension, picture drawing, narration, dictation, information processing, and critical dialogue	Yields frequency counts and individual profile of language structures. Oral Instructional Guide available.
Patterned Elicitation of Syntax Test (Revised) with Morphophonemic Analysis (PEST-R) (Young, E.C., & Perachio, J.J. [1993]. San Antonio, TX: Pearson)	3–7;6 yr	Expressive syntax and morphology	Uses delayed imitation. Includes morphophonemic analysis. Provides means and standard deviation for age, and percentile ranks. Normed on 651 children in four states. Administration time: 20 min.
Peabody Picture Vocabulary Test-4 (PPVT-4) (Dunn, L.M., & Dunn, D.M. [2007]. Minneapolis, MN: Pearson)	2;6–90+ yr	Receptive vocabulary	Provides standard error of measurement and confidence intervals for score. Norming sample related to EVT. Yields standard scores, percentile ranks, age equivalents, and stanines. Spanish version available. ASSIST scoring and reporting software available. Standardized on 4012 children, ages 2–18 yr. Administration time: 10–20 min.
The Phonological Awareness Profile (Robertson, C., & Salter, W. [1995]. East Moline, IL: LinguiSystems)	5–8;11 yr	Phonological processing and phoneme-grapheme correspondence including the following tasks: rhyming, segmentation, isolation, deletion, substitution, blending, & decoding	Criterion-referenced. Gives performance profile. Administration time: 10–20 min.
The Phonological Awareness Test 2 (Robertson, C., & Salter, W. [2007]. East Moline, IL: LinguiSystems)	5–9;11 yr K–4th grade	Phonological processing and phoneme-grapheme correspondence including the following tasks: rhyming, segmentation, isolation, deletion, substitution, graphemes, blending, decoding, invented spelling	Normative sample of 1,582 subjects from both special and general education, several U.S. racial and ethnic groups, and across socioeconomic levels. Yields Phonological Awareness and Phone-Grapheme Correspondence scores and total test composite score. Test-retest coefficients exceed .90 Scoring software available. Administration time: 40 min.

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Porch Index of Communicative Ability in Children (PICAC) (Porch, B.E. [1981]. Albuquerque, NM: PICA Programs)	3–12 yr	Verbal, gestural, and graphic abilities	Scores responses qualitatively. Two batteries: ages 3–5 and 6–12. Provides means and percentiles. Standardized on several hundred children representative of U.S. census. Administration time: 30–60 min.
Pragmatic Language Skills Inventory (PLSI) (Gilliam, J.A., & Miller, L. [2006]. Austin, TX: Pro-Ed)	5;0–12:11 yr	Pragmatic language skills including personal interaction, social interaction, and classroom interaction skills	Norm-referenced rating scale. Utilizes cut-off scores to characterize presence of a pragmatic language disorder. Administration time: 5–10 min.
Preschool Language Scale-Fifth Edition (PLS-5) (Zimmerman, I. L., Steiner, V. G., & Pond, R. E. [2011]. San Antonio, TX, Psychological Corporation)	Birth–6:11 yr	Receptive and expressive language	Yields standard, percentile rank, and language age-equivalent scores. Normed on 1,500 children including those with special needs. Test retest reliability .90–.97 for the total language score. Includes caregiver questionnaire. Includes items that evaluate phonological awareness skills for 5- and 6-year-olds. Spanish Edition available. Administration time: 20–45 min.
Preschool Language Scale-Fourth Edition Measure of Progress (PLS-4 Measure of Progress) (Zimmerman, I. L., Steiner, V. G., & Pond, R. E. [2007]. San Antonio, TX: Psychological Corporation)	Birth–6;11 yr	Receptive and expressive language	Yields progress scores using current and past obtained PLS-4 raw scores. Helps quantify therapy and intervention results. Administration time: 10–15 min.
Receptive One-Word Picture Vocabulary Test-2000 Edition (ROWPVT-2000) (Brownell, R. (Ed.) [2000]. Novato, CA: Academic Therapy Publications)	2–18;11 yr	Receptive vocabulary	Yields standard, percentile, and age-equivalent scores. Percentiles based on over 2,000 individuals for English Edition. Spanish-bilingual edition available (Ages 4–12;11 yr). Administration time: 15–20 min.
Renfrew Language Scales Action Picture Test, Fourth New Edition of Revised Edition (Renfrew, C., & Hancox, L. [1999]. Milton Keynes, UK: Speechmark Publishing)	3–8 years	Semantics, Syntax	Norm-referenced. Yields age-equivalent scores. Administration time: untimed
Rhode Island Test of Language Structure (RITLS) (Engen, E., & Engen, T. [1983]. Austin, TX: Pro-Ed)	3–20 yr (hearing impaired); 3–6 years (normal hearing)	Receptive syntax	Designed for hearing impaired, but can be used for learning-disordered or for English-as-a-second-language populations. Standardized on 513 children with hearing impairment and 283 hearing children. Administration time: 30 min.
Rice/Wexler Test of Early Grammatical Impairment (Rice, M.L., & Wexler, K. [2001]. San Antonio, TX: Pearson)	3–8 yr	Morphemes and syntactic structures that children with language disorders characteristically lack	Helps identify children with specific language impairments who might be missed by other tests. Administration time: 45–60 min.
S-MAPS, Rubrics for Curriculum-Based Assessment and Intervention (Wiig, E.H., Lord Larson, V., & Olson, J.A. [2004]. Eau Claire, WI: Thinking Publications)	K–12th grade	Basic and advanced language and communication skills, literacy and discourse development, thinking and creativity	27 rubrics in the three categories. Student performance can be evaluated on continuum from beginner to expert. Rubrics available on CD. Helps adapt skills to curriculum.

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Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Social Emotional Evaluation (SEE). (Wiig, E.H. [2008]. Greenville, SC: Super Duper)	6–12;11 yr	Receptive and expressive social skills including recognizing and labeling emotions, comprehending social and emotional situations, and understanding conflicting messages	Separate scores for students with autism spectrum disorders or language/learning disabilities. An online Qualitative Response Analyzer available. Administration time: 20–25 min.
Social Language Development Test-Elementary (Bowers, L., Huisingh, R., & LoGiudice, C. [2008]. East Moline, IL: LinguiSystems)	6–11 yr; grades 1–6	Language-based skills of social interpretation and interaction including making inferences, interpersonal negotiations, multiple interpretations, and supporting peers	Yields standard, percentile rank, and age equivalent scores. Normed on 1,494 subjects in 47 states including both regular and special education populations and all socioeconomic levels.
Social Skills Improvement System Rating Scales (SSIS Rating Scales) (Gresham, F., & Elliott, S. N. [2008]. Bloomington, MN: Pearson)	3–18 yr individuals Reading level: parent—5th grade; student—2nd grade	Pragmatics in Social Skills section, problem behaviors, and academic competence	Yields standard and percentile rank scores, behavior levels, and frequency and importance ratings. Scoring software available. Spanish version of parent and student forms. Administration time: 10–25 min.
The Strong Narrative Assessment Procedure (SNAP) (Strong, C.J. [1998]. Eau Claire, WI: Thinking Publications)	7–12 yr	Narrative skills	Prerecorded narrative and wordless picture books used. Manual describes procedure for elicitation, transcription, segmentation, and analysis of story retelling samples. Description of intervention program development based on results. Administration time: 20 min.
Structured Photographic Expressive Language Test 3 (SPELT-3) (Dawson, J., Eyer, J., & Stout, C. [2003]. DeKalb, IL: Janelle Publications)	4–9;11 yr	Syntax and morphology	Yields standard, percentile, age-equivalent scores. Standardized on more than 1800 children nationwide. Has guidelines for scoring African-American English dialect. Spanish version available (2nd Edition). Administration time: 15–20 min.
Swanson Cognitive Processing Test (SCPT) (Swanson, H. L. [1996]. Austin, TX: Pro-Ed)	5 years–adult	Cognitive Abilities related to information processing includes 11 subtests: semantic association, story retelling, auditory digit sequencing, phrase recall, spatial organization, mapping and directions, picture sequencing, nonverbal sequencing, rhyming words, and visual matrix	IQ test battery. A brief form of 5 subtests can be administered. Internal consistency reliability coefficient of .80. Administration time: variable.
Teacher Assessment of Grammatical Structures (TAGS) (Moog, J. S., & Kozak, V.J. [1983]. St. Louis, MO: Central Institute for the Deaf)	Birth–12 years (hearing impaired); 2–5 years (normal hearing)	Comprehension and use of grammatical structures (noun modifiers, pronouns, prepositions, adverbs, verbs, and questions) in sentences	Designed for hearing impaired, but may be used with children with normal hearing and notable language delay. Available on 3 levels: pre-sentence, simple sentence, and complex sentence. Administration time: variable.

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Test for Auditory Comprehension of Language-3rd Edition (TACL-3) (Carrow-Woolfolk, E. [1999]. Austin, TX: Pro-Ed)	3–9;11 yr	Auditory comprehension, word classes and relation, grammatical morphemes, elaborated sentence constructions	Yields standardized scores, percentile, and age-equivalent scores. Standardized on 1003 children. Internal consistency: 0.96. Test-retest reliability: 0.89–0.95. Computer scoring available. Administration time: 15–25 min.
Test of Auditory Processing Skills-Third Edition (TAPS-3) (Martin, N.A., & Brownell, R. [2005]. Novato, CA: Academic Therapy)	4–18 yr	Word discrimination, word memory, phonological segmentation, sentence memory, phonological blending, auditory comprehension, numbers forward, auditory reasoning, and numbers reversed	A revamping of the *Test of Auditory Perceptual Skills.* Provides information for diagnosing auditory processing, language, and learning difficulties. Yields standard, percentile ranks, age-equivalent scores. Normed on over 2000 children and teens. Spanish version available. Administration time: 1 hr.
Test of Auditory Reasoning and Processing Skills-Third Edition (TARPS) (Gardner, M.F. [1993]. Hydesville, CA: Psychological & Educational Publications)	5-13;11 yr	Auditory processing skills including reasoning, developing new ideas, drawing inferences, solving problems, and acquiring and organizing knowledge.	Yields scaled, percentile rank, stanine, and age-equivalent scores. Normed on over 1,100 students enrolled in regular education classes. TARPS performance correlates well with Similarities and Vocabulary subtests on WISC-III and WPPSI-R ($r = 0.58$ to 0.63). English and Spanish test booklets available. Administration time: 10–20 min.
Test of Early Language Development-3rd Edition (TELD-3) (Hresko, W.P., Reid, K., & Hammill, D.D. [1991]. Austin, TX: Pro-Ed)	2–7;11 yr	Receptive and expressive syntax, semantics	Yields standard, percentile, normal curve equivalent, age-equivalent scores. Normed on 1184 children in 30 states. Reliability: 0.90/ Content validity: 0.40–0.52 Administration time: 15–20 min.
Test of Early Written Language-2 (TEWL-2) (Herron, S., Hresko, W., & Peak, P. [1996]. Austin, TX: Pro-Ed)	3–11 yr	Emerging writing skills	Helpful for identifying students with mild deficits. Yields means, standard deviations, and percentiles.
Test for Examining Expressive Morphology (TEEM) (Shipley, K., Stone, T., & Sue, M. [1983]. Austin, TX: Pro-Ed)	3–7;11 yr	Morphemes in sentence completion tasks	Provides means and standard deviation for age and age-equivalent scores. Has companion intervention program- Teaching Expressive English Morphology. Normed on 540 children. Interrater reliability: 0.94\ Construct validity: 0.87 Administration time: 7 min.
Test of Grammatical and Syntactical Skills (TGSS) (Gardner, M.F. [2002]. Burlingame, CA: Psychological and Educational Publications)	8–15 yr	Grammar and syntax including parts of speech, nouns, pronouns, articles, verbs, subject-verb agreement, verb tense, adjectives, adverbs, sentence types and use, grammatically incorrect sentences, punctuation and capitalization, word meaning, and spelling.	Yields standard, scaled, percentile, stanine, and age-equivalent scores. Administration time: 40–50 min.

Continued

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Test of Language Competence-Expanded Edition (TLC-E) (Wiig, E.G., & Secord, W. (1989). San Antonio, TX: Pearson)	Level 1: 5–9;11 yr Level 2: 9–18;11 yr	Metalinguistics, multiple meanings, inferences, figurative usage, and conversational sentence production	Yields standard, percentile ranks by age, and age-equivalent scores. Has companion intervention program, which uses cognitive-linguistic approach. Administration time: Less than 1 hr
Test of Language Development-Primary-Fourth Edition (TOLD-P:4) (Hammill, D.D., & Newcomer, P.L. [2008]. Austin, TX: Pro-Ed)	4–8;11 yr	Receptive and expressive semantics, morphology, syntax, and phonology	Normed on demographic representative sample of the 2005 U.S. population. Administration time: 30 min–1 hr.
Test of Language Development-Intermediate- Fourth Edition (TOLD-I:4) (Hammill, D.D., & Newcomer, P.L. [2008]. Austin, TX: Pro-Ed)	8–17;11 yr	Receptive and expressive semantics, morphology, and syntax	Yields standard, percentile rank, composite, and age equivalent scores. Normed on demographic representative sample of the 2005 U.S. population. Administration time: 30 min–1 hr.
Test of Morpheme Usage. Stevens, N., & Isles, D. [2004]. Milton Keynes, UK: Speechmark Publishing)	Children and adults	Morphology	Designed following developmental norms. Administration time: 10–15 min.
Test of Narrative Language (TNL) Gillam, R.B., & Pearson, N.A. [2004]. Austin, TX: Pro-Ed)	5–11;11 yr	Literal and inferential comprehension and use of language in narrative discourse	Normed on 1,059 children from 20 states. High validity and reliability. Administration time: 15–20 min.
Test of Phonological Awareness, Second Edition: PLUS (TOPA-2+) (Torgensen, J.K., & Bryant B.R. [2004]. Austin, TX: Pro-Ed)	5–8 yr	Phonological Awareness	Yields standard and percentile rank scores. Internal consistency, test-retest, and interscorer reliability exceed or meet .80 across all ages. Normed on national sample of 2,085 students for 26 states: 1,035 for the kindergarten version and 1,050 for the Early Elementary version. High validity and reliability. Administration time: Kindergarten 30–45 min; Early elementary 15–30 min.
Test of Phonological Awareness Skills (TOPAS) (Newcomer, P., & Barenbaum, E. [2003]. Austin, TX: Pro-Ed)	5–10 yr	Phonological Awareness including sound comparison, phoneme blending, and phoneme segmentation	Yields standard, percentile rank, composite, and age-equivalent scores. Reliability coefficients ranging from .87–.97. Normed on national sample of 926 children. High validity and reliability. Administration time: 15–30 min.
Test of Pragmatic Language –Second Edition (TOPL-2) (Phelps-Terasaki, D., & Phelps-Gunn, T. [2007]. Austin, TX: Pro-Ed)	6–18;11 yr	Pragmatics	Determines individual strengths and weaknesses. Allows for documentation of progress. Yields standard, percentile, and age-equivalent scores. Administration time: 45–60 min.
Test of Problem Solving-3-Elementary (TOPS-3: Elementary) (Bowers, L., Barrett, M., Huisingh, R., Orman, J., & LoGiudice, C. [2005]. East Moline, IL: LinguiSystems)	6–12;11 yr	Explaining inferences, determining cause of events, answering negative questions, sequencing, determining solutions, and avoiding problems	Yields standard, percentile, age-equivalents scores. Total test scores test-retest coefficients average .84 Administration time: 20 min.

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Test of Relational Concepts-Revised (Edmonston, N., & Thane, N.X. [1999]. Washington DC: Gallaudet University)	3–7;11 yr	Conceptual/relational language including dimensional, spatial, temporal, comparative, and quantitative concepts	Yields standard, percentile scores. Administration time: 10–15 min.
Test of Semantic Skills-Primary (TOSS-P) (Bowers, L., Huisingh, R., LoGiudice, C., Orman, J. [2002]. East Moline, IL: LinguiSystems)	4–8;11 yr	Receptive and expressive semantics: labels, categories, attributes, functions, and definitions	Yields standard, percentile, age-equivalent scores. Standardized on 1,510 students nationwide. Test-retest coefficients for total test scores average .88 Administration time: 25–30 min. Previously called *Assessing Semantic Skills Through Everyday Themes (ASSET).*
Test of Word-Finding-Second Edition (TWF-2) (German, D.J. [2000]. Austin, TX: Pro-Ed)	4–12;11 yr	Multisyllable and compound word retrieval and progressive and past tense verb forms	Yields standard and percentile rank scores. Standardized on 1,836 students. Administration time: 20–30 min.
Test of Word-Finding in Discourse (TWF-D) (German, D.J. [1991]. Austin, TX: Pro-Ed)	6;6–12;11 yr	Word retrieval in discourse	Provides word-finding behaviors index and productivity index. Yields standard scores and percentile ranks. Nationally standardized on 856 students. Administration time: 15–20 min.
Test of Word Knowledge (TOWK) (Wiig, E.H., & Secord, W. [1992]. San Antonio, TX: Pearson)	Level 1: 5–8 yr; Level 2: 8–17;11 yr	Expressive and receptive semantics, definitions, antonyms, synonyms, multiple meanings	Yields standard, age-equivalent, and percentile rank scores. Administration time: Level 1: 25 min for core battery; 6 min for supplementary subtest. Level 2: 40 min for core battery; 25 min for supplementary subtest
Test of Written Expression (McGhee, R., Bryant, B., Larson, S., & Rivera, D. [1995]. Austin, TX: Pro-Ed)	6;6–14;11 yr	Provides a comprehensive assessment of writing achievement	Yields standard and percentile rank scores. Normed on 1,226 students in 21 states.
Test of Written Language-4 (TOWL-4) (Hammill, D.D., & Larsen, S.C. [2009]. Austin, TX: Pro-Ed)	9–17;11 yr	Assesses written expression including: vocabulary, spelling, punctuation, logical sentences, sentence combining, contextual conventions, and story composition	Two forms available, so post-test results not confounded by memory. Yields standard, percentile, composite, and age- and grade-equivalent scores. Standardized on 2,505 individuals from 18 states. Administration time: 60–90 min.
Token Test for Children- Second Edition (TTFC-2) (McGhee, R.L., Ehrler, D.J., & DiSimoni, F. [2007]. Austin, TX: Pro-Ed)	3–12;11 yr	Auditory comprehension, temporal and spatial concepts	Yields age- and grade-equivalent scores. Standardized on 1,310 children in 22 states. Administration time: 10–15 min.
Utah Test of Language Development-4 (Mecham, M.J. [2003]. Austin, TX: Pro-Ed)	3–9;11 yr	Receptive and expressive language	Yields standard scores and language quotient. Administration time: 30–45 min.
Wiig Assessment of Basic Concepts (WABC) (Wiig, E. [2004]. Greenville, SC: Super Duper Publications)	2;6–7;11 yr	Receptive and expressive concept knowledge in 7 categories: color or shape; size, weight or volume; distance, time, or speed; quantity or completeness; location or direction; condition or quality; sensation, emotion, or evaluation	Test is presented in interactive storybook format. Normed on 1,200 children. Yields standard scores, percentile ranks, and age-equivalents. Spanish version available. *(Wiig Assessment of Basic Concepts-Spanish [WABC-S] {2006]).* Administration time: 10–15 min.

Continued

Test Name (Author[s]/Date/Publisher)	Age Range	Areas Assessed	Comments
Wiig Criterion-Referenced Inventory of Language (Wiig, E.H. [1990]. San Antonio, TX: Pearson)	4–13 yr	Semantics, pragmatics, syntax, and morphology	Criterion-referenced scores. Record forms designed to determine progress over time. Administration time: untimed.
Woodcock Language Proficiency Battery-Revised (Woodcock, R.W. [1991]. Chicago, IL: Riverside Publishing)	2–95 yr	Oral language, vocabulary, antonyms and synonyms, reading, and writing	Yields standard, age- and grade-equivalent scores. Nationally standardized on 6,359 students. Reliability coefficients: 0.95 Compuscore software for scoring. Administration time: Over 90 min.
Woodcock-Munoz Language Survey-Revised (Woodcock, R.W., Munoz-Sanoval, Ruef, M., & Alvardo, C. G. [2004]. Rolling Meadows, IL: Riverside Publishing)	2;5 yr–adult	Oral language, reading, writing in the areas of picture vocabulary, verbal analogies, letter-word recognition, and dictation	Establishes language proficiency in English and Spanish. Administration time: 55 min.
Word Finding Referral Checklist (WFRC) (German, D.J. [1992]. Rolling Meadows, IL: Riverside Publishing)	Elementary, middle, and secondary school	Language processing including language comprehension word-finding skills in both single word and discourse contexts	Yes/no checklist designed to be used by educators and caregivers. Administration time: variable.
The Word Test-2 (Elementary) (Huisingh, R., Bowers, L., LoGiudice, C., & Orman, J. [2004]. East Moline, IL: LinguiSystems)	7–11;11 yr	Associations, synonyms, antonyms, semantic absurdities, definition, and multiple meanings	Yields standard, percentile, and age-equivalent scores. Standardized on more than 1,282 students. Administration time: 30 min.
Writing Process Test (WPT) (Warden, M., Hutchinson, T. [1992]. Novato, CA: Academic Therapy Publications)	8–19 yr; grades 2–12	Assesses writing and critical thinking including writer's sentence structure and variety, grammar and usage, purpose, focus, audience, vocabulary, style, tone, support and development, organization, coherence, capitalization, punctuation, and spelling	Administration time: 45 min-90 min.
Written Language Assessment (WLA) (Grill, J., & Kirwin, K. [1990]. Novato, CA: Academic Therapy Publications)	8–18+ yr	Assesses language with writing samples including expressive, instructive, and creative writing	Norm-referenced. Administration time: untimed, but allot 15–20 min per writing task.

APPENDIX 11-3

Tests of Phonological Awareness

TEST	RAPID NAMING	WORD DISCRIMINATION	RHYMING	SEGMENTATION	ISOLATION	DELETION	SUBSTITUTION	BLENDING	GRAPHEMES	NON-WORD REPETITION
Test of Auditory-Perceptual Skills – Third Edition (TAPS-3; Martin, & Brownell, [2005])		X		X				X		
Test of Phonological Awareness – Second Edition (TOPA-2; Torgesen, & Bryant, [2004])		X	X		X	X	X	X	X	
Rosner Test of Auditory Analysis Skills (TAAS; Rosner, [1979])						X				
Lindamood Auditory Conceptualization Test-Third Edition (LAC-3; Lindamood, & Lindamood, [2004])							X			
Woodcock-Johnson III (WJ III; Woodcock, McGrew, & Mather, [2002])	X	X	X	X	X	X	X	X	X	
Goldman-Fristoe-Woodcock Auditory Skills Test Battery (GFW; Goldman, Fristoe, & Woodcock, [1974])		X			X			X	X	X
Roswell-Chall Auditory Blending Test (Roswell, & Chall, [1963])								X		
Phonological Abilities Test (PAT; Muter, Hulme, & Snowling, [1997])	X		X			X			X	
The Phonological Awareness Test-Second Edition (TPAT-2; Robertson, & Salter, 2007)			X	X	X	X	X	X	X	
Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen, & Rashotte [1999])	X			X		X		X		X
Children's Test of Nonword Repetition (CNRep; Gathercole, & Baddley, [1996])										X

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11-4 Answers to Complex Sentence Assessment Exercise In Box 11-6

Percentage Complex Sentences

15/18 = 83.3%

Complex Sentence Types

Early Developing

Simple infinitive: T4, T6, T7, T10, T16
Full propositional clause: T9, T15, T16, T17, T18
Simple *wh-* clause: T9
Simple or multiple conjoining: T4, T7, T8, T11, T13, T14
Multiple embedding: T9, T10, T16, T18
Embedding and conjoining in one sentence: T4, T6, T7, T8, T17

Later Developing

Infinitive clause with subject different from main sentence: T10
Relative clause: T12, T18
Gerund clause: T4, T18
wh- infinitive clause: T8
Unmarked infinitive clause: T3

Conjunctions Used

and, when, because, why, that

Evaluation

Adequate use of complex sentence constructions; small repertoire of conjunctions.

Plan

Probe conjunction use with elicited production tasks (e.g., ask student to "make up a sentence with *if* . . ."). If difficulties appear in elicited as well as spontaneous production, develop intervention activities to facilitate production of sentences with early developing conjunctions that are missing from the repertoire, such as *if, so, but,* and *how*. Target more advanced conjunctions (e.g., *unless, until, before, after, although,* etc.) when earlier-developing ones are used spontaneously.

Narrative Analysis of Sample in Box 11-12

Narrative Macrostructure

T1 = Setting

T2 = Initiating event

T3−6 = Description of characters' actions without much sense of plot, plan, or motivation

T7 = Attempt (use of verb *know* indicates some internal response)

T8 = Consequence

T9 = Reaction (does not include character motivation; physical reaction only; contains temporal element then)

T10 = Abrupt end

Narrative stage using scheme in Box 10-3: 4 (Chain)

Narrative stage using scheme in Box 11-8: Temporal Chain

Narrative stage using scheme in Figure 11-8: Action Sequence

Cohesion Analysis Based on Scheme in Box 11-10:

Cohesive Marker T-Unit No./Item	*Cohesive Adequacy Analysis* Tied to Information in T-unit No./Item	Marker Judgment*
2/the bus	1/a bus	C
3/the bus	1/a bus	C
3/the grass	-	I
4/the bus	1/a bus	C
4/the train	—	I
4/but	conj.	I
5/they	4/bus and train	C
5/couldn't	ellipsis	I
5/the train	4/bus and train	C
5/because	conj.	I
6/then	conj.	C
6/they	4/bus and train	C
6/the coutnry	5a town	C
7/it	—	I
7/its	—	I
7/because	conj.	C
7/it	—	I
7/know	ellipsis	I
8/it	—	I
8/the water	-	I
9/then	conj.	C
9/the owner	1/a man	C
9/it	—	I
10/then	conj.	C
10/they	—	I

*C = Complete tie; I = incomplete tie.
12/25 = 48% complete ties.

Literary Language Style (Box 11-11)

1. Conjunctions: but, because, who, then
2. Elaborated noun phrases: T1—"who was driving . . ."
3. Mental and lingusitic verbs: T7—*know*
4. Adverbs: none

Evaluation

Little evidence of literary language style, poor use of cohesion, immature macrostructure, marginal lexical richness. Include narrative goals, focusing first on macrostructure and cohesion, within intervention program.

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. List the elements needed in a plan for communication intervention at the elementary school level.
2. Name the required elements in an Individualized Educational Plan.
3. Define and describe appropriate intervention goals at the elementary school level.
4. List a variety of intervention activities at the elementary school level.
5. Describe several service delivery models at the elementary school level.
6. Discuss the role of various intervention agents at the elementary school level and the ways in which they structure collaboration.
7. Carry out language analysis procedures for conversation and narratives.
8. Apply concepts discussed to the education of students with autism spectrum disorders and severe disabilities in elementary schools.

Willie had been late to begin talking when he was a toddler. His parents were concerned about him and asked their pediatrician about it. The pediatrician had Willie's hearing tested and found that he had a mild sensorineural loss in the right ear and a moderate loss in the left. He began wearing hearing aids and was enrolled in an early intervention program. His oral language skills began to improve, and by the time he reached kindergarten, he was able to pass a screening for entrance into a mainstream program. The regular kindergarten teacher referred him for additional speech and language intervention midway through the year, though, because of some mild problems with the intelligibility of his speech and a concern about "immature language." He worked with a speech-language pathologist (SLP), Ms. Johnson, during kindergarten and first grade on basic oral language skills, including increasing intelligibility, use of auxiliary verbs and verb marking, increasing vocabulary, and other skills at the developing language level. Ms. Johnson helped his teachers set up and use a classroom amplification system to improve Willie's reception of the teacher's language input. His first grade classroom included an responsiveness to intervention (RTI)

program for reading development, and Willie was placed in Tier II instruction for one marking period when he began to struggle with early reading achievement. By the end of first grade, though, he had mastered most of the basic oral language skills his Tier II group had targeted, and he moved back into Tier I. Language analysis showed he was functioning at or above Brown's stage V in most areas of productive language. He scored within the normal range, although at the low end, on receptive language and vocabulary assessments. Ms. Johnson put Willie on monitoring status at the end of first grade, and Willie went on to second grade.

Toward the end of his second-grade year, Ms. Johnson received another referral for Willie. His second-grade teacher reported that Willie was "not listening" in class; was having trouble with reading and writing; couldn't organize his materials or complete independent work; and was "acting out," getting attention by being silly and boisterous. Generally, he seemed unable to keep up with the other second-graders in "getting" the information being studied in the subject areas. The second-grade teacher felt he could not function in a mainstream classroom and needed a special program for children with hearing impairments.

Willie was seen by the Student Success Team. They made modifications in his assistive listening system, moved his seat to the front of the room, and advised the teacher to look directly at him when she spoke to him. However, when another marking period went by without much improvement in his classroom performance, it was decided that he needed more help. After an intensive evaluation including both standardized and criterion-referenced assessments in collaboration with the audiologist and learning-disability and reading specialists on the school assessment team, as well as two classroom observations for some curriculum-based evaluation, Ms. Johnson concluded that Willie could benefit from speech/language services. This time, though, his needs were different. They were not in the area of basic oral language skills, but concerned his ability to use and understand language to participate fully in the life of the classroom and to move beyond basic oral language to higher level linguistic functions, including reading, writing, and the complex discourse demands of the classroom. Still, Ms. Johnson felt that Willie had enough language skill to continue to progress in a mainstream classroom if he received the appropriate support. Ms. Johnson began to work with Willie's family and with the reading and learning-disability specialists and audiologist to design a program for Willie's third-grade year that would meet his needs and help him succeed in the mainstream setting.

Although Willie's hearing impairment figures in his difficulties in school, the pattern of his development is in some ways typical of many children with problems at the language-for-learning (L4L) level. They may start out with a primary problem in oral language, grow out of that (with some help from the SLP), and grow into a different kind of problem, one with managing in school. Let's talk about how to plan and deliver intervention for children whose language skills lead to difficulty in meeting the demands of the school curriculum.

PLANNING INTERVENTION IN THE L4L STAGE

Students being seen for language intervention in the L4L period usually require *transdisciplinary planning,* which, you'll remember, means that specialists and teachers work together, not just within but across their disciplines, to design an effective intervention program. Services need to be coordinated among the specialists, in consultation with the regular or special education teacher, to ensure that the student's program is coherent and addresses all aspects of the student's needs and includes the family's perspective (Prelock, Beatson, Contompasis, & Kirk, 1999), since family involvement predicts academic achievement, social and emotional development, and a variety of other positive school outcomes for all children, including those with special needs (Howland et al., 2006).

The Individualized Educational Plan (IEP) meeting provides an excellent opportunity to engage in this kind of collaborative planning. Since the IEP meeting is required by law, everyone involved in the student's program will be present. Parents will be there, too, so their input can be incorporated. If the SLP serves as service coordinator, he or she can initiate a discussion among the team as to who will do what and when and how to be sure the program flows smoothly and makes sense for the student. To make the intervention truly transdisciplinary, the SLP needs to work with the other educators to outline the client's needs and figure out how each can best be served. Take Willie, for example. His hearing impairment needs to be carefully monitored and his aids and assistive listening devices managed. He needs to work on basic reading and writing skills. He also needs to learn to communicate more effectively in the classroom, be more organized in his work habits, and improve his use of the hearing he has in classroom situations. And he needs help learning the material being presented in the classroom. Who helps him with what?

In transdisciplinary intervention, specialists don't work independently on separate intervention agendas. Instead they decide with the classroom teacher what Willie's most immediate needs are and divide up the responsibilities according to the strengths of each professional. Monitoring his hearing and managing his audiometric equipment would fall to the audiologist. Work on basic reading and writing skills would obviously be under the direction of the reading specialist. The learning-disability (LD) teacher might work with Willie or in consultation with the classroom teacher to develop better organizational and study skills and help with mastering classroom content. The SLP might work with the classroom teacher to give Willie some listening strategies in the classroom and might help the teacher to modify some of the classroom procedures to make it easier for Willie to succeed. The speech-language pathologist also might consult with the full team about some of the higher level oral language skills that Willie needs to work on to

succeed in the other areas of the curriculum. The SLP could address these skills in oral language activities, developing comprehension-monitoring and metacognitive strategies for Willie to use in focusing on these higher level targets. The SLP might share these strategies with the classroom teacher, who would encourage Willie to use them in the classroom. The reading and LD specialist also might encourage Willie to use the same comprehension monitoring and metacognitive strategies in their work with him. In this way, a focused and coherent program might be developed in which the work of each specialist would contribute interactively to fostering Willie's development (Silliman, Ford, Beasman, & Evans, 1999).

Planning Intervention with the IEP

The IEP for a school-aged child differs somewhat from the Individual Family Service Plan (IFSP) for infants and toddlers, as we have discussed. It still requires participation and signature of all parties, from both the family and the school, at the IEP meeting. And, since the law emphasizes including children with disabilities in the mainstream curriculum, the regular education teacher must also be part of the team. The IEP also includes a statement of the student's present levels of educational performance, a statement of annual goals and objectives with criteria for determining whether each has been achieved, a summary of all special educational and related services (such as transportation) to be provided, a statement of the extent of participation in the regular education program, a justification of the student's placement in the least-restrictive setting for that pupil, a statement of modifications needed in the regular classroom program to accommodate the student, the projected dates for initiating services, the duration of services, and the proposed date of review.

IEP goals at the L4L stage may include targets in traditional oral language areas, such as increasing sentence length, expanding vocabulary, and increasing use of appropriate request forms. They also can include goals directed at improving classroom performance and integrating oral language and literacy. Sample IEP goals for these kinds of targets might include following classroom directions, demonstrating comprehension of classroom textbooks, producing a cohesive story, or explaining the meaning of technical terms in the curriculum. Nelson (2010) and Simon (1999) provided some examples of ways to design curriculum-based goals for the IEP. They suggested, for example, that objectives be embedded into larger goals based on the curriculum. An IEP goal might state "Willie will be able to define target vocabulary with 80% accuracy *when discussing key vocabulary items from classroom lessons,*" or "Willie will demonstrate understanding of –ing and –ed morphemes by correctly spelling words with these endings on weekly spelling tests." Farber, Denenberg, Klyman, and Lachman (1992); Nelson (1988, 2010); and Prelock, Miller and Reed (1993) also provided extensive examples of IEP goals that can be written to address classroom performance and literacy development in students with language-learning disorders (LLDs).

Procedures for modifying the classroom environment so that the child with special needs can participate are an especially important aspect of the IEP for a child at the elementary school level. These modifications might include providing auditory training equipment for a child like Willie or modifying grading so that a child with a developmental disability can be graded on a pass/fail basis. Other modifications might involve providing an aide to help a student with ASD participate in classroom activities or a Sign or oral

interpreter to translate classroom language for a hearing-impaired or deaf-blind student. Tests might have to be modified for a student with attention-deficit hyperactivity disorder (ADHD), so that there are only a few questions per page. Written texts might need to be read to a blind student or to one with a severe reading disorder. Any such modification would have to be stated on the IEP.

Justifying a placement as least restrictive is also important in this age range. Any placement that moves the student away from the regular classroom or neighborhood school must be justified on the basis of an inability to provide appropriate education in the mainstream setting. Particularly for students with mild to moderate disabilities, the Individuals with Disabilities Education Act (IDEA) gives strong support for inclusion, or integrated education within the general classroom. Silliman, Ford, Beasman, and Evans (1999) provide one model for achieving this *inclusion* for students with LLD. Appendix 12-1 provides a model of what an IEP form might look like. Each educational agency must develop its own form, so the one your school uses may not look just like this. Although there are no mandatory forms for use in creating IEPs, the 2004 reauthorization of the IDEA provides for the development of model IEP forms. However, as of this writing, these models have not yet been disseminated. Whatever form is used, however, it must contain the components we've discussed.

Section 504 of the Rehabilitation Act of 1973

One other area of federal legislation affects intervention planning for school-aged children. Section 504 of the Rehabilitation Act of 1973 prohibits agencies that receive federal monies from discriminating against people on the basis of their disabilities. This legislation actually laid the basis for IDEA, since it meant, in practice, that schools could not exclude children because they had a disability (as they had up until that time). Some children have "504 plans" rather than IEPs in schools because they may not qualify for services under the special education eligibility laws of their states. For example, children with a diagnosis of ADHD who do not have other learning disabilities may not qualify for special education. Many of these students will have accommodation plans under Section 504.

Family-Centered Intervention for the School-Aged Child

IDEA requires that families participate in the IEP meeting and in designing the educational program for a student with special needs. What does this mean for a school-aged child, for whom intervention will take place primarily in the educational setting, often without direct involvement of parents in the day-to-day program? For us as SLPs it means keeping the family in mind and informed throughout the assessment and intervention processes, not just at the IEP meeting. Parents usually appreciate weekly notes or newsletters sent home with students. A regular telephone call every few months (not just when problems come up) to discuss progress and get input and feedback from parents also can be helpful. Again, the key to family-centered practice in the L4L stage, just as for younger clients, is an attitude of openness, respect, and concern for the family as well as for the client. Using the communication strategies outlined in Appendix 6-1 can be helpful in working with families of school-aged children as well as those of younger children. Howland et al. (2006) and Prelock et al. (1999) also provide guidance on including families in programs for our students.

Students and their families can participate in planning intervention at the L4L stage.

Students in the L4L stage are old enough to have their own perspectives considered in planning the intervention program, as well as those of their parents. Enlisting clients in identifying their own areas of strengths and weaknesses and in setting priorities for working on goals identified in the assessment can help to ensure cooperation and make clients feel that the intervention is really for them. A short questionnaire such as that in Figure 12-1 can be used as a basis for an interview with the client in the beginning of an intervention program. The clinician can ask these questions; record the clients' responses; and discuss the intervention program with the student, pointing out how the activities will address the needs and preferences the client expressed. This kind of collaborative planning with school-aged children not only helps them to take responsibility for their own learning, but maximizes the chances for their cooperation in the intervention program.

Behavioral Issues in Intervention Planning

We've talked before about the fact that students with LLDs frequently have attentional and behavioral problems that interfere with their ability to take advantage of instruction, both in the classroom and in the intervention setting. This is a fact of life in working with children with special needs, one that unfortunately will not go away. Our best approach is to be prepared to deal with behavior problems, to expect them, and to have some strategies in place for addressing them. Most specialists in the management of problem behaviors today advocate the use of positive behavior support (PBS; e.g., Bopp, Brown, & Mirenda, 2004; Peck & Scarpati, 2004; Samuels, 2009). PBS represents a movement away from punishment-based approaches that emphasize obedience and compliance and toward instruction that emphasizes functional skill development. In addition, PBS includes engineering environments that make problem behavior less likely to occur (Carr et al., 2002; Gunlap, 2005; Renzaglia, Karvonen, Drasgow, & Stoxen, 2003). PBS consists of two procedures: conducting a *functional behavior assessment* (FBA) and implementing comprehensive intervention.

FBA is a procedure used to identify why problem behavior occurs and what purpose it serves (Scott & Caron, 2005). Functional assessment procedures usually consist of collecting information about the maladaptive behavior through checklists, interviews,

Name _____

Date _____

Teacher _____

Grade _____

Please answer the following questions to help me figure out ways to make school more interesting and fun for you.

What's your best subject in school? Why is that your favorite?

What part of school is hardest for you? Why is it hard?

What would you like to read more about?

_____ Famous people   _____ Adventures

_____ Space or science fiction   _____ Sports

_____ Hobbies   _____ History

_____ Other? _____

What kinds of things do you like to read?

_____ Books   _____ Comics

_____ Newspapers   _____ Magazines

_____ Poems   _____ Plays

_____ Other? _____

What do you like to write?

_____ Letters   _____ Crossword puzzles

_____ Poems   _____ Stories

_____ Reports   _____ Diaries

_____ Other? _____

How do you learn best?

_____ Large group, when the teacher explains something to everyone

_____ Small group   _____ Working with one other student

_____ Working alone with the teacher   _____ By yourself

_____ Watching films   _____ Listening to audio recordings

_____ Doing "hands on" experiments   _____ Working on a computer

_____ Other? _____

What would you like to do better on in school?

What do you think we could do together to help you do better?

What do you wish your teacher did that would make it easier for you to do well in school?

Tests are hard for everyone, but what would help you do better on tests?

_____ Having extra time to finish   _____ Having fewer questions on each page

_____ Having someone read you the questions   _____ Having the questions recorded to listen to

_____ Being able to tell someone your answers instead of writing them down

What would you like to change about the way you work in school?

FIGURE 12-1   A sample questionnaire for including school-aged clients in intervention planning.   (Adapted from Waldron, K. [1992]. *Teaching students with learning disabilities.* San Diego, CA: Singular Publishing Group.)

and direct observation of the problem behavior, recording important aspects of the situation in which it occurs. O'Neill et al. (1997) provide detailed instructions for conducting FBA. Typically, FBA is performed by the school psychologist or behavior specialist, although the SLP may be one of the professionals who responds to the questionnaires or checklists.

The second component of positive behavior support is developing and implementing comprehensive interventions that address

the functions of the behavior, as determined by the functional assessment. The program is implemented throughout the day across settings by means of multiple intervention strategies developed by the team. Although FBA may be conducted by the psychologist, the delivery of PBS intervention requires the collaboration of everyone on the student's educational team. The SLP's role is often to deliver functional communication training (FCT), in which we teach students to replace socially unacceptable behavior

with a more adaptive communicative act (Bopp et al., 2004; Prelock, Paul, & Allen, 2011). Buschbacher and Fox (2003) discuss the components of a comprehensive PBS intervention plan, which include the following:

- *Behavior hypotheses*: Statements of the most probable antecedents, maintaining factors and communicative functions of the problem behavior, as suggested by the FBA. For example, the team might hypothesize that Willie is clowning because he does not understand the directions for particular class activities.
- *Long-term supports*: Strategies to assist the student's overall development and interactions to create the optimum quality of life for the student. These might include, for example, having the school nurse check Willie's hearing aid batteries each morning to be sure he is hearing optimally.
- *Prevention strategies*: Changes in the environment that will minimize the likelihood that the problem behavior will occur. These will be inferred from the FBA, but must fit into the natural routines of the classroom. For example, the teacher might provide written or pictured directions on the blackboard as she explains them, and assign Willie a "buddy" to work with in case he still has trouble understanding what to do.
- *Functional communication training (FCT)*: Adaptive and conventional communication skills are taught so they can replace maladaptive behaviors. For example, Willie might be told to address questions about classroom instructions to his buddy, rather than acting out. Replacement behaviors should be functionally equivalent to the problem behavior, and should result in faster and more consistent achievement of the behavior's goal.
- *Consequential strategies*: Outlines of how the team responds to both the replacement skills and the maladaptive behavior. It is important to ensure that rewards for the replacement should exceed those for the problem behavior. In Willie's example, the teacher might assiduously ignore any clowning, but provide rapid and lavish praise, perhaps combined with tokens that can be accumulated for a prize or special privilege, when Willie works quietly with his buddy to complete an assignment.

A related strategy was suggested by LaVigna (1987): *differential reinforcement of other behavior* (DRO). In this method, the student is reinforced after a specified period in which an undesirable behavior has *not* occurred. Reinforcement is not dependent on the production of any specific behavior, only on some target behavior's being omitted. Suppose Willie is constantly getting up out of his seat and wandering around the room and talking to other students, when he should be working on a written assignment. Using DRO, the teacher or clinician would provide reinforcement for every 3 minutes in which he did *not* wander around and bother others. He would not have to be completing his own work to receive the reinforcement; he would only have to *not* engage in the disruptive behavior. Once some success was achieved, the intervals between reinforcements would be lengthened. Eventually, behavior that substitutes for the undesired one can be shaped into the behavior in which we really want the student to engage. If Willie is first reinforced for not bothering others, eventually we can up the ante, requiring him to stay in his own seat to get the reinforcement. When that has been accomplished, reinforcement can become contingent on his completing his own work.

Another strategy that appears useful for managing problem behavior is the Social Story (Gray, 1995a). These stories were developed to assist children with autism to manage their behavior in social settings, but can be used with any child who needs positive behavioral support (Schneider & Goldstein, 2009). A fairly large literature (e.g., Kuoch and Mirenda, 2003; Ozdemir, 2008; Reynhout & Carter, 2007) has now demonstrated that using these stories provided replacement of appropriate behaviors for maladaptive ones. Social Stories can be written individually for children, or taken from commercial materials that present a range of social stories for common situations (Gray, 2000a). The Social Story contains three basic elements:

- Descriptive sentences identify a social setting the child finds problematic and describe it. (The bell rings when recess is over. Everyone gets in line.)
- Directive sentences tell what the child should do to be successful in the target situation. (When the bell rings I stop playing. I get in line. I wait for the teacher.)
- Perspective sentences: describe internal states of others during the target situation. (My teacher will feel happy when everyone is in line. I will feel good that I followed the rules.)

For children identified as having special educational needs, IDEA provides protections against penalties for behavior that is part of their disability. Although many schools, in the wake of recent episodes of violence on school premises, have adopted "zero tolerance" policies for certain behavior such that the first infraction leads to automatic suspension or expulsion, children with disabilities cannot be punished this way if the infraction was related to their disorder. For example, a school may have a "zero tolerance" policy for wearing a hat in school (as part of regulations against "gang paraphernalia"), but if a child with autism insists on wearing a hat because he has a need for sameness and removing his hat would cause him inordinate disorganization and distress, he cannot be punished for breaking this rule. However, the team certainly can work with him to help him overcome his need for the hat, or to replace it with an alternative more acceptable to school administrators.

Managing behavior is an unavoidable part of the work of any clinician who deals with children. Clinicians who want to engage in transdisciplinary and collaborative intervention need to be especially aware of discipline issues and to work with the team to establish consistent strategies. The best offense here is a good defense. Being prepared for behavior problems before they happen, with plans and strategies for addressing them as a team effort, keeps them to a manageable minimum.

INTERVENTION PRODUCTS IN THE L4L PERIOD

Many of the language difficulties we discussed in Chapter 10 and assessed in Chapter 11 will be important objectives of the intervention programs we design for children in the L4L stage. We want to address the language forms that appear in normal development during this period. These include use of advanced morphological markers, complex sentences, abstract vocabulary, adverbial marking, precise conjunctions, and linguistic cohesion markers, and elaboration of noun phrases (Nippold, 2007). We also want to help students with LLD to make better use of the language they have. This goal would include reducing word-finding problems, and increasing the flexibility and sensitivity of use of language forms employed to accomplish a range of pragmatic goals, such as politeness, persuasiveness, explicitness, and clarification. Developing use of more varied discourse structures, such as the classroom discourse and narrative structures we outlined in Chapter 10, will

also be important. As we saw in Chapter 10, though, language intervention in the L4L period entails more than targeting specific oral language objectives. It also means finding ways to help the student learn the language needed and use the language learned to succeed in the classroom. Let's think about how this basic goal influences intervention planning in the L4L period.

We've been referring to the period of language development that normally takes place between 5 and 12 years of age as the "language for learning" stage. Westby (1991) suggested that, during the elementary school years, children move from learning to talk, which was the prime accomplishment of the preschool period, to "talking to learn." In talking to learn, children acquire, among other things, a new style or register of language. Westby called this the *literate language* style. We discussed aspects of this style and contrasted it to oral language use in Table 10-2. One important goal of intervention in the L4L period is to develop a literate language style. Access to this "language for learning" register enables a student to engage in "talking to learn," as well as to understand written forms of communication, which generally have a literate language format. One of the reasons narrative skills are so important in the L4L stage is that they form a bridge, or middle ground, between the familiar, contextualized language of conversation and the abstract, decontextualized style of literate language (Westby, 2005; 2007). In helping students develop a literate language style, improving oral narrative skill is often a useful first step. What else is needed? Let's look at four principles that can guide intervention in the L4L period. Using these principles to help us choose intervention targets and procedures can ensure that our intervention not only addresses oral language skills but also works toward developing a literate language register that will contribute to success in the mainstream curriculum.

Guiding Principles of Intervention at the L4L Stage

Principal 1: Use Curriculum-Based Instruction

The first principle was articulated by Nelson (2010), Wallach (1989) and is reinforced by regulations in IDEA. SLPs working with clients at school-age levels should refrain from having their own independent intervention agenda. Instead, they should target goals that are curriculum based (Ehren, 2000b; Ukrainetz, 2007). Wallach (2010) goes further, and argues that goals based on a purely developmental or specific deficit model, such as improving sequencing or "auditory processing," are less central to the needs of school-aged clients than the need to provide functional improvement in their literacy and performance in the curriculum. Let's take Willie as our example again. Suppose that we find as a result of our assessment that Willie has very limited complex sentence production. Following the principle of curriculum-based instruction, we might use onlooker assessment procedures to find out what aspects of Willie's participation in the curriculum require complex sentence use. We would then work on his complex productions within those curricular contexts. Perhaps he needs to be able to answer content questions more concisely in class. We could work on using complex sentences to answer questions modeled after teacher questions drawn from a classroom observation. Maybe he needs to report on past events more precisely, using appropriate temporal conjunctions, such as *when, before,* and *after*. If so, we could have him "practice" for sharing times or group discussions by "prepping" him to organize his contribution with complex sentences and

conjunctions. The point is to avoid work on a language agenda isolated from the ways the language will be used to participate in the curriculum. Instead we want to integrate our language intervention with the demands our students face in the classroom every day.

Principle 2: Integrate Oral and Written Language

The second principle that should guide intervention in the L4L period was suggested by Berninger (2000) and Gerber (1993). They advocated another type of integration: the integration of oral and written language. This means that we want to provide both oral and written opportunities for students to practice the forms and functions targeted in the intervention.

For students functioning at primary-grade levels, we want to address skills that contribute to both oral and written language development. In addition to basic oral language approaches, then, we want to include literacy socialization, metalinguistic and phonological awareness, as well as narrative and simple writing activities. We might work on comprehension and use of abstract vocabulary, for example, not just in oral exercises but also in activities that involve printed forms. Vocabulary sessions might include literacy socialization activities such as book reading and discussion of the words in the text. We might ask students to identify target words in the book we've discussed. In a similar vein, we could include phonological awareness (PA) activities in the vocabulary program. We could have students decide whether a word we were working on was a "long" or "short" word, how many syllables it had, what words rhyme with it, what sounds it begins and ends with, how many sounds are heard in the word, what letters might be used to represent those sounds, and so on. All this discussion could go on right along with talking about the word's meaning and use.

For students functioning at the intermediate-grade levels, integrating oral and written language remains important. Even if these students are seeing the reading or learning disability specialist, we need to encourage them to "pull together" the oral language skills we are helping them develop. The best way to attain this goal is to provide a variety of language experiences addressing each objective. Experiences early in the program might be primarily oral and highly contextualized, such as face-to-face conversation. But as we continue to work on a goal, it can be addressed in increasingly literate, decontextualized activities, such as oral narrative contexts, and eventually in reading comprehension, writing, and spelling activities.

Principle 3: Go Meta

The third principle guiding intervention in the L4L stage was presented by Wallach (2010); Wallach and Miller (1988); and Wallach, Charlton, and Christie (2009). In their words, intervention in the L4L period should focus on the "metas": activities that direct conscious attention to the language and cognitive skills a student uses in the curriculum. "Meta" skills include talking about talking and thinking about thinking. All the activities we do around any of our language objectives ought to be done on two levels. On the first level, we demonstrate through models and practice how particular forms and functions of language work, just as we would for a child at an earlier language stage. On the second, or "meta," level, the client and clinician talk about the language forms and functions being used and state rules and principles explicitly, focusing attention on the structure of language.

"Going meta" can involve a variety of activities aimed at bringing the clients' language use and comprehension to a higher level of awareness. Basic comprehension activities for vocabulary and

syntax can be supplemented by comprehension-monitoring instruction. Activities aimed at production of language forms, such as advanced morphemes, complex sentences, and adverbial usage, can be introduced with basic-level activities and expanded with metalinguistic discussions. In these, the client can state when and why these forms are used, tell what meaning they encode, explain how to use linguistic or nonlinguistic context to decide what form is appropriate, and so on. Work on improving classroom discourse skills, such as listening, making relevant contributions, knowing when to talk and when not to, what to talk about and what not to—all the aspects of the "hidden curriculum"—are ideal contexts for metapragmatic activities. The clinician can get students to state classroom rules explicitly, role-play appropriate and inappropriate language use, role-play the teacher as the clinician role-plays the student making various classroom discourse errors, discuss why things go wrong for the client in the classroom, and brainstorm alternative language strategies.

Principle 4: Collaborate to Prevent School Failure by Participating in RTI, Incorporating Principles 1 through 3

Finally, when providing Tier II and III services for students in classrooms using RTI, SLPs can contribute our unique expertise to the RTI process by using our first three principles as we plan activities for these students. We can work on semantic and syntactic targets in curriculum-based activities, for example, using language from the literacy materials children are practicing in their RTI activities not only for guided oral reading, but also for talking about the words and sentences in the material, pointing out long words, short words, discussing meanings of words that may be unfamiliar, or talking about rhymes, synonyms, and opposites for words that are known. We can integrate oral and written language approaches by focusing on meanings and connections among words in sight word reading activities (see Box 12-1 for an

example). We can also "go meta," by, for example, talking explicitly about strategies for increasing comprehension with students struggling with understanding what they read. Appropriate Tier II and III reading comprehension activities can include meta approaches such as strategic reading (Ukrainetz & Ross, 2007). Such approaches explicitly teach and guide students to employ strategies before (e.g., recall what you already know about this topic, give a purpose for reading), during (e.g., restate what you read in your own words, identify main ideas in each paragraph), and after reading (ask yourself what you learned, relate what you learned to what you knew before reading). We'll talk more about these and other strategies later in this chapter and in Chapter 14.

Summary

We might say, then, that in addition to the basic language goals we've outlined for the L4L stage, four additional considerations should guide our intervention planning. These are (1) making intervention curriculum based, rather than independent and isolated; (2) integrating oral and written forms of expression in addressing language goals, moving from oral to literate formats for communication as we work on language objectives; (3) "going meta," attempting to bring all the language we work on to a higher level of awareness; and (4) using the first three principles to guide our participation in RTI instructional models to prevent school failure before it happens. Let's see how we might use these principles to design intervention activities for the wide range of issues students in the L4L period will face.

INTERVENTION PROCESSES IN THE L4L PERIOD

Remember that we've been discussing intervention procedures under three basic categories: clinician directed (CD), child centered (CC), and hybrid. Although our interactions with school-aged

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BOX 12-1   Example of Integrating Oral and Written Language Activities in RTI: Learning Second-Grade Sight Words

SIGHT WORDS	WRITTEN LANGUAGE ACTIVITY	ORAL LANGUAGE ACTIVITY
Cold, green	Concentration game: students match words written on cards	When a student draws the *cold* card, the adult encourages the child to read the word, provides help if necessary, encouraging the child to say the sound of the first letter, then the second, etc. When the child reads the word, the adult encourages the child to talk about a time when he or she was cold/saw something green, to think of a word that rhymes with cold/green and guess how to spell it (e.g., fold/seen), and to talk about when else they can use the word *cold/green* besides talking about weather (e.g., emotionally cold) or color (e.g., environmentally friendly). After discussing the word, the student is asked to find its matching card in the Concentration game and read it, or whatever card is drawn.
Found, fast	Buried: cards with *found, fast,* and other target words written on them are "buried" in a bowl of Styrofoam peanuts. Students "dig up" each card and read the word on it aloud.	The adult calls the child's attention to the first sound in the word, and asks him or her to think of other words with same first sound. The adult asks to child to talk about a time he or she *found* something or went *fast*. The adult asks the student to think of other words that mean the same thing as *found* (discovered) or *fast* (quick), or the opposite (lost, slow).

children don't fit quite so neatly into these categories as many of our preschool intervention approaches do, these points on the continuum of naturalness can still present a framework that is helpful in organizing our thinking about intervention methods the L4L period. Let's take a look at some of the approaches at the L4L level that might fall in each category.

Clinician-Directed Intervention in the L4L Stage

CD activities, using drill play contexts, can be used for a variety of goals at the L4L stage. PA is often targeted in a drill play format. For example, students can be given a set of tokens, nickels for vowels and pennies for consonants, perhaps. The clinician demonstrates segmenting a vowel-consonant (VC) word, such as *oat* (/ot/), by moving the nickel as /o/ is pronounced and the penny as the /t/ is produced. The students are then instructed to follow the clinician's model and move their coins as the sounds are pronounced. When students can accomplish this kind of phonological segmentation, CVC (*coat*) words can be introduced. Eventually, CCV (*blue*), CCVC (*stone*), CVCC (*taps*), and CCVCC (*blast*) words can be incorporated into the activity. Many of the PA programs used in research demonstrating the efficacy of PA training on literacy (e.g., Ehri, et al., 2001; Gillon, 2000b; Scheule & Boudreau, 2008) make use of this format.

CD activities can, of course, be used to target morphological markers, vocabulary, and sentence structures at the L4L stage, just as they can at the developing language period. In using CD activities for these targets, though, we want to be sure *not* to be operating on an independent agenda, targeting forms just because they are identified as deficits in the assessment. The principles we discussed earlier still apply. We can address goals with drill and operant procedures, but we want to be sure that the drills focus on using these forms in ways that are relevant to the curriculum.

We might decide, for example, that a first-grader with deficits in advanced morphological markers really needed to develop proficiency with *-er* and *-est* because these were used frequently in the math curriculum (e.g., "Find the larger number"). In this case we would develop *-er* and *-est* drills in number-related contexts. The student might be asked to repeat, and demonstrate with chips or counters, a list of number statements containing *larger:* "Two is *larger* than one, three is *larger* than two," and so on. The student could then be asked to complete a series of cloze statements, such as "Of 10 and 9, 10 is _____." The same process could be repeated with *smaller*. The next step would be to use cloze statements in which the student had to decide, with the help of chips or counters, whether *smaller* or *larger* were appropriate ("Of 6 and 7, 6 is _____; and so on). The same process could be followed for *largest,* then for *smallest,* then for the two combined in cloze drills ("Of 6, 7, and 8, 8 is _____; and so on). Eventually all four terms would be included in an activity. The point to remember about CD activities at the L4L stage is that they are appropriate methods for addressing goals, so long as the goals themselves conform to the four principles we discussed earlier. We want to avoid isolated CD drills that do not relate in any way to the classroom curriculum.

Another application of CD techniques is what Marshall (1991) and Silliman (1987) referred to as cognitive behavior therapy (CBT). CBT is a CD approach to developing comprehension-monitoring and metacognitive strategies for increasing learning skills. It is, essentially, an operant way to "go meta" that has strong empirical support (e.g., Henin, 2008; Kazdin & Weisz, 2003). CBT involves three basic steps:

1. The clinician tells the client explicitly what strategy will be developed, why it is important, and what procedures will be used to attain the strategy. The clinician might, for example, tell clients that they were going to work on deciding whether they had understood all the information in a paragraph read by the clinician. The clinician might explain that it is important to know when we don't understand something so that we can ask questions, ask for repetition, or seek further information. The clinician would then explain that she will model how to talk through the process of deciding whether the paragraph was understood and will have the clients follow this model.

2. The clinician "thinks out loud" to demonstrate how the strategy is accomplished. She might read a paragraph out loud, then ask herself, "Now, do I understand what it was about? Let's see, it was about X. OK, do I remember the details about X? Well, there was A, B, and I think there was another one, but I can't remember it. I'll have to ask about that one. Did I understand all the words? There was one word I didn't know. I think it was 'magna' or something like that. I'll have to ask the teacher or look that up in the dictionary." The clinician could write each question she asked herself and make a note as to the answer she gave herself after each question.

3. The clinician has each client model this thinking out-loud process in turn. For our comprehension-monitoring example, the clinician would read the paragraph again and ask a student to talk through the list of questions that she generated. In this example she would have the students ask themselves "Did I understand what it was about? Did I remember the details? Did I understand all the words?" Students would then note their own answers to each question and take the actions needed, such as looking up one of the words in the dictionary.

This process would be repeated numerous times, until clients were able to generate self-monitoring questions spontaneously. Then more advanced material, such as longer passages or text the clients read themselves, would be used, with the same procedures. CBT is another way we can use explicit, CD procedures to find ways to help students with LLD succeed in the classroom.

Child-Centered Intervention in the L4L Stage

Scaffolding

The most common CC techniques at the school age level involve *scaffolding*. Scaffolding involves identifying the student's zone of proximal development (ZPD) in curricular language skills, and devising activities that scaffold his current level of function into the ZPD by means of clinician support. These techniques can be used by the clinician in interactions with students with LLD and also can be provided to classroom teachers in consultative formats. When we give teachers very specific techniques to use, our chances of influencing their interactions with the students with LLD in their classrooms are greatly enhanced, and the chances for success of our consultative efforts in general increase. Gerber (1993) described three forms of scaffolding that can be used in working with students with LLD.

Creation of Optimal Task Conditions

This form of scaffolding involves reducing the amount of stress and undue effort a student uses to complete a curricular task. In practice, it means working with the classroom teacher to reduce

the amount of material a student has to process and to present the material in smaller units with extra time allowed for task completion. Suppose Willie is required to write one book report a month on a book he reads independently. The clinician can discuss modifying this requirement with the classroom teacher. Instead of having Willie choose any book from the class library, as the mainstream children do, he might be given his own "shelf" in the library with books that are written at his level of reading or narrative development. For example, when a book report is assigned, the clinician can provide several books for Willie's "private shelf" in the classroom library that are at the level of narrative development just above his current level, as identified by assessment. After reading or listening to these books and preparing appropriate book reports, Willie can be reassessed. If narrative stage has improved, the shelf can be stocked with books at the next, higher level. Box 12-2 contains examples of well-known books at a range of narrative complexity levels, compiled from suggestions of Wallach (1989) and Westby (2005).

In addition to providing scaffolding in terms of narrative structure, clinicians can also create optimal task demands by structuring the written work the student is required to produce. Take our book report example again. The clinician might suggest to the teacher that instead of being asked to produce a free-form book report,

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BOX 12-2   Suggestions for Books at Various Stages of Narrative Macrostructure Development

1. For students currently producing narratives at the Heap stage, provide books at the Sequence level, in which there is a recurring theme but the order of events doesn't matter:
    Abuela's Weave by Omar Castenada
    Charlie Needs a Cloak by Tommie DePaola
    King Bidgood's in the Bathtub by Audrey & Don Wood
    The Gingerbread Boy by Paul Galdone
    The Goat and the Rug by Charles L. Blood, Martin Link, & Nancy Winslow Parker
    The House that Jack Built by Paul Galdone
    The Snowy Day by Ezra Jack Keats
    The Very Hungry Caterpillar by Eric Carle
2. For students currently producing narratives at the Sequence stage, provide books at the Primitive Narrative level, which have a main theme and involve some understanding of attempts and actions and ability to interpret events:
    Alexander and the Terrible, Horrible, No Good, Very Bad Day by Judith Viorst
    Alice Gets Ready for School by Cynthia Jabar
    George and Martha by James Marshall
    Kevin's Grandmother by Barbara Williams
    Mr. Happy; Mr. Fussy; Mr. Bounce; Mr. Worry; etc. by Roger Hargraves
    Rotten Ralph by Jack Gentos
    Round Robin by Jack Kent
3. For students currently producing narratives at the Primitive Narrative stage, provide books at the Chain level, which involve some understanding of cause-effect and character motivation:
    Drummer Hoff by Ed Emberley
    Feelings by Aliki
    If I Had by Mercer Mayer
    If You Give a Mouse a Cookie; If You Give a Moose a Muffin by L. Numeroff
    Just for You by Mercer Mayer
    Keep Your Mouth Closed, Dear by Aliki
    The King's Tea by T.H. Nonle
    The Little Red Hen by Paul Galdone
    Tingo, Tango, Mango Tree by Marcia K. Vaughan & Yvonne Buchanan
    Today I Feel Silly by Jamie Lee Curtis
    What are YOU so Grumpy About? by Tom Lichtenheld
    Why Mosquitoes Buzz in People's Ears by Vernal Aardema & Leo and Diane Dillon
    Why the Sun and the Moon Live in the Sky by Elphinstone Dayrell
4. For students functioning at the Chain level, provide books with a simple True Narrative structure, plots that have character development, sequences of actions motivated by characters' goals and plans, and a resolution of the story's problem:
    Bread and Jam for Francis by Russell Hoban
    Elbert's Bad Word by Audrey & Don Wood
    Fantastic Mr. Fox by Roald Dahl
    Franklin in the Dark by Paulette Bourgeois & Brenda Clark
    Hetty and Harriet by Graham Oakley
    Ira Sleeps Over by B. Waber
    Owl at Home by Arnold Lobel
    The Three Little Pigs by Paul Galdone

Adapted from Wallach, G. (speaker). (1989). *Children's reading and writing disorders: The role of the speech language pathologist* (ASHA Teleconference Tape Series). Rockville, MD: American Speech-Language-Hearing Association; and Westby, C. (2005). Assessing and remediating text comprehension problems. In H. Catts & A. Kamhi (Eds.). *Language and reading disabilities—2nd Ed.* (pp. 157-232). Boston: Allyn & Bacon.

Intervention for children with LLD often includes scaffolding and guidance of selective attention in classroom materials.

Willie be given a form to complete. The clinician might give the teacher a series of increasingly complex forms to use, suggesting that when the student becomes adept at writing reports using one form, the next in the sequence can be required for subsequent reports. Westby (2005) provided such a series of book report formats that can be used to scaffold a client's performance. An adaptation of her series appears in Box 12-3. An example book report form can be found in Figure 12-2.

Guidance of Selective Attention

This form of scaffolding involves highlighting important information by using visual, verbal, and intonational cues. Using this device, a clinician can, for example, use a highlighting marker to call attention to potentially difficult words in a photocopied passage from a textbook. Before students read they can be told to look for these words, try to guess what they mean, or to let the clinician know whether they need to look them up in the dictionary. Similarly, the clinician can read the passage with heavy intonational stress on the same words, telling the students beforehand to listen for them because they may be tricky and to decide whether they can guess their meaning or need to look up their definitions.

Provision of External Support

The clinician can "prime" students to succeed in classroom activities. This can be done especially effectively in service delivery systems that combine collaborative intervention with some clinical sessions. Suppose the clinician is doing a collaborative lesson on listening skills in a client's classroom. She can "prep" clients for the lesson in a clinical session, previewing what she will be covering and some of the questions she will be asking. She might tell the clients ahead of time that she will be asking the class to think about and make a list of "good listening behaviors." She could preview the activity with the clients, helping them to generate their own list. When she gives the lesson in the classroom, the clients already know the right answers! Allowing them to demonstrate their knowledge to the mainstream students not only reviews and reinforces the information for the clients, but also allows them to "look smart" before the other students. Such an opportunity can give a real boost in self-esteem to clients who often find themselves trailing behind the rest of the class.

This technique is also an important tool for helping teachers learn to support students within their classrooms. Scheule and

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BOX 12-3   Book Report Sequence

BOOK REPORT 1: DESCRIPTION
Identify title.
Identify author.
Draw a picture of a favorite part of the story.
Describe the pictures in the book.

BOOK REPORT 2: SEQUENCE 1
Identify title.
Identify author.
Name the major characters.
Tell the first thing that happened in the story.
Tell how the story ends.

BOOK REPORT 3: SEQUENCE 2
Identify title.
Identify author.
Name the major characters.
Tell three things, in sequence, that happened in the story.
Retell the story with pictures.

BOOK REPORT 4: PRIMITIVE NARRATIVE
Identify title.
Identify author.
Respond to a "why" question about a physical cause (Why did the first little pig's house fall down?)
Tell three things, in sequence, that happened in the story.
Retell the story with pictures.

BOOK REPORT 5: CHAIN NARRATIVE
Identify title.
Identify author.
Tell what a character in the story wants.
Identify a feeling experienced by a main character.
Explain how you know the character feels this way.
Retell the story with pictures.

BOOK REPORT 6: TRUE NARRATIVE-ABBREVIATED EPISODE
Identify title.
Identify author.
Tell what a character wants.
Explain why the character feels this way.
Retell the story without pictures.

BOOK REPORT 7: TRUE NARRATIVE
Identify title.
Identify author.
Tell the problem in the story.
Tell how the characters solved the problem.
Retell the story in your own words.

Adapted from Westby, C. (2005). Assessing and remediating text comprehension problems. In H. Catts & A. Kamhi (Eds.) *Language and reading disabilities—2nd Ed.* (pp. 157-232). Boston: Allyn & Bacon.

Title: _____

Author: _____

Characters: _____

_____

_____

_____
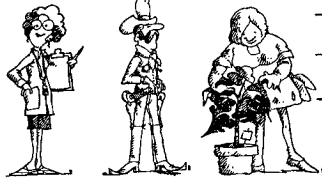
Three things that happened:

1. _____

2. _____

3. _____

Retell the story with pictures:
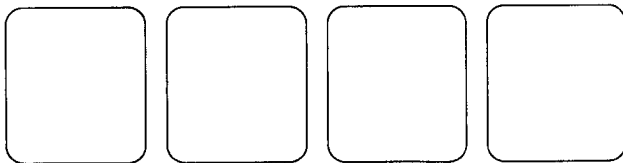
FIGURE 12-2   Sample book report form for book report 3. (Adapted from Westby, C. [2005]. Assessing and remediating text comprehension problems. In H. Catts & A. Kamhi [Eds.], *Language and reading disabilities* (3rd ed.) [pp. 157-232]. Boston, MA: Allyn & Bacon.)

Boudreau (2008) discuss the provision of this kind of support in everyday question-answer interactions in classrooms. They argue that teachers need to do more than just ask questions in teaching activities; instead they should explain, model, highlight important ideas, and provide practice and scaffolding tailored to the child's current level of performance. At the beginning of learning a new skill, adults should provide multiple input models, showing the child how to move from question to answer, with the child at first simply repeating the correct answer provided by the adult. Over time, the adult guides the child to complete the pieces of the task, providing less and less support. They suggest that we think of learning not as moving a child from 20% correct to 80% correct, but of moving a child from successful performance with maximal support to successful performance with little or no support. Box 12-4 provides an example of the kinds of sequenced levels of scaffolding that characterize this technique. We can help teachers working at both Tier I and Tier II instruction to organize instruction along these principles.

Hybrid Intervention in the L4L Stage

A great number of the intervention methods we use with students at the L4L stage are of the hybrid variety, with some degree of direction by the clinician but less structure than traditional operant procedures. We'll look at examples of hybrid procedures that might be used to address some of the major goals of the L4L period, but these examples are by no means exhaustive. Additional sources of ideas include DeKemel (2003); Dodge (1998); Falk-Ross (2002); Gerber (1993); Haynes, Moran, and Pindzola (1999); Kuder (1997); Nelson (2010); Paul (1992b); Secord (1990); Simon (1991a); Ukraintez (2007); Wallach and Butler (1994); Wallach and Miller (1988); Westby (2005); and Wiig and Semel (1984). The suggestions here are meant only to start you thinking about how hybrid intervention activities for this developmental period

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BOX 12-4   Sequenced Scaffolding Approach Example: Teaching Initial Phoneme Identification

SCAFFOLDING LEVEL	DESCRIPTION	EXAMPLES
Maximal support	Provide multiple modes of target concept.	Listen to the word *wolf*. The first sound in *wolf* is /w/. Listen to *walk*. The first sound is /w/, too. Listen to *waffle*. The first sound there is also /w/ . . .
Moderate support	Provide opportunity for child to practice adult model.	Listen to the word *wolf*. The first sound in *wolf* is /w/. Say the first sound in *wolf* with me, /w/ . . .
Moderate support with modeled test question	Provide the same moderate level of support, with opportunity for child to practice adult model, then provide opportunity for child to produce the answer to a question.	Listen to the word *wolf*. The first sound in *wolf* is /w/. Say the first sound in *wolf* with me, /w/. What's the first sound in *wolf*? /w . . .
Moderate support with unmodeled test question	Provide the same moderate level of support, without opportunity for child to practice adult model, then provide opportunity for child to independently produce the answer to a question.	Listen to the word *wolf*. The first sound in *wolf* is /w/. What's the first sound in *wolf*? /w/.
Minimal support	Provide a model with guidance of selective attention to target concept. Then independently produce the answer to a question.	Listen to the word *wolf* (with emphasis, elongation on first sound). What's the first sound in *wolf*?
No support	Provide opportunity for child to demonstrate knowledge of the concept independently.	What's the first sound in *wolf*? How about in *watch*?

Based on Scheule & Boudreau (2008). Phonological awareness intervention: Beyond the basics. *Language, Speech, and Hearing Services in Schools, 39*(1), 3-20.

might be designed. The rest is up to your own creativity. Remember, too, that when we talk about hybrid activities that can be used to address specific intervention targets, the targets themselves should always be selected with our guiding principles of intervention at the L4L stage in mind.

One other consideration needs to be kept in mind. When working on oral language skills with school-aged children, particularly in the areas of vocabulary, semantic integration, complex syntax, literate language forms, and discourse comprehension, we are *not* doing only "language therapy." We are also building essential skills for improving reading comprehension. Clarke, Snowling, Truelove, and Hulme (2010) showed in a randomized controlled trial (our scientific gold standard) that including oral language training in reading comprehension programs resulted in greater gains than programs focused on written language and traditional reading comprehension activities alone. That means when SLPs in schools are asked to be part of literacy instruction, we can show that we *are* doing literacy instruction when we address the oral language skills that lay the foundation for understanding written texts. Let's look at some of the specific areas of oral language we can address as we help to support students in reading comprehension.

Semantics

Vocabulary: A Basis for Reading Comprehension

Research (Biemiller, 2003; Dole, Sloan, & Trathen, 1995; Wise, Sevcik, Morris, Lovett, & Wolf, 2007) has shown that students with more extensive vocabularies do better in reading comprehension as well as in oral language activities. But these studies also demonstrate that having students look words up in a dictionary does not transfer word knowledge very effectively to reading comprehension tasks. Something more is needed to develop the kind of understanding that improves reading skills. Blachowicz (1986) and Marzano (2009) outlined the essential elements of programs aimed at deepening both receptive and expressive lexical skills:

- *Activate what students already know* about the new words. To accomplish this, Blachowicz suggested *exclusive brainstorming*. The adult can select a list of words from a curricular topic, and others that are also new but do not fit with the topic, and present the words to the students in oral and written form. The students discuss the words and decide which ones go with their topic for the day and which don't. To make this decision, students are encouraged to use a knowledge rating

checklist like the one in Table 12-1 to foreground whatever knowledge they have about the words.
- *Provide a description, explanation, or example of the new term:* an explanation by an adult works better than having students consult a dictionary. The explanation can relate the word to current curricular topics and to students' experience in a way that makes the meaning easier to retain. Biemiller and Boote (2006), for example, showed that in primary grades, children learned significantly more words from stories when the stories were read repeatedly and when the teachers stopped to give an explanation of new words in the course of the story reading.
- *Ask students to restate* the description, explanation, or example in their own words, connecting it to their own experiences and knowledge. Having students rephrase the adult's explanation helps them to assimilate it into what they already know.
- *Have students construct a picture, pictograph, or symbolic representation* of the term. Marzano (2009) found this step to be particularly important and most highly related to successful learning of new words. If students keep vocabulary notebooks or card files, they can record words and illustrations for each word there. An example of a card with a word and illustration appears in Figure 12-3.
- *Make connections among words and topics*. Have the students deepen their associations between the new words and the curriculum topic to which they relate. For example, give students a list of words from a textbook or literature selection and ask them to guess the topic of the selection. Various graphic organizers can also be helpful in making connections among words. Examples of several types of graphic organizers may be of found at: www.educationoasis.com/curriculum/GO/vocab_dev.htm

As just one example, a "Predict-O-Gram," like the one in Box 12-5, can be used to help students predict how the words will be used in the selection. In this example, a story grammar format is used to guide the predictions. In this way, work on story macrostructure can accompany vocabulary development.

Another way to foster connections among words is to use "word maps" (Westby, 2005). Figure 12-4 shows one type of map, relating words around a theme. Phillips, Foote, and Harper et al. (2008) suggest using word "ladders" relating synonyms by their level of intensity, with the "weakest" word placed at the

TABLE 12-1 A Knowledge Rating Checklist for Words that Do and Do Not Pertain to the Topic "Solar System"

	How Much Do We Know About These Words?		
Word	**Can Define**	**Have Seen/Heard**	**Beats Me!**
Asteroid		X	
Orbit	X		
Nebula			X
Lunar		X	
Interstellar		X	
Volcanic	X		
Axis		X	
Rotation		X	
Magma			X

Adapted from Blanchowicz, C. (1986). Making connections: Alternatives to the vocabulary notebook. *Journal of Reading, 29,* 643-649.

Front of card

Back of card

Word: Parcel	Picture
Definition: A small package	

I drew this because:
A parcel is a small box like one the mail carrier brings.
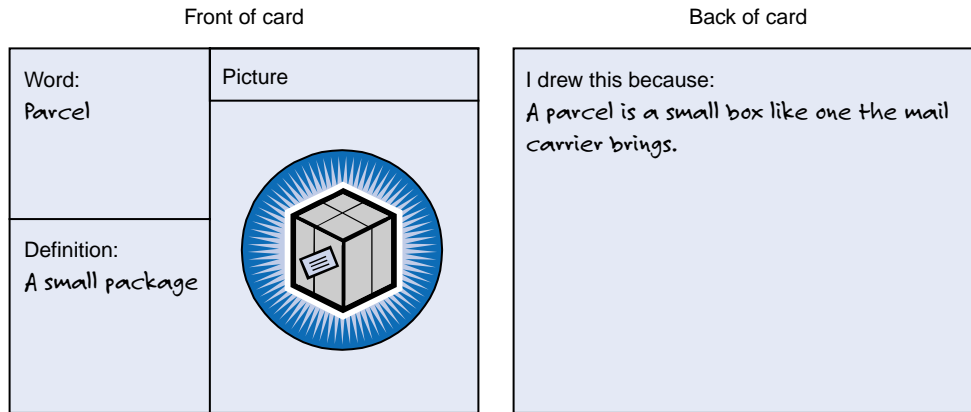
FIGURE 12-3 Sample illustrated vocabulary card.

BOX 12-5 A Predict-O-Gram for Vocabulary Chosen from a Literature Selection

Predict in what part of the story the author will use these words: *boa, butler, croquet mallet, cure, disappear, elegant, gazebo, relief, shocked, shriveled, snickering, wizard*

THE SETTING	THE CHARACTERS	THE PROBLEM	THE ACTION	THE RESOLUTION
elegant gazebo	butler wizard	croquet mallet boa	snickering shocked shriveled	cure relief disappear

Adapted from Blanchowicz, C. (1986). Making connections: Alternatives to the vocabulary notebook. *Journal of Reading, 29,* 643-649; literature selection; Wood, A. (1988). *Elbert's Bad Word.* San Diego, CA: Harcourt, Brace, Jovanovich.
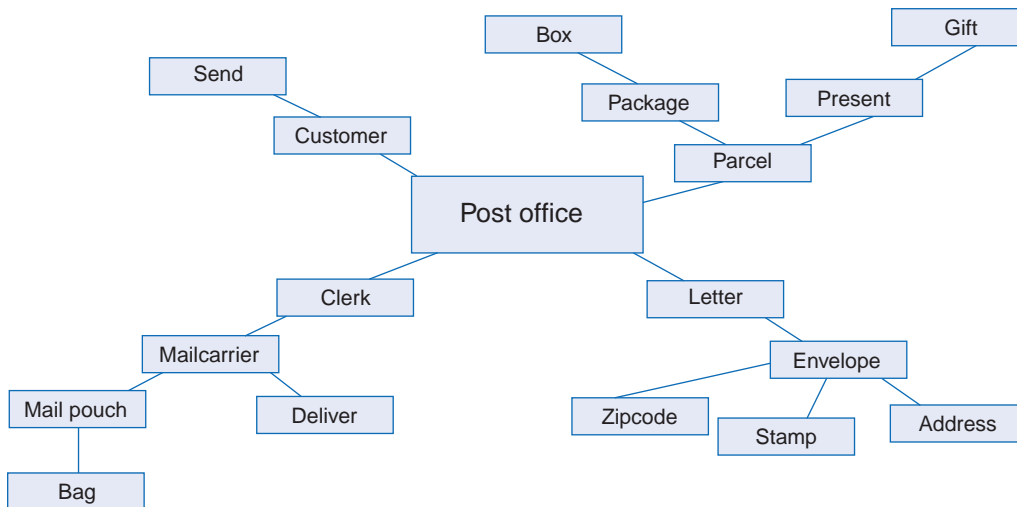
FIGURE 12-4 Visual map for the "visiting the post office" script used in working on word retrieval in primary grades. (Adapted from Yoshingaga-Itano, C., & Downey, D. [1986]. A hearing-impaired child's acquisition of schemata: Something's missing. *Topics in Language Disorders, 7,* 45-57; and Wallach, G., & Miller, L. [1988]. *Language intervention and academic success.* Boston, MA: College Hill.)

bottom of a vertical array of the words and the strongest at the top. If words are written on "sticky" notes, students can work together to order them, discussing their relative "strength" as they complete the task by placing each word "sticky" in correct order on the rungs of a ladder. Figure 12-5 provides an example word ladder.

- *Use both spoken and written contexts*. Rosenthal and Ehri (2008) showed that both pronouncing and providing written forms of new vocabulary increased elementary students' retention of both spelling and meaning. Our goal, then, is to expose students to new words in a variety of language experiences. Using a science lesson as an example, the adult could first read the science passage to the students, asking them to raise their hand when they hear one of the words on a list of new vocabulary. The students could then write a list of the words and discuss what they know about each one. They might be asked to do the knowledge rating checklist again, to list the words they now feel they can define and read their list to the group. The group could together generate definitions for each word, then compile a group glossary, by writing down the definition they gave orally for each word.

- *Ask students to discuss the terms with one another* to refine and reformulate meanings. Here, again, we need to expose students to the words in varying contexts. The students could be asked to tell each other as much as they know about each word and name the words they still have trouble understanding. The adult could help the students look these words up in the dictionary and discuss their meanings further. The clinician might read the students the passage containing the words from their science text and from a library book on the same topic. The students could talk in small groups about how the words are used in each selection. They might comment on which selection helped them learn more about what the words mean, whether any have parts in common with other words
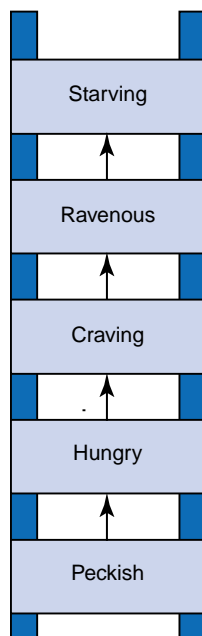
FIGURE 12-5 Example word ladder. (Adapted from Phillips, D., Foote, D., & Harper, L. [2008]. Strategies for effective vocabulary instruction. *Reading Improvement, 45* [entire issue].)

they know, which was easier to understand, and which they liked better and why.

- *Use the words for writing and additional reading*. Over the course of the next few days following initial instruction, adults give have students additional opportunities to use the new words. A teacher might have students write a fictional story about the curricular topic, using words from the list, then ask students to listen to each other read their stories. Finally, they can write a group story using their favorite parts from each of the individual stories, with the stipulation that the group story must contain all the words on the list.

- *Return to the words periodically in following weeks,* using games that enable them to play with terms, such as Concentration, Password, or Charades. Game play with words appears to be especially helpful in making them part of the students' active vocabulary (Marzano, 2009).

The main thrust of this approach is that vocabulary development should be an in-depth procedure that takes place, not on a one-shot basis, but continually, over time. I like to call this approach *elaborated exposure*. For both typical students (Coyne et al., 2009), and more especially for those with LLD (Lovelace & Stewart, 2009), listing and defining words is just not enough to get the words firmly implanted in their lexicon. They need to engage with words repeatedly over several different occasions, both receptively and expressively, in speech and in print, in a variety of experiences that intensify and expand knowledge of their meanings. Elaborated exposure helps to ensure that the newly learned words are retained and accessible for recall.

A second method of vocabulary development was suggested by Dole, Sloan, and Trathen (1995) and Boulware-Gooden, Carreker, Thornhill, & Joshi (2007). This is a *metacognitive* approach, which attempts to teach students strategies for learning new words, rather than a particular set of new words themselves (we'll talk more about learning strategies approaches to intervention in Chapter 14). Students are taught first to use three criteria to select important unknown words from their classroom reading sections:

1. They must not know what the word means.

2. The word must be used in the assigned selection.

3. The word must be key to describing a character, event, or idea in the selection.

Students must justify their choice of each word on these grounds. Teachers first model this procedure, then students select their own words and write them in a list. After each word, they:

- write a guess as to what it might mean, based on their review of the context in which they encountered it.
- look up the word in the dictionary and write down the one meaning most appropriate for this context.
- reread the words aloud in context and read the definition they found most appropriate.
- talk about how each word's meaning relates to the plot or main point of the selection and why each word might have been chosen by the author to convey this meaning.

Dole et al. (1995) report significant improvement in students' understanding of word meaning when they are taught this strategy, as opposed to a more traditional program in which students simply look up words the teacher gives them, without contextual discussion. In the Boulware-Gooden et al. (2007) study, semantic webbing to connect the part of speech, synonyms, antonyms, and other related words to a new word was added to the process, with modeling from the teacher on how to construct the webs. Children who received instruction with semantic webs did significantly better

on vocabulary assessments after instruction than children who only received dictionary definition instruction. An example of a semantic web appears in Figure 12-6.

Still, DeKemel (2003) stressed that although building curricular-related vocabulary through elaborated exposure is an important aspect of language instruction for students with LLD, we cannot ignore the fact that children will encounter words they do not know, and will need to develop dictionary skills to understand such words. She advocated combining elaborated exposure with specific instruction in the use of the dictionary and thesaurus, using the following methods:

- Keep a dictionary and thesaurus available in each classroom and therapy room.
- Teach skills for alphabetizing and using the alphabetic system to find words in reference books in clinical pre-teaching and classroom collaborative lessons.
- Explicitly teach the various parts of dictionary entries, including pronunciation key, etymology, and the meaning of the order of definitions.
- Focus on word study; pointing out parts of words (roots and affixes) and the concept of identifying roots they know within new words.
- Explain the meaning of abbreviations used, such as *n.* for *noun*.
- Point out the use of sentences in the dictionary to help illustrate meaning and usage.
- Once a definition is found, use the thesaurus to identify words related in meaning.
- Teach how to use synonyms to eliminate redundancy and create more precise expression through paraphrasing activities.
- Always take newly defined words back to usage contexts, such as curricular themes and texts.

Biemiller (2003) reports that research supports the use of oral reading contexts for introducing new words. His studies suggest that reading texts to children, picking out words likely to be unfamiliar and explaining them within the context of the story or passage is sufficient for typical students to acquire two or three new words per session. Students with LLD will need additional exposure, but consulting with teachers to provide this kind of direct instruction and then providing more elaborated exposure in therapy sessions can help our students' vocabulary keep up with their peers. Biemiller also advocates teaching all students to *ask* the teacher or SLP about words they do not know, so students can be actively encouraged to use the strategies they have learned on these unfamiliar words.

We've talked a bit already about helping children identify *roots*, or parts of words within words, to help then guess the meaning of unfamiliar words. This *Word Study* approach lends itself to the development not only of vocabulary, but of morphology and spelling, as well. Bloodgood and Pacifici (2004) suggested several activities that can be used in a word study approach to vocabulary development. These are outlined in Table 12-2. Box 12-6 lists children's books suggested by Bloodgood and Pacifici that can be used in a word study approach. Williams, Phillips-Birdsong, Hufnagel, Hungler, and Lundstrom (2009) report improvements in spelling and vocabulary after using a Word Study approach with children as early as the primary grades. We'll talk more about using Word Study to help children with spelling later in this chapter.

Whatever specific approach is used, research (Throneburg, Calvert, Sturm, Paramboukas, & Paul, 2000) suggests that an in-class, collaborative model is more effective for teaching curricular vocabulary to students who qualified for speech or language services than a traditional clinical model. So, however we decide to teach new vocabulary to students with IEPs, incorporating a collaborative approach will be advantageous. And explicitly linking word study to spelling can also be helpful for students struggling with this aspect of literacy, as well (Bauman et al., 2002). In classrooms using RTI, the approaches outlined here can be used as small group Tier II and individual Tier III instruction for students with or without IEPs who are struggling to acquire grade-appropriate vocabulary and spelling.

Word Finding

In Chapter 10 we talked about the fact that word-finding problems are frequently observed in students with LLD. We said they may be caused by semantic or phonological problems or some combination of the two (German & Newman, 2004). Therefore, to address word-finding problems, we need to work on several levels. One way to address the semantic side of word-retrieval difficulties is to do the kind of elaborated exposure work on vocabulary that we just discussed. By expanding and deepening students' knowledge of word meaning, we increase the connections among words in the students' semantic network. These stronger links and more elaborated understanding will, in themselves, decrease word-retrieval problems.

Wallach and Miller (1988) suggested using visual maps to help increase the semantic associations among words around a specific curriculum topic. For students in primary grades, topics with which students have some direct experience may be used. Yoshinaga-Itano and Downey (1986) suggested using familiar scripts, such as going to the doctor or visiting the post office, as bases for visual mapping. Figure 12-4 gives an example of a visual map for a "going to the post office" script that might be used in conjunction with a "community helpers" unit with primary students who show word-finding difficulties.

Massed practice can help increase speed of retrieval. Here students time themselves as they produce a list of vocabulary words associated with a curriculum-based unit. Students in intermediate grades could, for example, name all the layers of the rain forest that they have studied or all the parts of the food pyramid. Students at
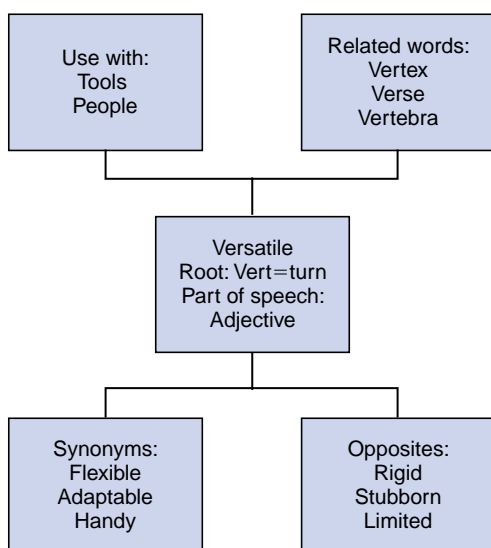
FIGURE 12-6   Example semantic web.

TABLE 12-2 Activities for Supporting Vocabulary, Morphology, and Spelling through Word Study

Activity	Grade Level	Activity	Resources
Root of the day	3–6	Teacher/SLP writes a Greek or Latin root on the board at the beginning of the week (e.g., *tele*). Students add words they think are related (e.g., telephone, telegraph, television). Later, students discuss what the root might mean based on the words in their list. Volunteers check meaning in the dictionary; students add these to notebooks or cards.	*Word Journeys* (Ganske, 2000) *Words Their Way* (Bear et al., 2000)
Roots and branches	4–6	Teacher/SLP places a root word in the center of a tree trunk drawn on chart paper. Students in groups record derived words on branches in one color. Volunteers find the meanings in the dictionary and record them on the branches in a second color.	Greek mythology, *American Heritage Dictionary of Indo-European Roots* (Watkins, 1985)
Word sorting	3–6	Teacher/SLP introduces two related sound patterns (e.g., short *i*, long *i*), and a list of words for each (stick, time, find, guide, miss, wild, blimp); students sort the words into the two patterns (short: miss, blimp, stick; long: time, find, guide). They then attempt to find spelling patterns (e.g., what determines whether the *i* is long or short).	*Explorations in Developmental Spelling* (Bear & Templeton, 1998)
Homophone rummy	4–6	After introducing the concept of homophones (words that sound the same but are spelled differently), homophone pairs are written on cards, and various matching games (Rummy, Concentration, Uno, etc.) are played with them. To make a pair, however, students must give correct definitions for each word. Challenges are resolved by looking the words up in the dictionary.	*Eight Ate: A Feast of Homonym Riddles* (Terban, 1982)
Homograph concentration	4–6	After introducing the concept of homographs (words that are spelled the same but pronounced differently), pairs of sentences containing homographs are written on card stock. Cards are placed face down, as for Concentration. Players turn over pairs of cards until a match is found. Players must read the two matching sentences aloud and give a description of the meaning of the homograph in each of the two sentences.	*The Dove Dove: Funny Homograph Riddles* (Terban, 1988)

Adapted from Bloodgood, J., & Pacifici, L. (2004). Bringing word study to intermediate classrooms: Here are four original word study units teachers can easily implement themselves. *The Reading Teacher, 58,* 250-264.

the primary level can be asked to name all the days of the week or months of the year. The listing would be timed and repeated until retrieval was rapid and effortless. Timed trials, with small incentives for reaching particular time milestones (such as saying all the months of the year in 10 seconds), can be used to increase motivation. When one set of terms reaches criterion, new vocabulary could be introduced.

Hanly and Vandenberg (2010) showed that children with LLD were more likely to make errors in word retrieval based on phonological, rather than semantic, features of words, and research by Best (2005) and German (2002) has suggested that approaches that incorporate phonological cues can be especially effective in helping these students recall words. Vocabulary work can, then, be organized around phonological similarities. We might do a session on *bl* words, for example, using some of the words from a current classroom theme, work of literature, or classroom discourse activity. At the primary grades, such words might include *blaring, blackened, blast,* and *blazing* during a classroom unit on fire prevention. At the intermediate level, we might use words such as *blatant, blunder, blush,* and *blame* in conjunction with work on classroom discourse skills. Work on meanings and uses of the words could be supplemented with cloze activities in which the clients supply the words in sentences constructed by the clinician.

The clinician might write sentences such as the following for the intermediate-grade students:

> When I talk out of turn in class, the teacher gives me a dirty look and I _____.
> When someone gives the wrong answer, it's _____ly obvious because the teacher says, "Any other ideas?"
> Talking without raising your hand is a _____.

If students have trouble remembering the word needed to fill in the blank, the clinician can remind them, "Remember, all the words we've been working on begin with *bl*. Try to remember the word by saying the beginning to yourself, and see whether that helps you remember the rest. When the teacher gives you a look, you /bl/. . . ?" Later, a second set of words with a different phonological pattern can be introduced and the two patterns can be used in the cloze procedure, with the clinician encouraging the students to try to remember which of the two beginnings start the word.

Best (2005) and Gerber (1993) suggested further work to focus students' attention on the phonological properties of words. Students can be given phonological cues in games in which they

BOX 12-6 Children's Books Supporting Vocabulary, Morphology, and Spelling through Word Study

CHILDREN'S BOOKS FOR WORD PLAY

Barrett, J. (1998). *Things That Are the Most in the World*. Illustrated by J. Nickle. New York: Simon & Schuster

Cleary, B.F. (2000). *A Mink, a Rink, a Skating Rink: What Is a Noun?* Illustrated by J. Prosmitsky. Minneapolis: Carolrhoda

Cleary, B.F. (2001). *Hairy, Scary, Ordinary: What Is an Adjective?* Illustrated by J. Prosmitsky. Minneapolis: Carolrhoda

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guess a word after a clinician's clue. Again, the words can be drawn from classroom themes. The clinician might say:

> Here are pictures of five people in our school. I'm thinking of one whose job has four syllables. (secretary)
>
> Here are pictures of six foods. I'm thinking of one that rhymes with *seen*. (bean)
>
> Here are maps of three countries we've studied. I'm thinking of one that starts with /s/. (Spain)

Another application of phonological retrieval strategies combines work on vocabulary and spelling. Carpenter, Gehsmann,

Smith, Bear, and Templeton (2009) and Fulk and Stormont-Spurgin (1995) emphasized the importance of teaching spelling through analogy by pointing out, for example, that when two words rhyme, the last part of each word is often spelled the same. We can use these spelling analogies to highlight a variety of phonological similarities among words (for example, same ending, same beginning sound, same sound in the middle represented by double letters, same short vowel sound). By focusing on the structural similarity among words and pairing these sound similarities with written forms, we provide students with both auditory and visual images of the word for storage, again deepening and elaborating knowledge of words. In this way, we not only build vocabulary strength, but adhere to our principle of integrating oral and written instruction and provide a

good foundation for increasing knowledge of words' written representation—their spelling—as well.

German (2002) investigated a word retrieval program that made use of words drawn from the curriculum and included three elements: metalinguistic reinforcement, phonemic neighbor cues, and rehearsal. These strategies are summarized in Box 12-7. German reported that these strategies were effective in improving students' access to words trained, but not to untrained words. German (2009) suggests integrating vocabulary learning with word retrieval strategy instruction in Tier II interventions for children with word finding difficulties. This approach would include supplementing the teaching of the meaning of new curriculum-related words with focus on the phonological structure of the new words as well. So children would be encouraged, for example, to divide newly learned words into syllables and to rehearse the pronunciation of the word during the initial learning process. German (2009) also encourages classroom accommodations for children with word finding difficulties, such as replacing oral reading assessments with silent reading, and using recognition formats such as multiple choice rather than cloze tasks.

Helping students learn to use both semantic and phonological cues to aid in word finding provides the students with a broad-based strategy for improving their word-retrieval skills. There also are commercially available programs that target word finding, such as German's (2005) *Word Finding Intervention Program*. Either commercial programs or clinician-created activities on word retrieval can be used both to pre-teach vocabulary from classroom curricula for students on IEPs, and as Tier II and III vocabulary reinforcement in RTI programs.

Semantic Integration and Inferencing: Enhancing Reading Comprehension

Understanding what we read involves pulling together ideas from different sentences in a text, and drawing inferences by integrating information given in the text with information presented earlier and with background knowledge. For example, if you read, "The family put their gear in the car and drove to the park for a game of softball. When they got to the parking lot, they opened the trunk and found they'd forgotten to bring a catcher's mitt," you would need to infer that the family put their sports equipment in the trunk of the car, even though that is never stated in the text. As we have seen, students with LLD appear to have difficulties in spontaneously putting information together and drawing inferences from language they hear or read (Botting & Adams, 2005; DeKemel, 2003; Letts & Leinionen, 2001), although they do better in listening contexts than during reading (Wright & Newhoff, 2001). This suggests helping these students improve reading comprehension ability should begin with material the clinician tells or reads to the student before working on inferencing in material the student reads himself. Literature-based activities are an excellent framework for developing semantic integration—the ability to synthesize ideas from several linguistic units—and inferencing skills that build on this ability. McGee and Johnson (2003) showed that specific training in drawing inferences resulted in significant improvement in primary aged children with LLD.

One way to develop inferencing and semantic integration is to use prediction activities. Students can be read part of a short story or picture book from the classroom literature selection and asked to predict what they think will happen next and why. They can be asked to draw a picture of what they think the next part of the story will look like and to label or describe the picture in writing. Commercial materials also are available, such as Matthews' (1995) *Jump to a Conclusion!*

Older students can write their own stories around classroom themes or curricular content, individually or in small groups. They can be told to leave off the ending or to write the ending on a separate sheet of paper. For the second part of the lesson, the stories (without the endings) can then be passed to another student or group for a meaningful ending to be added. The completed stories

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BOX 12-7   Word Retrieval Strategies

1. **Metalinguistic Reinforcement:** Make student aware of syllable structure of target word. Present a grid of cells representing the number of syllables for the target word:

Segment the word into syllables for the student, and have student write each syllable in one of the boxes:

Hip	po	po	ta	mus

The student is then asked to say each syllable while touching its box, and to pronounce each syllable along with a clap.

2. **Phonemic Neighbor Cue:** The student is given a prompt word that is a "phonemic neighbor," or shares some phonemic properties of the target word. Examples include *hip* for hippopotamus, *try* and *angle* for triangle, *help* and *mitt* for helmet, *card* for cardinal. Students are taught to link each cue to the target word and to think of the prompt word but not say it (so the prompt will not interfere with access to the target: "Think *card*, say cardinal").

3. **Rehearsal:** Massed practice, in response to picture or written cues is used, but the requirement also to use each target word in a sentence is added.

might then be read aloud and the reasons for the chosen endings discussed and evaluated. If the original authors wrote the endings on a separate sheet of paper, these can be shared and compared with those produced in the second part of the activity. The students could evaluate which ending was better and why. Book series such as the *TwistAPlot* (Scholastic) and *Choose Your Own Adventure* series (Bantam Books), which are designed to allow readers to select among endings, also can be used in these activities.

Interactive computer games also are very useful for this purpose. Many computer games used in schools allow students to select what comes next in a story or simulation activity. These programs, if available, can be used with students with LLD, with clinician assistance, if necessary, in reading the text on the screen. When working with computer games with students, we need to provide a lot of contextual and metalinguistic support. We want to be sure that the students are really attending to the semantic integration of the information and not getting so involved in the game that they are not focusing on the goal of the activity. Reminding students to remember the information in the story that they already know, think about what might happen next, and guess about the consequences of characters' actions can help to keep their inferencing at an awareness level.

Wallach and Miller (1988) also discussed some semantic integration and inferencing activities that can be done around smaller pieces of text. They cited Johnson and von Hoff Johnson's (1986) suggestion to present students with various sentences, following each one with a question that requires an inference. The sentences can relate to a curricular unit or be drawn from a classroom literature selection or theme-based unit. For example, if a primary grade class is reading *The Fox Went Out on a Chilly Night* (Spier, 1961), the following sentences and inferential questions might be presented:

1. The fox went out on a chilly night.
   What season of the year was it?
2. Then old mother Giggle-gaggle jumped out of bed.
   What was she doing before she heard the fox?
3. She cried, "John, John, the gray goose is gone and the fox is on the town."
   Who is John?
4. There were the little ones 8-9-10. They said, "Daddy, better go back there again, 'cuz it must be a wonderful town.
   Who are the little ones? Have they ever been to town before?

Inferencing activities also can be done around classroom themes. For example, if students are studying Mexico in geography or social studies, they can be presented with a selection such as the following:

Señora Rodriguez got out her cornmeal. She mixed it carefully with a small amount of water, then rolled the dough into a very thin circle. She filled it with some beans she'd fried, then put it in the oven. What was she doing?

Wallach and Miller also suggested helping students become more conscious of inferencing by producing "sentence bridges" to make inferred information explicit. For example, students working on a weather unit in science might be presented with the following two sentences:

Sam and Dave looked up at the dark and cloudy summer sky. They decided to listen to the game on the radio.

Students could be asked to explain how the second sentence might follow from the first. They could then be asked to fill in the middle with the clinician's guidance, after discussing why cloudy weather might lead to listening to a ball game on the radio. They might generate sentence bridges such as:

It looked as if it would rain.
They didn't want to drive all the way to the city in bad weather and sit in the rain all day.
It would be more fun to stay home and be warm and dry.

And of course, all these activities are appropriate not only for intervention sessions with children on IEPs, but also as consultative suggestions to teachers, as classroom collaborative lessons on reading comprehension, and as Tier II and III reading comprehension activities in RTI programs.

Syntax/Morphology: Integrating Advanced Language Forms with Reading and Spelling

The most important reason students need to learn advanced syntax and morphology is to support their understanding and use of literate language in reading, writing, and spelling (Nelson, 2010; Scott, 2009). This suggests two things to the SLP: first, following one of our basic principles for work with children with LLD, we want to select targets for syntax and morphological instruction that are drawn from the reading and writing children will need to do in the classroom; second, we want to provide guided practice in using these targets in both spoken (listening and speaking) and written (reading and writing) contexts. Work on syntax and morphology, then, doesn't have to be restricted to children with identified oral language IEP goals. It will also be useful for Tier II and III activities with students in RTI classrooms, to help them improve their reading comprehension of texts that include these advanced forms.

In choosing syntactic forms to target at the L4L period, then, we want to remember to take into account data from *both* the assessment of a student's syntactic abilities *and* from assessment and understanding of the demands of classroom discourse as well as the literary language requirements of the curriculum. The following sections contain some examples of these kinds of forms that contribute to classroom success in reading comprehension as well as more literate writing.

Advanced Morphology: Support for Spelling and Reading Comprehension

Wolter (2007) reviewed evidence demonstrating that working on awareness of morphology improved both vocabulary and reading comprehension for middle grade students. Windsor, Scott, and Street (2000) showed that although children with LLD had relatively high levels of correct morphological production in speech after age 7, they had significantly more errors in writing. When we work with students with LLD on morphology, then, it is important to practice both saying and writing the markers in appropriate

contexts. Gerber (1993) suggested that one way to address advanced morphological usage is to develop an understanding of the relationships between root words and derivations. Students can play matching or "Concentration" games with pairs of cards. Each pair would contain two words that share a common root. One of the words in each pair can be drawn from classroom activities. Students would be required to match the related words, for example:

social	monster	video	medicine	danger
society	monstrous	videographer	medical	dangerous
school	giant	muscle	serene	intent
scholastic	gigantic	muscular	serenity	intention

In discussing how the words are related in meaning, we also can point out the relations both in meaning and spelling. For example, we can ask students what *videographer* means and, if they don't know, suggest they look for a smaller word inside it that they recognize. Once they identify the root *video,* they can be encouraged to think about other words that have similar parts beside video (*photographer*), then make a guess about what a *videographer* is. Additionally, we might, as Chomsky (1980) suggested, show students that *muscle* and *muscular* both have a *c* in them, although the *c* is pronounced only in *muscular*. Students can be told that if they have trouble remembering how to spell *muscle*, they can remind themselves of the word *muscular*, in which the sound of the letter *c* is clearly heard. The same approach can be used to discuss the spelling of *medicine*. If the students can't remember whether to spell the /s/ sound in *medicine* with an *s* or a *c*, they can remind themselves of *medical*, in which a *c* is clearly the spelling. Similar reasoning can be used to discuss *social* and *society*, and many other terms. In fact, the students can be told that one of the reasons spelling in English has so many irregularities is that our writing system often preserves these connections among related words by retaining similar spelling patterns even when pronunciation changes over time (Chomsky & Halle, 1968). Frequently reminding students of these connections in succeeding work on morphology and vocabulary can help to build not only oral language skills but spelling ability. Evidence (Bhattacharya & Ehri, 2004) suggests that analytic approaches such as these help struggling readers both to recognize and spell new words more effectively. Many of the books and activities suggested in Table 12-2 and Box 12-6 will be helpful here.

By increasing students' ability to apply strategies like these to unfamiliar words they encounter in reading, we improve their ability to get as much meaning as possible from the texts they read. These strategies, too, with guided practice, can apply to spelling skills as students become more able to take advantage of what they know about relations among words to learn and retain new spellings. And as we've seen so often already, these kinds of activities work not only as intervention for children on IEPs, but for consulting with teachers about improving spelling instruction, as collaborative classroom lessons, and as material for Tier II and III reading comprehension and spelling groups in RTI programs.

Literate Language Forms: Support for Reading Comprehension and Writing

Complex Sentences

Scott (2009) discussed the importance of the ability to understand complex sentences to reading comprehension. In this discussion, she emphasized the need to avoid using isolated, decontextualized exercises for these forms. Instead, she suggests intervention for complex sentences be carried in the context of real academic tasks. Literature-based script approaches are a great way to accomplish this, as they are for so many other language goals. Some examples of books for complex sentence development were provided in Appendix 9-1. Just one example that is especially appropriate for school-aged children is *When I Was Young in the Mountains* (Rylant, 1982). This book has more mature content than most of those listed in Appendix 9-1 and can be used to encourage use of temporal conjunctions, among other things.

Suppose, for example, a fourth grade class is reading *Gentle Ben* (Morey, 1965). If passive sentences were identified as an area of weakness for a child on an IEP, or if RTI activities identified difficulty with comprehension of the text for other students, one intervention activity might involve giving the student pairs of sentences taken from book being read in class:

> Fog Benson always kept Ben chained.
> Ben was always kept chained by Fog Benson.

Students could be asked to discuss the characters in the story, to recall that Fog was the man who owned the bear, Ben. They could then be asked to draw a picture to illustrate the first sentence, decide whether the first and second sentences meant the same or different things, and tell why they knew ("Ben couldn't keep Fog chained, since Fog was the owner"). The clinician could then focus metalinguistically on the structure of the sentence, discuss what the *was* and *by* signaled, and give other examples of passive sentences. Students could be asked to generate more sentences about what characters in the story did to someone ("Mark's mother protected him, Mark's father frightened him, Fog shot Ben in Mark's dream"). The clinician could write the sentences down, give a passive equivalent for some, then ask students to generate the passive equivalents. At the end of the activity, the structures that signal the passive could be discussed again. Subsequent activities could use the same procedures applied to different classroom material. A similar approach could be used for other sentence forms on which assessment data indicate strategies are operating. These forms might include sentences with *before* and *after;* those with center-embedded relative clauses ("The man who owned the bear was named Fog Benson."); and other sentences, such as clefts, with unusual word order ("It was Fog Benson who owned the bear.").

Other approaches to the development of complex syntax were suggested by Wallach and Miller (1988). They had students analyze complex sentences taken from classroom content or newspaper stories on topics of interest. The students first identify propositions included within the meaning of a complex sentence. Then they write out the propositions. For example, the clinician might choose a sentence from a classroom literature selection like *Charlotte's Web* (White, 1952):

> Every afternoon, when the school bus stopped in front of her house, [Fern] jumped out and ran to the kitchen to fix another bottle for [Wilbur].

Students might identify which of the following sentences' meanings were contained in the complex one:

> The school bus stopped at Fern's house every afternoon.
> Fern jumped out of the school bus as soon as it stopped at her house.
> Fern ran to the kitchen as soon as she got home from school.
> Wilbur's bottles were kept in the kitchen.
> Fern jumped in the kitchen.

We can also work the other way: combining simple sentences to complex ones. In fact, research (e.g., Andrews et al., 2006; Eisenberg, 2007; Saddler & Asaro-Saddler, 2010; Scott & Balthazar, 2008; Scott & Nelson, 2009) shows that combining sentences is one of the few techniques that has solid evidence behind it for improving both understanding and use of complex sentences in school-aged children. Taking *Charlotte's Web* as our literature base again, we might ask students to combine the following sentences into one:

> Wilbur climbed up on top of the manure pile.
> Wilbur was full of energy and hope.
> The rat and the spider were watching Wilbur climb.

Paraphrasing is another way to develop complex sentence skills. Paul (1992b) suggested giving students sentences in two different forms, such as:

> Charlotte wove some words in the web.
> Some words were woven in the web by Charlotte.

Students can discuss whether the sentences mean the same thing and why they might choose one over the other. The clinician might ask, "Which one would you say to a friend? Which one would you use if you were writing a book?" and other questions. Students can then be given sentences to paraphrase (or "say a different way") on their own or in groups.

Wallach and Miller (1988) used picture sequences to discuss clause order in complex sentences. Students can be given pictures to place in correct order corresponding to a spoken or written sentence. Alternatively, the students can draw the pictures themselves, based on a literature selection. For example, they can draw a picture of Fern holding Wilbur on her lap and another of Fern feeding Wilbur a bottle. The clinician can present the following sentences and ask the students to arrange the pictures according to what the sentences say:

> Fern held Wilbur before she fed him.
> Fern held Wilbur after she fed him.
> After she fed Wilbur, Fern held him.
> Before she fed Wilbur, Fern held him.

Other hybrid methods that we discussed in Chapter 3 for increasing sentence length for young children can be adapted for enhancing sentence complexity in older children, as well. These include focused stimulation, vertical structuring, and contrastive modeling. Metalinguistic approaches, in which the clinician explicitly describes the forms being targeted ("Today we are going to work on subordinate clauses. These are groups of words we include in sentences to expand their meaning. Here are some examples . . . "). Additional suggestions can be found in Eisenberg (2007).

In line with one of our principles of intervention at the L4L stage, we would follow up such activities with metalinguistic discussions about how the different sentences convey different meanings, which pairs mean the same thing, in what situations each sentence would be most appropriate, and so on. Focusing on the development of complex sentences in the context of increasing children's understanding of what they read and hear in the classroom makes these activities, too, excellent candidates for consultative suggestions, collaborative lessons, and Tier II and III reading comprehension instruction, in addition to remediation for children on IEPs.

Noun Phrase Elaboration
As we saw in Chapter 11, Eisenberg et al. (2008) showed that, by 8 years of age most typically developing children are using noun phrases with at least three elements (*the funny little kid*), and by 11 most are using complex noun phrases with modifiers like relative clauses after the noun (*The man who is wearing a yellow hat is tall*). These elements are often found in children's literature and classroom texts, so they make appropriate targets for activities to increase syntactic complexity in the service of improving reading comprehension.

To encourage use of *multiple modifiers* and *prepositional phrases* to elaborate noun phrases, the clinician might write modifiers, prepositional phrases, or both, taken from the classroom literature selection or from a theme-based unit, on cards given to each student or group. Several nouns from the selection would be displayed on similar cards. Students would be asked to choose noun cards that could be elaborated with the modifiers and phrases they have. After discussing how the modifiers and phrases give more information about the nouns, students could be asked to put the noun phrases they've developed into sentences relating to the story or theme. They could then be asked to generate other modifiers or prepositional phrases that could modify the same nouns and to talk about how the meanings of the noun phrases would change accordingly. They might then write sentences with these new elaborated noun phrases. Eventually, new nouns could be introduced for which the students can generate modifiers and prepositional phrases, based on the ones with which they have become familiar in the earlier exercises. As always, it will be important to do these activities in the context of classroom texts and assignments, so new learning can be quickly applied to real academic tasks.

To increase noun phrase elaboration with *relative clauses*, the clinician might use a story the group has read in class, such as "The House that Jack Built." Gerber (1993) suggested writing each clause in the story on a strip and allowing students to add their strip to the story as it is read. Students can then write their own version of the story, such as "This Is the House that Miguel Built," using different clauses to elaborate the tale.

To work on relative clause development at a higher level, Gerber (1993) and Eisenberg (2007) suggested sentence expansion activities. These start with a simple, kernel sentence and encourage students to expand on the kernels. For example, each student or group might be given a relative clause relating to a classroom theme (for example, *who study the earth's atmosphere*), written on a strip. The strip can be color coded so it can be referred to as "the red one" instead of as "the relative clause." Each student/group

may then receive a different-colored strip containing a subject noun phrase (for example, *The astronauts*) and one with a verb phrase (for example, *gather information for scientists*). The students see how many different, meaningful sentences they can form with their strips, writing each sentence down as they form it. The groups can compare their sentences and talk about how placing the relative clause (or red strip) in different places changes the meaning of the sentence.

Verb Phrase Elaboration

Auxiliary Verbs   Both DeKemel (2003) and Eisenberg (2007) noted that students with LLD often show limited variety in their verb forms and tenses, and include fewer arguments—direct objects, indirect objects, and locative terms—in their sentences. Again, these difficulties will impact not only the intelligibility of the students' speech, but also their ability to understand complex verb phrases when they read classroom texts. Using multiple auxiliaries to modulate the meaning of verbs in sentences (*he could run, he could have run, he could have been running*) is an important aspect of elaborating meaning, and provides opportunities to discuss roots and affixes in a metalinguistic, word study format. Literature-based script approaches can be used here, too. Texts familiar to students can be modified to include repeated instances of present perfect tense (*have arrived*), past perfect tense (*had arrived*), and auxiliary combinations (*could have arrived, could have been delayed*). These "homemade books" can be read repeatedly to children, following the procedures developed by Kirchner (1991) and outlined in Chapter 9. For example, if *Mr. Brown Can Moo, Can You?* (Seuss, 1970) is being read in the clients' classroom, the clinician can make a photocopy of each of its pages and paste over the usual text with versions that contain target forms. The book might be made to read, "Mr. Brown has mooed, have you?" and so on. As just one more example, the texts of Joslin's books on manners in silly situations, *What Do You Do, Dear?* (Joslin, 1961) and *What Do You Say, Dear?* (Joslin, 1986), could be modified to be read as "What could you have done, dear?" and "What could you have said, dear?"

Fey (1986) suggested that advanced auxiliary marking also can be taught by setting up a discourse context in which such forms are required. For example, the clinician might retell a story the students are reading in class, asking questions that create a context for the use of the past perfect tense. After reading the students the story, the clinician might say the following:

> A little old woman decided to bake a gingerbread boy. She had made the dough and put it in the oven, but when she opened the door, the oven was empty. What had happened? (The gingerbread boy had run away.)
> The woman yelled for him to stop, but the gingerbread boy ran on. The gingerbread boy ran past a little old man, who had stopped his work. What had happened to make him stop?
> (He had heard the little old woman yelling.)

Verb Arguments   To enhance use of verb arguments, activities like those described under Noun Phrase Elaboration, including writing verb arguments taken from the classroom literature selection or from a theme-based unit, can be given to each student or group. Several verbs from the selection would be displayed on similar cards. Students would be asked to choose verb cards that could be elaborated with the arguments they have. An example

activity based on *Charlotte's Web* might include the following cards for students to combine into sentences:

| Noun | Verb | Arguments | | |
		Direct Object	Indirect Object	Locative
Fern Charlotte	gave wove	a bottle her radiant web	to Wilbur for the people	in the kitchen at the fair

Adverbs   Another aspect of verb phrase elaboration involves modulating verb meaning with adverbs. Nippold (2007) suggested working on the relative magnitude of adverbs. Students can be given cards with words such as *slightly, somewhat, quite, unusually,* and *extremely*. They can be asked to use the adverbs (or "words on blue cards") to fill in blanks in a passage relating to curricular content. For example, the clinician might write the following:

> Scientists worry that global warming is increasing average temperatures. Weather in some parts of the county has been _____ hot.

Students could decide which of their words best completes the sentence. Alternatively, the clinician could write three versions of the second sentence and ask students to discuss the meaning of each and talk about why they might choose one over the other as the best follow-up to the first sentence:

> Weather in some parts of the county has been slightly hot.
> Weather in some parts of the county has been unusually hot.
> Weather in some parts of the county has been quite hot.

Another way to encourage adverbial use is to present a list of adverbs relating to emotions. This can be combined with "word ladders" like the one in Figure 12-5. Dialogue can be drawn from a classroom literature selection and students can be asked to choose the adverb (or "blue card") that could be used to show how the character would say that part of the story. Suppose students are reading *Curious George Rides a Bike* (Rey, 1952) in class. The children could be given the adverbs *sadly, angrily, curiously,* and *excitedly*. Then they could be asked to choose which one could be used to describe the way characters might speak in the following parts of the story:

> "I wonder what the river is like further on," said George _____.
> "We cannot use little monkeys who don't do as they are told!" said the director _____.
> "I won't be able to play the trumpet in the show now," George said _____.
> "There's George!" said the Man in the Yellow Hat _____.

Pragmatics

Conversational Discourse

We've talked about some of the conversational difficulties of our students with LLD. When assessing conversational discourse, we looked at the *range of advanced intentions expressed;* the way the client can *modify the message depending on the context;* and the management of *discourse turns, topics, and breakdowns.* We can address each of these areas in intervention.

A variety of conversational pragmatic programs are available commercially, many geared toward working with students with autism spectrum disorders. Some examples of these appear in Table 12-3.

As just one example, Dodge (1998) presented a program on general communication skills for elementary students that can be presented in classrooms for both mainstream and LLD students. Suppose you found that a client expressed few advanced intentions, such as using language to reason and report. You might set up an activity in which students had to solve a problem, such as how to make a spider web out of black yarn (continuing our *Charlotte's Web* theme). After letting students try on their own, you might report their success to them ("You figured out how to start the web. You wound the yarn around your hand. Then you put the yarn on the desk, cut off a piece, and lay a bigger circle of yarn around it"). You might then "think out loud" about how to proceed with the next step. When the project was completed, you could ask the students to think about how they might tell another student how to do the task. You might ask them to reason about why they had trouble at first, or about other ways to approach it. As they do this, you can provide additional models of reporting and reasoning as expansions or extensions of the clients' comments.

Contextual variation can be practiced through role-playing. Variations can be made for the following purposes:

1. Politeness ("Let's pretend you're a mom asking her son to get her a pencil. Now pretend you're a teacher asking a student. Now be a teenager asking his friend. Now be a boy asking his sister for the pencil she borrowed.")
2. Tact ("Pretend you're a doctor telling a patient she needs an operation. Pretend you're telling a friend you already have the book she gave you for your birthday.")
3. Assertiveness ("Pretend you want to tell your friend something, but she's not listening. Pretend your sister is hurt and you need to tell your mother, who is talking on the telephone.")

Bedrosian (1985); Brinton and Fujiki (1989, 1995); Brinton, Robinson, and Fujiki (2004); Mentis (1994); Naremore, Densmore, and Harman (1995); and Paul and Sutherland (2005) presented many suggestions for activities that can be used to address a variety of *discourse management* skills. As one example of a topic-maintenance activity, Brinton and Fujiki (1989) suggested engaging the client in a conversation about a topic of the child's interest. The clinician provides scaffolding to remain on the topic. If the child begins to wander from the topic of how he liked the basketball game he saw over the weekend, the clinician might comment, "That sounded like a great game you saw. Tell me about the most exciting play." Gradually, the scaffolding should be reduced, so that only cues are provided (for example, "Is that what we're talking about?" can be used at first and then later just a tap on the wrist). The client can then be asked to have a similar conversation with a peer. The clinician can sit beside the client and give the cue (a tap on the wrist) if the client strays from the topic, whispering a verbal cue or a prompt for an appropriate comment in the client's ear, if necessary. Paul and Sutherland (2003) suggested activities such as

TABLE 12-3   Examples of Commercially Available Programs for Addressing Conversational Pragmatics

Title	Author	Publisher
"Ask and Answer" Social Skills Games	K. Spieloogle, M. Cullough, & M. DeShang	SuperDuper
Let's Be Better Friends: The Peer Integration Program	M.B. DeLaney, N. Griffin, & K. Fox	Janelle Publications
Maxwell's Manor: A Social Language Game	C. LoGiudice & N. McConnell	LinguiSystems
Positive Pragmatic Games	K. Gill & J. DeNinno	SuperDuper
Promoting Social Communication: Children with Developmental Disabilities from Birth to Adolescence	H. Goldstein, L.A. Kaczmarek, & K.M. English	Alimed Inc.
Ready-to-Use Social Skills Lessons & Activities for Grades PreK–K	R. Weltmann Begun, editor	Jossey-Bass
Ready-to-Use Social Skills Lessons & Activities for Grades 1–3	R. Weltmann Begun, editor	Jossey-Bass
Ready-to-Use Social Skills Lessons & Activities for Grades 4–6	R. Weltmann Begun, editor	Jossey-Bass
Room 14: A Social Language Program	C. Wilson	LinguiSystems
Scripting Junior: Social Skill Role-Plays	L. Miller	Thinking Publications
Social Communication Skills for Children	W. McGam & G. Werven	Pro-Ed Inc.
Social Skill Builder Software		Academic Communication Associates
Social Star	N. Gajewski, P. Hirn, & P. Mayo	Thinking Publications
Talk About Activities: Developing Social Communication Skills	A. Kelly	Pro-Ed Inc
Talk About: A Social Communication Skills Package	A. Kelly	Pro-Ed Inc
Talk! Talk! Talk! Tools to Facilitate Language	N. Muir, S. McCaig, K. Gerylo, M. Gompf, T. Burke, & P. Lumsden	Thinking Publications
The Socially Speaking Game	A. Schroeder	SuperDuper

conversational mapping, in which children make a "scrapbook" containing one page for each friend. Each page contains a picture or drawing of a child the client would like to talk with, along with pictures of things the client knows each "friend" likes or is interested in. They role-play talking to each "friend" with the clinician, by asking one question about what the "friend" likes, and saying two things about that topic before introducing a new topic. After role-playing, they try approaching the new "friend" in a similar way, and report back to the clinician on how it went. An extension of role-playing activities involves video modeling; that is, having peers make a video of a conversational interaction, rather than using role-playing or live observation. Research summarized by Bellini and Akullian (2007) and Prelock, Paul, and Allen (2011) suggests that having a client view, discuss, rehearse, and practice the interaction observed on video first with a clinician and later with a peer is especially effective conversational intervention for students with ASD. Clinicians may wish to develop their own videos for modeling, based on the individual needs of their clients, and some video models are also available commercially from vendors such as www.modelmekids.com, www.watchmelearn.com, and www. silverliningmm.com.

Brinton et al. (2004) presented a case study of a conversational treatment program, which is summarized in Box 12-8. It is important to note that their program lasted for 2 years, suggesting that, in order to make significant changes in a client's conversational style, extensive intervention will often be required. Brinton and Fujiki (2007) presented guidelines for assisting students who have difficulty participating in peer groups. These appear in Box 12-9.

We talked about the use of barrier games, or referential communication activities, for assessment of *presuppositional* skills and of the ability to clarify and request clarification. Barrier games also can be used in intervention for discourse management. The clinician, as speaker, can model appropriate presuppositional behavior, pointing out to the client how the clinician's message was effective because it contained appropriate information. Again, vocabulary and sentence structures being targeted in intervention can be used in these barrier games, to help the student learn to use new forms and meanings in presuppositionally appropriate ways.

Troia (2009) emphasizes that developing presuppositional skills is especially important for improving writing, since novice writers often make inaccurate assumptions about what knowledge is shared with their audience. This suggests that, again, the principle of integrating oral and written language should be applied to work on presupposition. That is, students should be encouraged to check their presuppositions in written activities as well as oral ones. Troia suggests that targeted peer editing, in which students read each other's writing and point out where the writer has not given them adequate background information, can be helpful here.

For work on *clarification and communicative repair,* the client can be given a turn as speaker in a barrier game, with the clinician requesting clarification as frequently as possible during the exchange. Discussion about the interaction can follow, with the clinician pointing out how important it is to ask when we don't understand something. Roles can then be reversed. This time the clinician can give purposefully unclear messages. Nonsense words can be inserted in the message, or part of it can be mumbled. If the

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BOX 12-8 Elements of Conversational Treatment Study of Brinton, Robinson, and Fujiki (2004)

1. Watch short film clips from movies client had seen and role-play scenarios in them to increase awareness of the social, emotional, and contextual information needed to function appropriately in conversation.
2. Have client consider and comment on the exchange of messages between conversational partners.
3. Review video clips depicting clinic personnel role-playing events and interactions similar to those client had experienced at school, portraying difficult, isolating, or harassing incidents (e.g., peers ridiculing a student who was standing alone) and have client describe how various characters felt and what their intent was at different points in the interaction.
4. Generate possible conversation topics, write them on slips of paper, place them in a can; pick one at random.
5. Clinician models steps for the "conversation game": read the paper and take a moment to think about the topic, then make one comment on the topic, ask a question, and listen to the response.
6. Increase complexity of "rules" for the "conversation game" as client masters previous level:
   Make two comments on the topic, ask a question, and listen to the response.
   Make two comments on the topic, ask a question, listen to the response, and comment on that response.
   Make two comments on the topic, ask a question, listen to the response, comment on that response, ask a related question, and listen to the response.
   Make several comments on the topic, ask a question, listen to the response, make some comments on that response, ask a related question, and listen to the response.
7. Additional strategies initiated at later points in the program include:
   Ask for your partner's opinion.
   Talk approximately the same amount of time as your partner does (balance the conversation).
   Determine what interests your partner.
   Draw your listener(s) into the conversation.
   Respond to your listener's needs.
8. Later sessions provide cues to client's failure to adhere to appropriate conversational give and take. Each cue is demonstrated, then given in context if client begins dominating the conversation or ignoring listener needs:
   Yawn
   Look at watch
   Look away from client
   Client is taught first to recognize these cues, then to develop appropriate responses to them.

From Brinton, B., Robinson, L., & Fujiki, M. (2004). Description of a program for social language intervention. *Language, Speech, and Hearing Services in Schools 35,* 283-290.

BOX 12-9   Brinton and Fujiki's Guidelines for Facilitating Peer Group Access

STEPS	INSTRUCTIONS
1. Why?	Explain that it is fun to do things with others; discuss how to choose a group to join based on what the group is doing or talking about.
2. Walk	Have the student approach a group after practice with toy figures, pictures, or written cue cards.
3. Watch	Have the student observe the others and identify a topic or task before entering the group, after practice with toy figures, pictures, or written cue cards.
4. Talk	Encourage student to give a compliment (You're building a cool building), offer a suggestion, ask a question, or offer help, after practice with toy figures, pictures, or written cue cards.
5. Try again	Help the student understand that the first bid may not work and we may need to try again. Practice scenarios with toy figures, pictures, or written cue cards to try several strategies for modifying the approach. Have peers coach the student.
6. Reflect	Discuss the process, rehearse alternate strategies, model mistakes and have student correct them (e.g., approach a group and grab materials. Ask student, "Did I do it right? What should I have done?"[watch])

Adapted from Brinton, B. & Fujiki, M. (2007). Peer interaction. In Ukrainetz, R. (Ed.). *Contextualized language intervention.* (pp. 289-318). Eau Claire, WI: Thinking Publications.

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student fails to request clarification, the clinician can allow the task to be completed. Then errors in completion can be discussed and the clinician can point out that some of the message was unclear, ask the client whether he or she detected the miscommunication, and ask what he or she might have done. The interaction can then be replayed, with the client coached to request clarification at appropriate points. Additional activities can provide opportunities for the client to experience such unclear messages and respond to them. As we saw in Chapter 11, many commercial materials, such as *Make-It Yourself Barrier Activities* (McKinley & Schwartz, 1987), *Barrier Games for Better Communication* (Deal & Hanuscin, 1999), and *Creatures & Critters* (Marquis, 2004), and *Developing Oral Language with Barrier Games* (Jarred & Reolofs, 2010) are available for use in these activities. Musselwhite (2007) also provides ideas and templates for a variety of barrier games at www.aacintervention.com.

Classroom Discourse Skill

We talked in the last chapter about using classroom observation methods to identify any difficulties a student might be having with the "hidden curriculum" of classroom discourse (Christie, 2003; DeKemel, 2003). Some of the work to improve classroom discourse

performance involves working with the teacher in a consulting role to modify the demands of the classroom. We'll talk about this role a bit later. We also can work with the student, though, to improve some classroom discourse skills.

Westby (2007) discusses some aspects of classroom discourse that can be addressed in this work. Table 12-4 provides some components of classroom scripts that can be part of metalinguistic discussions of classroom discourse. Ripich and Spinelli (1985) suggested using the intervention setting to construct a "miniclassroom" for discussing and practicing these classroom discourse structures. Each miniclass session begins with a discussion of a school event or routine. After discussing the hidden rules and structure of each script, the students do an activity involving the script, with some taking roles of students and one taking the role of the teacher. The miniclass might, for example, role-play coming to class and doing a science experiment, cooperative learning group, or book report. The student playing the teacher role would be encouraged to provide specific correction to students who fail to adhere to the rules the group generated to describe the hidden curriculum of the activity. When the clinician plays the role of teacher, he or she can

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TABLE 12-4   Components of Classroom Scripts

Component	Elements	Explanation
Rules for participation in class discussion	Gatekeeping	Teacher determines who can talk, when, where, why, with whom
	Sequencing	Students must wait their turn or wait to be called on
	Topic management	Teacher chooses topic; teacher determines which contributions are/are not relevant
Turn taking	Automatic	Follows pre-set order (e.g., alphabetical)
	Nomination	Teacher calls students by name to respond
	Invitation	Teacher allows students to reply by raising hands, or as a whole group
Feedback	I-R-E	Teacher initiates a turn sequence, child responds, teacher evaluates the response ("That's right!")
	Revoicing	Instead of evaluating response, teacher reframes or rephrases it ("So you're explaining that when plants are put in the dark they can't grow. Plants need light, don't they?")

Adapted from Westby, C. (2007). There's more to passing than knowing the answers: Learning to do school. In T. Ukrainetz (Ed.) *Contextualized language intervention* (pp. 310-388). Eau Claire, WI: Thinking Publications.

purposefully give unclear directions or violate the rules of the script to encourage students to ask for clarification and assert themselves in a group setting.

Narrative Skill: The Bridge from Oral to Literate Language

We've already discussed some ways to develop inferencing in narrative and to scaffold narrative macrostructure. Let's look at a few more examples of activities that can be used to increase narrative comprehension and production to fortify this important bridge from oral to literate language.

Comprehending Narratives: Gateway to Reading Comprehension

For students in the L4L stage, story understanding is a major portal to improving reading comprehension. As Nelson (2010) and Westby (1985) have argued, narratives form a bridge from simpler to more literate forms of language understanding because they contain a relatively familiar, though still complex, structure. For children with LLD or those who struggle with reading comprehension, SLPs have a central role to play in improving reading comprehension by scaffolding and providing extended guided practice with narrative texts in both oral and written form. Work on narrative understanding can take place at several points: before encountering the story, during story reading/telling, and following story exposure.

Let's talk first about activities we can introduce before a story. Norris and Hoffman (1993) advocated developing a *preparatory set* with students before they read a story to activate their background knowledge about the story's topic and to get them ready to take in the new information the story will provide. Hoggan and Strong (1994) suggested using the story's title to establish a preparatory set by asking students to talk about what they know about specific words in the title and to identify words or concepts with which the students are unfamiliar. Unknown words can be discussed, and students can act out meanings of words. Wallach et al. (2009) discuss the importance of helping develop students' knowledge not only of vocabulary, but also of content that relates to curricular topics. She advocates helping students develop a preparatory set by encouraging them to relate their own experiences to previewing activities and using the opportunity to expand their background knowledge by adding new information to this discussion. Stahl (2004) suggests targeted discussions of background knowledge guided by the teacher with focused discussion of what students know about relevant topics before reading or listening to a text, as well as open-ended questions invoking background

knowledge relevant to specific events during the story. Kamhi, (2009) argues that providing students with additional background knowledge in content areas important to school achievement will optimize their chances for improved reading comprehension. All this implies that part of developing preparatory sets involves providing students with the background information they need to fully understand a story. Discussing what students already know about the story's setting or content during previewing activities, and giving brief chunks of new information about them in anticipation of reading the story can contribute to this goal.

Ambe (2007), Nessel (1989), and Stahl (2004) suggest using *directed reading-thinking activities* to establish preparatory sets. Here students are shown the book to be read and told the title, but not told the story's topic. Students are asked to make predictions about the topic of the story and to give support for their opinions. Predictions are listed, so they can be compared to the events in the story after it is read in its entirety. Students then hear the first few paragraphs and are asked whether they want to change their predictions. After reading the whole story, students are asked to compare their predictions to what happened in the story, identify predictions that were correct, and contrast those that did not turn out to be true. Students can explain what events in the story led to different conclusions than the ones they predicted.

Literature webbing is another prediction technique reported to have significant effects on young readers' ability to predict and retell story events (Stahl, 2004). The teacher or SLP writes key events from a story on cards, and gives each group of students a set of these cards in random order before hearing a story. Each group organizes the cards into the order they predict will occur in the story. They then hear or read the story, check their predicted order, and discuss any changes they need to make and why. Nelson (2010) advocates prereading/prelistening tasks that encourage children to develop a set of prereading/prelistening questions to guide their reading/listening. Examples of such question sets appear in Box 12-10.

Activities aimed at improving comprehension during the process of oral reading are also available. Again, these techniques involve inserting questions within the reading to guide and deepen students' comprehension. Crowe (2005) compared the use of communicative reading strategies (CRS)—teacher questions posed during reading that are designed to engage the children in constructing a meaningful message from the text—with the use of questions that focus on decoding words. She reported that using CRS questions with struggling readers during oral reading

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BOX 12-10   Advance Organizers to Aid Narrative Comprehension

"STEWS" QUESTIONS

Skim through the pages of the story; what clues do they give you?

What does the **title** tell you the story may be about?

Examine pictures, headings, maps for clues. What new predictions can you make?

What are the **words** that might be important to the story. What words that are new to you will you need to understand before you read/listen?

Think about the story's **setting;** does it make you think the story will be fact or fiction?

STORY GRAMMAR ORGANIZING QUESTIONS

Listen for the answers to these questions as you read/listen:
- Who is in the story and where does it take place?
- What happens in the beginning?
- What do the characters try to do about it?
- What happens at the end?

Adapted from Nelson, N. (2010). *Language and literacy disorders: Infancy through adolescence.* Boston: Allyn & Bacon.

improved their ability to retell stories, an index of story compre-hension. Examples of CRS questions that can be used in this way appear in Box 12-11. A related technique uses teacher "think-alouds" to model processing of the story during oral reading. The teacher/SLP voices all the things she notices, does, visualizes, feels, and asks herself during the reading of a text. Wilhelm (2001) showed that this strategy also improved comprehension.

Following story reading with additional discussion is, of course, another way to address narrative comprehension. Westby (2005) suggested using repeated, scaffolded exposure; that is, reading the story more than once and providing follow-up questions at varying levels of complexity. Questions after an initial reading, for exam-ple, might ask students to identify story grammar elements with a series of questions:

- Where did the story happen?
- Who were the important people in it?
- What problem got the story going?
- How did the people try to solve the problem?
- How did it end?

Additional readings might involve questions that require higher level responses. For example, a second reading might be followed by a request for a summary of the story in students' own words. A third might require students to explain why characters did what they did, and to analyze the results of their actions.

Stull and Mayer (2007) reviewed evidence demonstrating that graphic organizers that highlight text structure assist students in comprehension. As one example, a story flow chart (Ollman, 1989) can be used to help students visualize the relations among events. After reading, the clinician can ask students to call out the major events they remember from the story. The students' ideas are listed on the board. The clinician then draws the chart and has the stu-dents place the events they listed in the appropriate place on the chart. Figure 12-7 illustrates a flow chart developed from A.A. Milne's (1926) "In which Pooh Goes Visiting and Gets into a Tight Place." Garner and Bochna (2004) showed that instruction like this provided lasting improvements in typical first graders' reading

comprehension. Boyle (1996) demonstrated that this kind of map-ping resulted in LLD students' showing substantial gains in both literal and inferential comprehension. Stahl (2004) also suggests using visual imagery to improve story comprehension. Teachers demonstrate how to "paint a picture in your mind" first of several displayed objects, then of events heard or read in stories. Think-aloud protocols can be used to model the visualization process. Stahl reports that visualization training increased both comprehen-sion and retelling in primary grade children.

For students at True Narrative levels of development, Westby (1991) suggested using stories that highlight aspects of the story grammar that are most likely to be difficult for students with LLD. She advocated helping students become aware of character traits by reading several books about one set of characters and having students discuss and list the character's attributes. This procedure lends itself well to having students write their own stories about the characters they have been discussing, being sure to maintain the personalities they have described. Series popular with chil-dren, such as *Harry Potter* (Rowling [Scholastic]), *Artemis Fowl* (O. Colfe [Hyperion]), *Little House on the Prairie* (L.I. Wilder [HarperCollins]), *Encyclopedia Brown* (D. Sobel [Random House]), or the Narnia books (C.S. Lewis [HarperCollins]) can be used in this way.

Students with LLD also are likely to have trouble understand-ing how feelings can motivate actions in stories. Westby (2005) suggested that students can be encouraged to talk about the feel-ings portrayed by characters in the pictures, to give words for the feelings, and to talk about how the feelings drive the action of the story. Students can then make posters by cutting out or drawing pictures of people who exemplify emotions they discussed in the story. Alternatively, Hoggan and Strong (1994) suggested making an "Internal States Chart." Each character in a story is listed, and students are encouraged to talk about how that character felt at dif-ferent points in the story. An example of an Internal States Chart, based on the story of "Androcles and the Lion" (Baldwin, 1955), is given in Table 12-5.

BOX 12-11   Examples of Communicative Reading Strategies to Improve Story Comprehension during Oral Reading

STRATEGY	EXAMPLE FROM *A TALE OF THREE WISHES* (SINGER, 1962)	EXAMPLE CRS QUESTION
Summarize as you read	Child reads first two paragraphs of story	"So now you've read the setting of the story; tell us where it happens and who is in the story."
Explain and define new words	Child reads: "Each Thursday was market day . . . [when people came to town] to sell grain, potatoes, . . . and buy salt, kerosene . . . "	"So lots of things were being bought and sold on market day. Why do you think they needed to buy *kerosene?* Do you know what they used it for? Has anyone ever used kerosene? It was used in lamps before people had electricity."
Clarify pronoun reference	Child reads: " . . . Someone told them that on [a certain day] the sky opens . . . . Those who happen to see it have a minute's time to make a wish."	"So who gets to make a wish?"
Provide cohesive ties	Child reads, "Children must go to bed early but the three stayed up until their parents fell asleep."	"Even though children usually had to go to bed early in those days, these three stayed up late. Why? Yes, they stayed up to try to see the sky open. They should have gone to sleep *but* they stayed up.

Adapted from Crowe, L. (2005). Comparison of two oral reading feedback strategies in improving reading comprehension of school-aged children with low reading ability. *Remedial and Special Education, 26,* 32-42.

Student Ideas

Pooh wants to visit Rabbit in Rabbit's hole.
Rabbit is worried.
Pooh eats all Rabbit's food.
Pooh tries to get out.
He gets stuck.

Rabbit tries to help.
Rabbit gets Christopher Robin.
Christopher Robin says Pooh has to wait to get thin.
He reads to Pooh.

In Which Pooh Goes Visiting and Gets into a Tight Place

Setting — Characters — Pooh (Hungry Greedy) — Christopher Robin (Wants to help) — Rabbit (Worried Polite)

Place — Hundred Acre Wood

Problem — Pooh eats too much — Can't get back out the hole he came in

Actions — Pooh (Tries to crawl out Rabbit's hole) — Rabbit (Tries to push Pooh out — Gets Christopher Robin)

Consequence — Christopher Robin reads to Pooh while Pooh waits to get thin

FIGURE 12-7 Flow chart of A.A. Milne's (1926) "In Which Pooh Goes Visiting and Gets into a Tight Place." (Adapted from Hoggan, K., & Strong, C. [1994]. The magic of "once upon a time": Narrative teaching strategies. *Language, Speech, and Hearing Services in Schools, 25,* 76-89; and Ollman, H. [1989]. Cause and effect in the real world. *Journal of Reading, 33,* 224-225.)

TABLE 12-5 An Internal States Chart for the Story "Androcles and the Lion"

Character	Feeling	Event	Motive
Androcles	Fear	Meets lion	Lion may eat him
Lion	Pain	Roars and frightens Androcles	Thorn in foot
People who watch Androcles and Lion in arena	Surprise	Lion will not eat Androcles	They expected lion to be fierce

Adapted from Hoggan, K., & Strong, C. (1994). The magic of "once upon a time": Narrative teaching strategies. *Language, Speech, and Hearing Services in Schools, 25,* 76-89; and Baldwin, J. (1955). Androcles and the lion. In *Favorite tales of long ago.* New York: J.P. Dutton.

Students with LLD often have trouble recognizing how characters' plans and intentions affect events in the story. Here Westby (2005) suggested using "trickster tales," in which a character achieves goals through deceit. Some examples include *Miss Nelson Is Missing* (Allard & Marshall, 1977), *Tales of an Ashanti Father* (Appiah, 1989), *Stone Soup* (Brown, 1947), *Iktomi and the Boulder: A Plains Indian Story* (Goble, 1988), *Anansi and the Moss-Covered Rock* (Kimmel, 1990), *How Rooster Saved the Day* (Lobel, 1977), and *Raven the Trickster: Legends of the North American Indians* (Robinson, 1982). Jarvey and McKeough (2003) found that using character webs to help students map out the strengths, weaknesses, desires, and fears of characters in trickster tales was particularly helpful in understanding these story forms

(Figure 12-8). Students can discuss how the character tricked others in the story, how their actions did not match their intentions, and whether the characters were right to deceive as they did. For follow-up, older students can write a story about a time, real or imagined, that someone tricked them and how they felt when they realized what happened.

Other procedures for working on story comprehension can be adapted from material designed for reading comprehension activities. The clinician can adapt these materials by reading the text to the students, reading the students the comprehension questions, allowing the students to work on answering the questions in cooperative learning groups, and having the students generate their own comprehension questions to follow up the texts provided in the

FIGURE 12-8 Character web for use with trickster tales.

Strengths:

Weaknesses:

Desires:

Personality traits:

Character:

Fears:

Age and appearance:

Dislikes:

Likes:
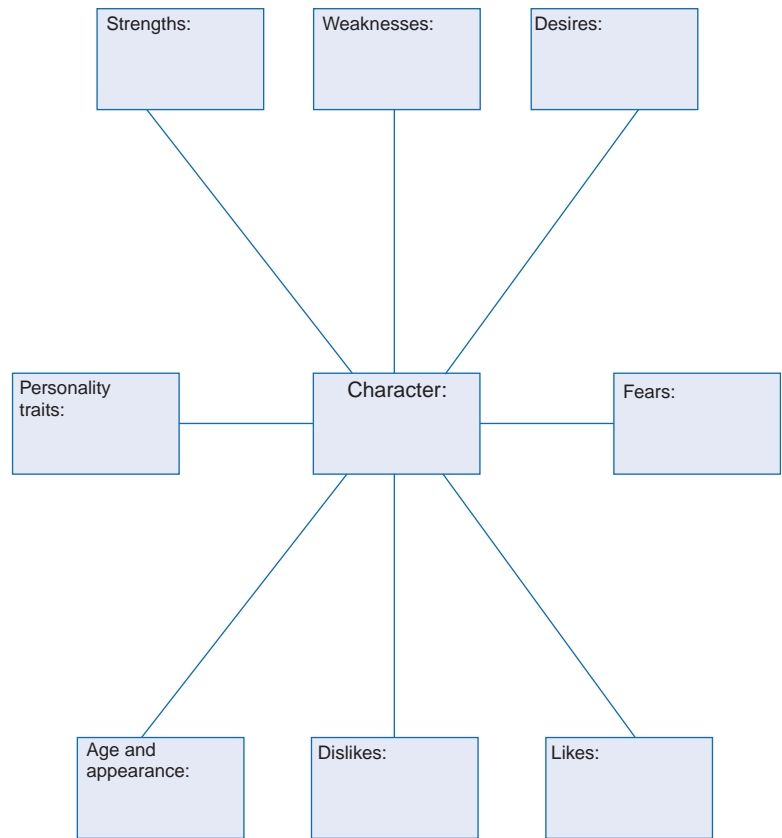
materials. It is important, though, to avoid too-heavy reliance on these traditional kinds of comprehension materials that focus on the details, sequences, facts, and literal interpretations necessary but not sufficient for authentic comprehension of texts. Kamhi (1997) and Westby (2005) argued that these basic comprehension activities should be supplemented by those that involve the reader in a more elaborated and personal response to the story. These activities include connecting personal experiences to the story; finding similarities between the story and others the students have read or heard; and talking about not only what characters do but about how they feel and what their plans, goals, and motivations for action are.

One way to approach this more elaborated level of comprehension was proposed by Hoggan and Strong (1994). They described the question-answer relationship techniques (QART) developed by Raphael (1984) to deepen students' understanding of narrative texts. Here, a clinician would first introduce four types of questions most frequently asked about stories. The clinician would ask example questions of each type about a story the group had read or heard. Students would then be encouraged to find the answers, using information from both the text and their own background knowledge. Examples of the four question types used in this technique, using *Three Billy Goats Gruff* (Rudin, 1982) as the sample text, can be found in Box 12-12. Mastropieri and Scruggs (1997) have shown that teacher-led questions such as these are an especially effective technique for improving text comprehension in students with LLD, particularly if the activity is followed by instruction that leads students to use self-questioning strategies in their independent reading.

Whatever techniques are used to enhance story comprehension, recent research (Adams, 1997; Catts, 2009; Pressley, 1998; Pressley & Wharton-McDonald, 1997; Stahl, 2004) has demonstrated that comprehension skills must be addressed with direct instruction that teaches children explicit strategies for getting meaning from what they read or hear, and this is even more true for students with LLD (Catts, Adolf, & Weismer, 2009; Gleason, 1995; Nation, Clarke, Marshall, & Durand, 2004; Rabren, Darch, & Eaves, 1999). Activities such as the ones outlined in this section, then, make excellent collaborative teaching lessons, as well as direct service activities. All the students in the classroom, as well as those with special needs, benefit from this kind of direct comprehension instruction. And, of course, they are appropriate activities for Tier II and III reading comprehension instruction.

Composing Narratives: Supporting the Development of Writing

Narrative production provides an excellent context for implementing our principle of integrating oral and written language in intervention. Norris and Hoffman (1993) suggested some ways to start the process of producing stories with students at low levels of writing ability. Beginning writers can be given a photocopy of a page or pages from a favorite story and some typewriter correction fluid. They can be asked to change as many elements of the story as they like by "whiting out" a word or words and supplying their own replacement words. Later, specific kinds of alterations can be used, such as asking the student to add to the text by putting in adjectives, prepositional phrases, or new clauses.

Ukrainetz (2007) suggests another strategy for this level of story production. She uses "stickwriting" to help children at early narrative levels preserve the stories they produce. This technique

BOX 12-12 Question Types Used in the QART Technique

QUESTION TYPE 1: RIGHT THERE
The answer can be found easily in the story. The words for the question and the words for the answer can be found in the same sentence.
 Q1: Why did the littlest billy goat decide to cross the bridge?
 A: He couldn't wait any longer to eat the sweet grass on the other side.

QUESTION TYPE 2: THINK AND SEARCH
The answer can be found in the story but requires information from more than one sentence or paragraph.
 Q2: Why were the billy goats afraid to cross the bridge?
 A: A mean troll lived under the bridge, and he threatened to eat anyone who tried to cross.

QUESTION TYPE 3: AUTHOR AND YOU
The answer is not in the story. Students need to think about what they already know about the topic and combine that knowledge with what the author provides in the story to infer the answer to the question.
 Q3: Why did the troll let the littlest billy goat go by without eating him?
 A: He was greedy and thought that he could get more to eat by waiting for the bigger brother.

QUESTION TYPE 4: ON MY OWN
An inferential question that encourages students to search their knowledge base. The answer to the question is relevant to the text but does not appear in it.
 Q4: What would you do if a bully like the troll in the story was keeping you and your friends from going somewhere?

Adapted from Hoggan, K., & Strong, C. (1994). The magic of "once upon a time": Narrative teaching strategies. *Language, Speech, and Hearing Services in Schools, 25,* 76-89; and Raphael, T. (1984). Teaching learners about sources of information for answering comprehension questions. *Journal of Reading, 27,* 303-311.

encourages students to plan and record stories using simple picto-graphs in order to give developmentally younger students a quick and easy method for representing characters, settings, and sequences of actions, while avoiding the frustration often involved in writing at this level. She suggests using "stickwriting" to help students plan and represent time sequences in their stories. This technique, along with verbal prompting, can help students to sequence events in their stories ("What happened first. Draw a quick picture of that. Then what? Draw that next. Remember to keep the drawing quick and easy."). After the stickwriting is completed, the student "reads" the story back to the clinician with support from the pictographic cues. Research on this technique demonstrates its benefits for increasing length and quality of early narratives and for allowing a greater focus on content, rather than the mechanics of writing (Ukrainetz, 1998). After stories are initially represented this way, they can be translated into more conventional written form. Figure 12-9 presents two examples of students' "stickwriting" stories.
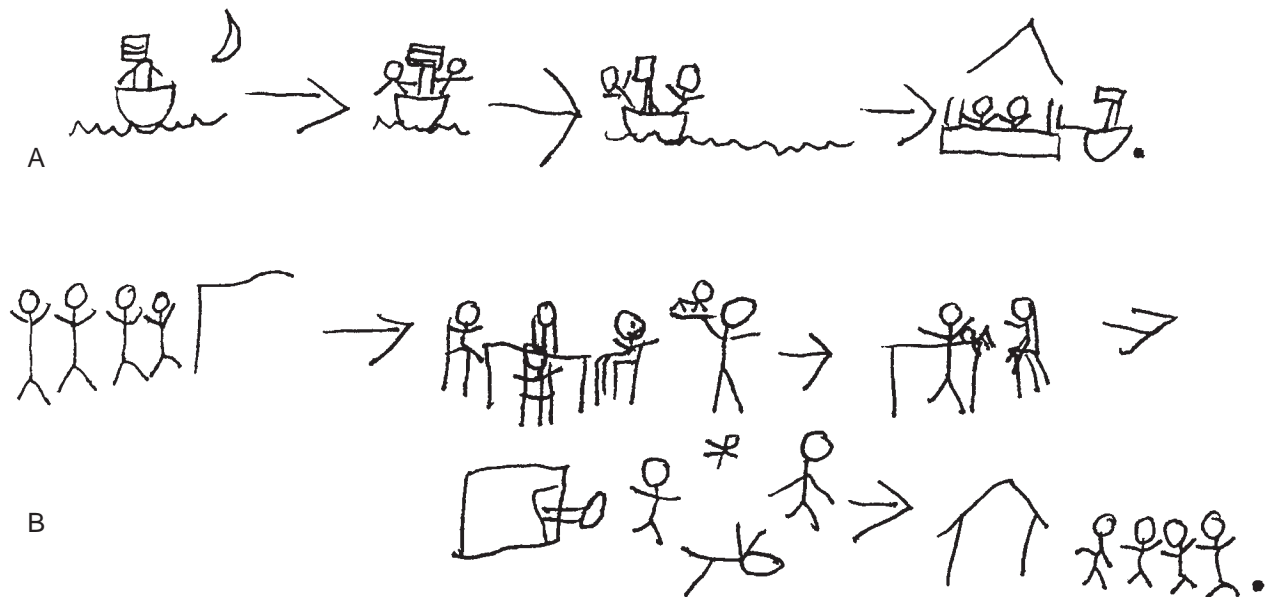
FIGURE 12-9 Two examples of a pictogram from **(A)** a fourth-grade student with language impairment showing a boat rescue story and **(B)** a typical second-grade student showing a frog escaping from a restaurant. (Reprinted with permission from T. Ukrainetz [1988]. Stickwriting stories: A quick and easy narrative representational strategy. *Language, Speech, and Hearing Services in Schools, 29,* 200.)

For students with some facility in the mechanics of writing, who are ready to do more independent narrative production, McCabe, Bliss, Barra, & Bennett, (2008) suggest beginning with personal narratives ("Where did you go on your vacation?"), which are a relative strength for students with LLD, before moving on to fictional stories. Stewart (1991) suggested introducing and discussing the parts of the story grammar, as we did in the comprehension activities, and using these as a basis for students to produce their own stories. This can be done whenever students reach a True Narrative stage of story development. Posting the story grammar elements on a wall chart can serve as a guide to the composition, which may be spoken, dictated, written, or typed, depending on the students' abilities. Other visual aids, such as the Story Grammar Marker (Moreau & Fidrych, 1998), also can be useful.

Story maps or webs also can be used to guide students' composition of stories, using formats like the one in Figure 12-7 and leaving the nodes blank for students to fill in and use later to structure their written productions. Zipprich (1995) showed that these techniques were effective in increasing planning time and improving quality of story writing in children with LLD.

Students also can be asked to generate group stories by modifying stories they have read or heard. They might listen to the clinician tell "Goldilocks and the Three Bears," for example, and then read James Marshall's (1988) humorous version of the tale. Another possibility is to listen to "Little Red Riding Hood," then read the Chinese version, *Lon Po Po* (Young, 1989). They could then be asked to write their own version. The resulting story can be illustrated and read to the rest of the class or to younger students. Later activities can include generating stories about students' own experiences as they relate to a literature selection they hear. If students are reading *Little House in the Big Woods* (Wilder, 1932) in class, for example, they might write stories about a time they helped their parents make or do something at home. Students can be reminded to refer to the story grammar visual aid to guide their compositions. Many additional ideas for facilitating narrative skills can be found in Apel and Masterson (2005); DeKemel (2003); Falk-Ross (2002); Merritt, Culatta, and Trostle (1998); and Roth (2000).

Word-processing computer programs also can be used in these kinds of activities. Software programs, such as *Kidspiration* (Inspiration Software, Portland, OR), *Kidwriter* (Spinnaker Software, Cambridge, Mass.), *Explore-a-Story* (D.C. Health, Cambridge, Mass.), and *Logowriter* (Log Computer Systems, New York), allow students to produce text and select graphics to illustrate stories and to rearrange elements of classic stories to create new versions. Cochran and Bull (1991) discussed additional ways to integrate word processing in language instruction at the L4L stage. Roth (2000) summarized a range of strategies, in addition to those already mentioned that can be used to improve narrative production in students with LLD. These are summarized in Box 12-13. Many of these approaches will be discussed in more detail later in this chapter and in Chapter 14.

Cohesion

Although cohesive markers such as pronouns, conjunctions, and articles (*a/an/the*) are used in a variety of texts in addition to narratives, stories rely especially on cohesion as an important element in their structure, and they are excellent contexts for developing cohesion skills. Let's look at some ideas for developing awareness and use of cohesive markers in narratives. As usual, we want to choose narratives that come from classroom literature selections or coordinate with curriculum themes.

Wallach and Miller (1988) provided a variety of activities for developing cohesive skills. They suggested working on pronouns by taking sentences that contain a referent and a pronoun from a literature selection. If we use the example of *Little House in the Big Woods* again, we might choose the following sentences:

> Every evening before he began to tell stories, Pa made bullets for his next day's hunting. Laura and Mary helped him.

The clinician can help the students to identify pronouns and referents in the sentences. The students can look for additional examples of pronouns and their referents in the text and generate their own sentences with pronouns about the characters in the story. The clinician can then present sentences with ambiguous referents, like the following:

> He told them a great story.

Students can be asked to guess what characters from the story might go with the pronouns. They can then write more text around

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BOX 12-13   Procedures for Improving Narrative Production

Prewriting: Drawing by hand or with computer programs such as *The Amazing Writing Machine* (Broderbund, 1999), The *Ultimate Writing and Creativity Center* (The Learning Company, 1996), and *Curious George Paint and Print Studio* (Pearson Software, 2000).

    Story web: A graphic organizer in which each element of story grammar is represented as a node on a web.

    Schematic story structure: Each story grammar component is sequentially introduced and defined. Students identify these elements in stories, and build their own stories using the following:

    Story frames: written starters for each story grammar element are provided in a cloze task.

    Scrambled stories: a written story is presented with one element out of sequence; students recognize it and restructure.

    Story grammar facilitation: students are given cards with story grammar elements written on them, which they use to organize their story.

    Story grammar cue cards: students are given a check list containing the story grammar elements that they check off as they include each element in their story.

    Story prompts: a set of questions or prompts the student answers to produce each story grammar element.

    Acronyms: SPACE (Setting, Problem, Action, Consequence, End), for example, are used to help students remember to include all story parts in order.

    Self-regulated strategy development (SRSD): This approach involves teaching the planning, production, and revision processes. It can make use of "think sheets" that serve as cues for student to carry out specific activities within each of these phases.

Adapted from Roth, F. (2000). Narrative writing: Development and teaching with children with writing difissilities. *Topics in Language Disorders, 20(4),* 15-28.

the sentence to remove the ambiguity. Other activities might involve substituting pronouns for some of the nouns in the text to see whether it can still be understood; substituting nouns for some of the pronouns; and writing summaries of individual chapters in the book, using pronouns carefully to provide cohesion. As always, metalinguistic discussion should accompany each phase of the activity, to give the students opportunities to evaluate the effect of using and changing pronouns on the cohesion of the text (or on "how the story hangs together and is easy to follow").

Work on the development of cohesion through conjunction use is particularly helpful because complex sentences that encode various semantic relations between propositions can be used in the process. These sentences and relations are frequently identified as intervention targets in our assessment of students with LLD. Working on complex sentence forms and on combining semantic relations between propositions in the context of narrative is another way to adhere to one of our guiding principles; that is, to integrate intervention targets identified in the assessment with work toward a literate language style. Let's look at some ideas for doing this.

Wallach and Miller (1988) suggested taking propositions from classroom literature selections and working on combining them using appropriate conjunctions and relations. Following Lahey's (1988) sequence as discussed earlier, we would work on relations and conjunctions in the following order:

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1. Temporal relations with conjunctions *then, when, before, after,* etc.
2. Causal relations with conjunctions *because, so,* etc.
3. Conditional relations with conjunctions *if-then*
4. Epistemic relations with conjunction *that*
5. Notice-perception relations with wh- conjunctions such as *what, where, how,* etc.
6. Specification relations with conjunctions *that, which*
7. Adversative relations with conjunctions *but, though, although,* etc.

Let's use *Little House in the Big Woods* as our example again. Suppose you were working at early stages with third-graders. You might ask students to combine the following propositions from the story:

Laura touched the shiny, hot bullet.
Laura burned her finger.

For later stages of development, perhaps with fifth-graders, you might choose the following propositions:

The bullet was too hot to touch.
The bullet shone so brightly that Laura couldn't help touching it.

Either way, you would encourage the students to think about how the two ideas might go together and discuss possibilities for how they might be combined in one sentence. Students could then

generate a sentence, with the clinician's help at first, that combined the two ideas with a conjunction or "hooking-up word." A wall chart listing conjunctions, each with a hook drawn from it to symbolize its linking function, could serve as a reference. Students might be asked to generate, orally or in writing, other ideas in the story that could be "hooked up" with the same conjunction. Students might then write their own story, with the stipulation that the target conjunction appear three times in it. When other conjunctions have been addressed, stories can be required to contain one instance of each of the conjunctions the students have been learning. As always, stories should be discussed when completed, to allow students to evaluate how well they have used the target conjunctions to "hook up" ideas in the story.

Naremore, Densmore, and Harman (1995) suggested a strategy-based approach for helping children produce cohesive narratives. They begin by having students identify the main idea in a story read to them and then in a story they intend to produce. They are then instructed to find a way to tie each sentence to the main idea by using one of the four following devices:
1. Pronouns
2. Repetition of key words
3. Substitutions for key words
4. Lists of items relating to the main idea
Ukrainetz (2007) suggests giving students clinician-written examples of stories that omit these cohesive ties asking the students to change them to improve their cohesion. They can then develop their own versions, using appropriate cohesive markers.

Artful Story Telling
Ukrainetz & Gillam (2009) caution that students with LLD need help with more than just the "basics" of story production. They advocate helping clients become more artful storytellers. Ukraintz et al. (2005) studied the development of artful story telling in typically developing children. Using the elements in Box 12-14, they found that appendages were used least frequently; orientations were more common, and evaluations were most frequent, while use of all elements increased with age from 5 to 12 years. Ukrainetz and Gillam also report that children with LLD improve when given opportunities for subsequent retellings of stories; this implies that getting students to produce narrative more than once (as in "rehearsals" for telling the story to family and classmates) can be helpful in eliciting higher levels of story production. In addition, these findings suggest that students in middle elementary grades (3 through 5) should begin using features in Box 12-14 in their in their stories. Clinicians may want to begin working on increasing artfulness in story-telling for struggling writers in intermediate grades, starting by encouraging increased use of evaluations, then orientations, and finally appendages. Again work in oral contexts might precede transitioning to their use in writing.

The Metas

Many of the activities we've been discussing in this chapter have metalinguistic components. We want to provide students with the opportunity to talk about and evaluate all the language they use in our intervention program, to bring it to a higher level of awareness. The following activities provide some additional suggestions for helping students attend to, think about, and use "meta" skills.

*Phonological Awareness: A Foundation
for Decoding and Spelling*
We've already talked at length about the importance of phonological awareness in the process of learning to read and about the need to integrate phonological awareness with other approaches to

BOX 12-14 Elements of Artful Story Telling

CATEGORY	ELEMENT	EXAMPLE
Appendage	Introducer	*Once upon a time . . .*
	Abstract	*Alexander was having a bad day.*
	Theme	*"It was a terrible, horrible, no good very bad day."*
	Coda	*"Some days are like that, even in Australia."*
	Ender	*And they lived happily ever after.*
Orientation	Character names	*Alexander, Doggie*
	Character roles	*His mother, the mail carrier*
	Ongoing conditions	*It was a dark and stormy night.*
	Personality attributes	*He was always friendly.*
Evaluation	Modifiers	*Angrily, slyly*
	Phrases and expressions	*"terrible, horrible, no good, very bad . . . "*
	Repetition	*Very, very dark, He tried and tried*
	Dialogue	*"I've found it!" he cried.*
	Internal state words	*Wanted, attempted, hoped, wondered, enthusiastically*

Adapted from Ukrainetz, T. (2007). Assessment and intervention within a contextualized skill framework. In T. Ukrainetz (ED.) *Contextualized language intervention* (pp. 7-58). Eau Claire, WI: Thinking Publications.

reading instruction. Phonological awareness may be part of the intervention program for primary grade children with higher-level phonological difficulties that were identified during assessment using tasks or the checklists we discussed in Chapter 11, with classroom-based methods like those suggested by Justice et al. (2002), or through ongoing monitoring in RTI programs. Even students in intermediate grades who are having reading difficulty can benefit from explicit phonological awareness instruction with the SLP (Ukrainetz, 2007), in conjunction with remedial reading help from the reading or LD specialist. Remember, though, that we don't want to develop PA as an isolated skill. We only want to address it to the extent that it helps students decode words for reading and encode for spelling. For older students, PA activities should be used only until students can accurately segment words into sounds, represent sounds with appropriate letters, and synthesize letter sounds to decode words. At that point, more targeted reading and spelling instruction should be implemented (Catts, 1999a; Torgesen, Otaiba, & Grek, 2005).

But don't children who are struggling to learn to read need a different kind of instruction than faster learners? Shouldn't these children be given more visually-based or context-based whole language strategies rather than PA training? Foorman and Torgesen (2001) reviewed literature that indicates children who struggle to learn to read do *not* need a different program of instruction than other children; instead they need more of the same: more intensive provision of explicit and comprehensive instruction in individual and small group settings that provide additional guided practice with developing phonological awareness and alphabet knowledge, along with high levels of both emotional support and cognitive scaffolding. Ryder, Tunmer, & Greaney (2008) tested this hypothesis and found that explicit instruction in phonological awareness was more effective than whole language instruction for improving word recognition and reading comprehension for struggling first graders, and effects persisted over 2 years. Blachman et al. (2000) showed that the same applied to children in grades 2 and 3 with poor reading skills. And Wright and Jacobs (2003) demonstrated that combining phonological awareness instruction with direct teaching of metalinguistic concepts (such as letter, word, syllable, vowel, consonant) and metacognitive strategies (such as planning

and self-monitoring) was even more advantageous for struggling readers than PA alone. That's why it makes such good sense for SLPs to work with teachers in primary classrooms to deliver this kind of explicit Tier I instruction to all children, and observe who has trouble with it, as Justice and Kaderavek (2004) suggested. Research (Hadley, Simmerman, Long, & Luna, 2000) provides some evidence that an SLP/classroom teacher collaborative approach is more effective in preventing reading failure than is the traditional classroom teacher-alone model. And for children who have difficulty mastering early reading and are referred for Tier II and III instruction, extended, intensified opportunities to practice PA and enhance alphabet skills and letter-sound correspondence is the best prescription (Snow, Burns, & Griffiths, 1998).

Phonological awareness training can take place in a variety of contexts. PA activities can be used in kindergarten and primary grades with groups in Tier II or III instruction, in individual clinical sessions, or in collaborative classroom lessons. Some materials for phonological awareness activities are commercially available, including Adams, Foorman, Lundberg and Beeler's (1998) *Phonological Awareness in Young Children: A Classroom Curriculum;* Blachman, Ball, Black, and Tangel's (2000) *Road to Code;* DeBruin-Parecki's (2008) *Effective Early Literacy Practice;* Donnelly, Thomsen, Huber, and Schoemer's (1992) program; Gillon's (2000b) *Phonological Awareness Training;* Haager, Dimino, and Windmueller's (2006) *Interventions for Reading Success;* Spector's (2009) *Sounds like Fun;* and Stone's (1992) *Animated Alphabet,* to name but a few. In addition, computerized programs on phonological awareness have also been shown to be useful adjuncts to classroom PA instruction, especially when modules include both phonological awareness and phonics (letter-sound association) activities. Macaruso and Walker (2008), Segers and Verhoeven (2004), and Wild (2009) for example, showed that supplementary computer-assisted PA activities significantly improved PA scores for kindergarten children, particularly for those with the lowest pretest scores. Ecalle et al. (2009) found similar results in both reading and spelling for older students with dyslexia.

Scheule and Boudreau (2008) presented a sequence of acquisition of PA skills that can serve as a curriculum guide for developing

a clinician-constructed PA program. This sequence is summarized in Figure 12-10. As their figure shows, the PA skill most closely related to reading is phoneme segmentation (that is, being able to break a word into its component sounds [for example, segmenting *dog* into /d/, /a/, and /g/]), although they argue that children eventually need not only to segment sounds but to practice segmentation in activities in which sounds are represented by letters. Catts (1999b), Gilbertson & Bramlett (1998), and Nation & Hulme (1997) demonstrated that letter-sound correspondence (knowing that the letter *B* stands for the sound /b/) and blending (being able to combine sounds to form a word [for example, what do /d/ and /at/ make when you put them together? (*dot*)]) are also critical for learning to read. These are the skills, then, that we will want to focus on in providing intervention in this area.

We would start with rhyming and syllable segmentation for children with very low levels of PA. Using rhyming texts from classroom literature selections, we would encourage students first to listen to the rhymes in the stories. Scheule and Boudreau suggest also having children judge if two words rhyme, match words that rhyme, and play "odd one out" games identifying which word of three given does not rhyme. Eventually we will want to offer students the chance to generate rhymes by substituting other words that rhyme as they listen to rhyming books, make up nonsense words that rhyme, and write alternate or additional verses for the rhymes in group story contexts. The focus in these activities is on awareness of sound patterns, not yet on spelling. But when two

rhyming words that are spelled with the same final sequence of letters come up, we can take the opportunity to write them, pointing out that they not only sound the same, but use the same letters at the end.

Rhythmic activities are fun for developing syllable awareness. Scheule and Boudreau suggest starting with compound words (*cupcake, hotdog*), moving the two-syllable words (*candy, mitten*), and then to longer ones (*elephant, hippopotamus*). Students can form a rhythm band and "play" the number of syllables in words taken from classroom literature or a theme-based unit. Paul (1992b) suggested "dances with words" in which students perform a different movement for each syllable in words from classroom reading selections.

Working on alliterative words is a common practice in primary classrooms, and Gilbertson and Bramlett (1998) have shown that this skill, too, is predictive of reading achievement. Scheule and Boudreau suggest starting this work with continuent sounds, which are easier to "stretch." Children can be given practice, judging if two words start with the same sound, which of three words starts with a sound different from the other two, generating a word that starts with the same sound as one given by the adult, and sorting sets of picture cards into groups that start with the same sound. Students can then make group or individual books with drawings or cut out pictures of words that have the same first sound. The books can be theme based to relate to classroom content. They might focus on foods that begin with /m/ in a nutrition unit
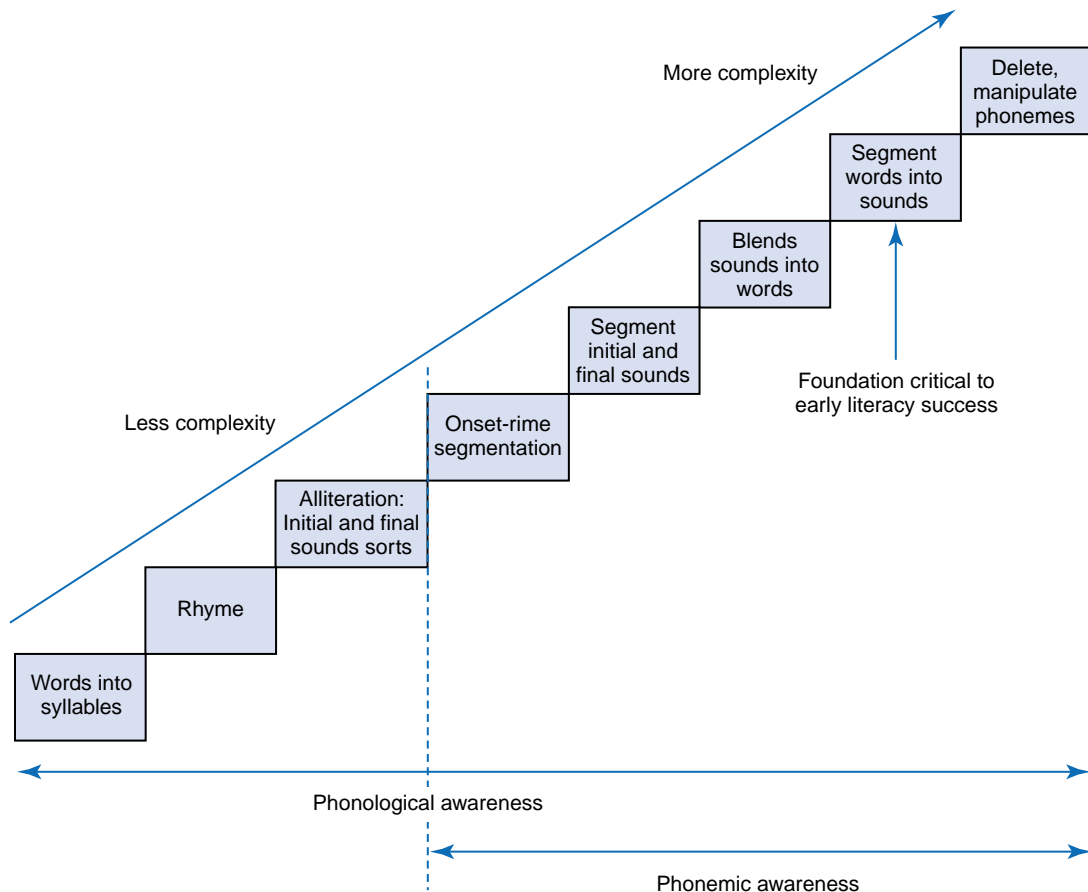
FIGURE 12-10 Sequence of phonological awareness development. (From Schuele, C., & Boudreau, D. [2008]. Phonological awareness intervention: Beyond the basics. *Language, Speech, and Hearing Services in Schools, 39,* 3-20.)

or vehicles that begin with /t/ for a transportation unit. Letters also can be associated with the sounds, by writing the letter for the sound the words share on each page of the book. The same process can be repeated for final consonant sounds. Students in phonological therapy can be encouraged to produce these theme-related picture albums using sounds from their intervention targets.

Yopp (1992) provided songs and rhymes to be used in practicing these skills in large group activities. For example, a jingle can be sung to the tune of "Jimmy Crack Corn":

Who has a word that begins with /s/?
Who has a word that begins with /s/?
Who has a word that begins with /s/?
It must begin with /s/!

The group sings the song together, then each student volunteers a word to be sung in the lyric:

Sun is a word that begins with /s/!
Sun is a word that begins with /s/!
Sun is a word that begins with /s/!
Sun starts with the /s/ sound!

Alternatively, students can be encouraged to identify initial sound similarities among words. Yopp (1992) suggested an activity using an "Old MacDonald" variation:

What is the sound that starts these words:
Toad, train, top (Wait for response from students.)
/t/ is the sound that starts these words:
Toad, train, top
With a /t/, /t/, here . . .

The same format can be used to help students identify words that share a common final (*duck, cake, beak*) or medial (*leaf, deep, meat*) sound. Scheule and Boudreau (2008) suggest following up these kinds of activities with having children explicitly indentify the first ("What sound does *fun* start with?") and last ("What sound do you hear at the end of *sun*?") sounds of familiar words.

Counting sounds and segmenting sounds in words is the next phase of the development of PA and is crucial to reading development. Several activities have been suggested in the literature to achieve this step. Yopp proposed using the tune of "Twinkle, Twinkle, Little Star" as a basis for sound counting:

Listen, listen to my word
And count all the sounds you heard. (spoken): top
/t/ is one sound
/a/ makes two sounds
/p/ makes three sounds
Top has three sounds, it's true
What a good listener that makes you!

Additional suggestions from Yopp and Yopp (2000, 2009) appear in Box 12-15.

Elkonin's (1973) sound-counting technique used small disks or coins to represent sounds. Children are presented with a picture of a CV (*me*), VC (*up*), or CVC (*sun*) word, with a small box drawn under the word for each sound it contains, as shown in Figure 12-11. The clinician says the word, prolonging the first sound while modeling moving one coin into the leftmost box. The next sound is pronounced as the clinician moves another coin into the next box. Students are then encouraged to try the same thing. Later words with CV, VC, and CVC shapes are provided for students to do independently. They can be asked to count how many coins they need for other words with these shapes. Eventually, more complex word shapes can be added. When students are proficient at this segmentation task, one type of coin can be provided for the consonants in the word and a different coin for the vowels. Eventually, students are given disks with the letters to represent each sound in the word they are segmenting, and the correspondence between the letter and the sound is highlighted during the activity. The words used in the activity can then be incorporated in stories or poems the students produce around classroom themes, with the students providing spellings for the words based on their segmentation activities. Torgesen et al. (2005) suggested additional activities along this line. Gillon's (2000b) program, which demonstrated positive effects of PA training on reading, follows similar procedures.

Word sorts are another technique that has been shown to facilitate PA (Joseph, 2000). Here, each child in the group receives a set of chips and three cards, each with a word exemplifying a different word family, such as:
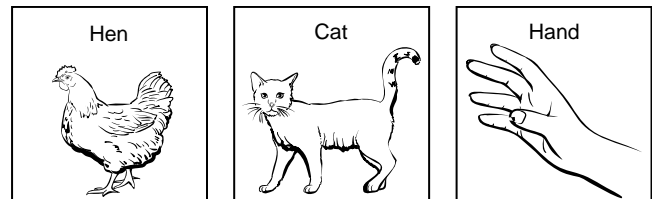
The clinician then reads a word from one of the families (e.g., *pen* [hen family]). The students put a chip on the card the new word belongs to; the clinician then gives each a card with the new word written on it to exchange for the chip. After a number of examples, the clinician gives each student a set of cards with words from the three families written on them for the students to sort visually, calling attention to the similarities in letters in the words among the family (*hen: pen, ten, den; cat: hat, mat, sat; sit:* hand: sand, land).

Another thing we have learned from recent reading research is the importance of combining instruction on letter-sound correspondence and print concepts with PA (Blachman, 1997; Kaderavek & Justice, 2004). Slingerland's (1971) method is another way of reinforcing letter-sound correspondence knowledge in a PA activity. It uses small letter squares, like Scrabble tiles, to allow children to "play" with sounds to segment and synthesize words. A small group of students can be given one vowel tile and several consonant tiles. The sounds associated with each letter can be discussed ("the *o* you have can spell the sound /a/. So you can make words that have the sound /a/ in them. Who knows what sound this letter *b* can spell?"). Students can be asked to see how many words they can form with the five or six letters they are given. Allowing them to synthesize nonsense words adds to the fun of the activity. They can then read one of their words to

BOX 12-15   Additional Suggestions for Phonological Awareness Activities

ONSET-RIME AWARENESS
Mail a Package: Use a large box or container with a lid to serve as a mailbox. Cut a slit in the lid through which cards can be deposited into the box or container. Give each child a picture card of an object and ask each child to show his or her card to the class and name the object. The objects should be single-syllable words such as *cup, ring, flag, street, rug, dog, cat, plum, brick.* The leader says the name of an object by segmenting it into its onset and rime components (c-up, r-ing, fl-ag, str-eet, and so on). The child who has the picture of the object named holds the card in the air, blends the sounds to say the word, and brings the card forward to mail as the group chants:
  A package! A package! What can it be? A package! A package! I hope it's for me!

SOUND SYNTHESIS
Make a Word: Select rime units (such as –at) to focus upon. Have a card with the letters written on it. In a bag have letter cards that may serve as the onset for this family. A child draws a card from the bag. The class says the sound of the letter drawn, blends it with the -at and determines whether or not a real word is made. Students give a thumbs up or thumbs down. For instance, a student draws the card b. Students say /b/ and blend it with /at/, /b/—/at/: bat. Everyone indicates thumbs up because this is a real word. Someone else draws the letter g. Students say /g/—/at/: gat! Thumbs down for this one.

PHONEME AWARENESS
Find Your Partners: Using a set of picture cards with which the children are familiar, distribute the cards so that each child has one. Be sure that each card can be matched with another that begins or ends with the same sound or has the same sound in the medial position. For example, if you choose to focus on ending sounds, you should select cards such as dog and flag, and hat and nut. Then tell the children that once you give the signal, they are each to circulate and find a classmate whose card shares the same sound in the targeted position.
  Bag Game: Have a large grocery bag or box that contains many small plastic bags that can be sealed so that objects do not fall out. In each of these smaller bags place one object and the same number of interlocking cubes as there are sounds in the name of the object. For instance, one bag might contain a key and two cubes that are connected (representing the two sounds in key: /k/ and /i/). Another bag might contain a dime and three cubes that are connected for the three sounds in dime, etc. To begin the activity, ask a volunteer to draw a small bag from the large grocery bag. The child opens the small bag, pulls out the object and the cubes. He or she names the object and then says the sounds in the object, breaking apart the cubes as he or she speaks each sound.
  Scavenger Hunt: Organize children into teams of about three. Give each team a bag or box that has on it a letter and picture of an object that begins with that letter. For instance, one team receives a bag with the letter *M* on it and a picture of a monkey; another team receives a bag with the letter *S* on it and a picture of a snake. Children then set off on a scavenger hunt to find objects in the classroom that begin with their target sound. Children with the *B* bag may locate a baby doll in the housekeeping center, a block in the building area, a brush in the painting area, and a book from the library corner. Children with the bag that has the letter *P* written on it may find a pencil, pen, and paper to put in their bag. Give the children enough time and support to be successful, then bring them together to state their target sound and share their objects. Then they may return their objects, trade bags, and repeat the activity.
  Guess Which One: Show two objects or pictures that start/end with different sounds. Tell the student you are thinking of one of them and they have to guess which. Produce the initial or final sound of one the items, or segment the word into individual phonemes and pronounce them separately (/l/ /i/ /f/), or leave off the first or last sound.

Adapted from Yopp, H., & Yopp, R. (2000). Supporting phonemic awareness development in the classroom. *Reading Teacher, 54,* 130-143; Yopp, H., & Yopp, R. (2009). Phonological awareness is child's play. *Young Children, 64,* 12-21.
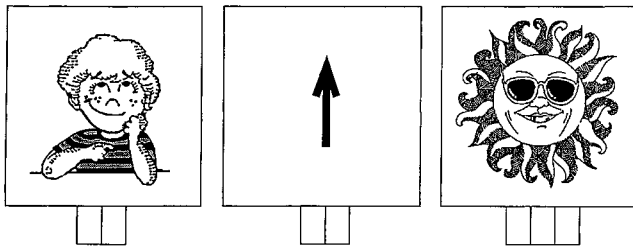
FIGURE 12-11   Phonological segmentation task for words *me, up,* and *sun.*   (Adapted from Elkonin, D. [1973]. U.S.S.R. In J. Downing [Ed.], *Comparative reading*. New York: MacMillan.)

another group, who must guess what letters they used to form it. Later, more tiles can be introduced into the activity. Students can write stories around classroom themes with the words they form or write silly poems with the nonsense words.
  One additional lesson of the recent literature (Gilbertson & Bramlett, 1998; O'Connor & Jenkins, 1995) is the usefulness of incorporating spelling activities in PA programs. O'Connor and Jenkins developed a series of steps in a combined PA/spelling program for kindergartners. Their sequence is presented in Box 12-16.

They were able to demonstrate that kindergartners who practiced representing sounds in spoken words with letters developed more complete generalization of their phonological knowledge, which facilitated their acquisition of decoding and spelling skills. Joseph's (2000) program, for example, includes a third step in which children are given a piece of paper with the three word families they have been using for sorting activities written for them at the top:

Hen	Cat	Hand

BOX 12-16   Sequenced Tasks Used by O'Connor and Jenkins (1995) in a Combined Phonological Awareness/Spelling Program for Kindergartners at Risk for LLD

LESSONS 1–2 (10 MINUTES EACH)
1. Show me the [magnetic] letter that makes this sound.
2. Write the letter that makes this sound.
3. Show me the [magnetic] letter that starts this word.
4. Write the letter that starts this word.
5. Show me the [magnetic] letter that ends this word.
6. Write the letter that ends this word.

LESSONS 3–18 (10 MINUTES EACH)
1. Show me how you spell these words with your [magnetic] letters (6–7 words chosen from selections the children had read or heard in their literature program).
2. Write these words (same 6–7 words).

CORRECTIVE FEEDBACK (IF CHILDREN HAD DIFFICULTY SPELLING A WORD)
1. Say the sound at the beginning of the word. (Model or correct, if necessary.)
2. Show me the letter for the first sound. (Model or correct, if necessary.)
3. Say the next sound in the word. (Model or correct, if necessary.)
4. Show me the letter for that sound. (Model or correct, if necessary.)
5. Say the last sound in this word. (Model or correct, if necessary.)
6. Show me the letter for the last sound. (Model or correct, if necessary.)
7. Now write the first sound, etc.

From O'Connor, R., and Jenkins, J. (1995). Improving the generalization of sound/symbol knowledge: Teaching spelling to kindergarten children with disabilities. *The Journal of Special Education, 29,* 255-275.

The clinician then says words they have worked with in the sorting activities (*hat, pen, sand, ten*), and the students spell each word beneath the word that shares its family.

Higher level PA activities for older students who struggle with reading can involve additional word play and sound manipulation practice. One excellent sound manipulation technique is pig Latin. The word formation rules for pig Latin require taking the first sound (not letter) from a word, putting it at the end, and adding /e/. In pig Latin, *teacher* becomes "eacher-tay." "*Shoe*" becomes "oo-shay." When students are proficient, they can create their own secret languages, specifying the rules, discussing exceptions, and writing out how the code works. Launer (1993) also suggested using the popular "oldie," "The Name Game," which specifies rules for changing the pronunciation of names ("Anna, Anna, bo-banna, banana-fanna," etc.). Again, when students have mastered the rules of this game, they can attempt making them explicit ("First you say the name twice, then say 'bo' and change the first sound in the name to /b/ . . . ") as well as devise alternatives of their own. These kinds of activities help to bring the sound structure of words to a higher level of awareness and also provide students with important opportunities to talk about and manipulate the sounds of language. They fit in especially well with classroom science units on sound energy; social studies units on communication; and literature selections about spies, detectives, people who have trouble understanding each other, or children who form secret clubs. But always keep in mind Catts's (1999a) advice not to focus on PA to the exclusion of other literacy skills. Instead, use a limited amount of these activities to help focus students' attention on sound structure, then work with teachers and specialists to provide more focused instruction and practice in decoding, comprehension, and spelling. PA activities make excellent points of collaboration on spelling instruction, if the SLP works closely with the teacher to choose words for PA activities that are related to classroom spelling lists. And Berninger et al. (2003) showed that combining PA and comprehension instruction resulted in higher gains in reading than PA instruction alone.

Wright and Jacobs (2003) demonstrated that instruction in metalinguistic and metacognitive strategies, in conjunction with PA instruction, also improved reading performance in elementary students with LLD significantly more than PA instruction alone. In addition to increasing PA skills, we want to help students with LLD become more aware of a variety of other aspects of language (metalinguistics) and become more conscious and able to plan their thinking processes (metacognition). Let's examine how we can achieve these goals with elementary school students.

Metalinguistics, Reading Fluency, and Writing

Being aware of how we talk and read involves metalinguistic skills. Fluent reading and writing are the result of both practice of basic skills, such as decoding and graphomotor skills, as well as an awareness the connection between "style" (tone of voice and prosody in reading, for example; word and sentence choice in writing) and the intended meaning. We can use metalinguistic discussions, then, to support the development of students' reading and writing fluency.

Reutzel (2009) defines reading fluency as accurate and effortless decoding at grade-appropriate reading rates using appropriate prosody and phrasing. Bashir and Hook (2009) discuss the fact that fluent reading, one of the key goals of reading instruction identified by the National Reading Panel (2000), requires rapid word identification which, in turn, enables reading comprehension. In fact, they identify fluency as a crucial link between decoding and comprehension. Leahy and Justice (2007); Reutzel (2009); Robertson (2009); and Snow, Griffin, and Burns (2005) identify evidence-based methods for promoting fluency, which include:

- <u>Echo reading</u>: the adult reads a short passage to the student(s)/ the student rereads the same passage aloud
- <u>Choral reading</u>: groups of children read passages together, so that weaker readers are supported by stronger ones

- Guided oral reading: students reread passages 3 to 5 times with feedback and guidance from the adult
- Partner reading: two students read the same text aloud in unison, or alternate turns reading while the partner listens and provides feedback
- Assisted reading: students listen to a prerecorded reading, such as an audiobook, while reading along out loud
- Performance reading, or Readers' Theater: students reread passages multiple times as "rehearsal" for a performance of the reading for friends and/or family, which may utilize costumes and props

Metalinguistic activities, which involve talk about the language within the text, are great follow-up activities to integrate with repeated readings. For example, when reading aloud with an individual student, the SLP can talk about how characters felt in the passage, and encourage the student to read the passage again, with that emotion in his voice (after some metalinguistic discussion about how we use our voice to convey feelings). For additional repeated readings, the students' attention can be drawn to other metalinguistic aspects of the text. They can be asked to identify punctuation marks, and they can be reminded to "pause when you come to a comma," or "raise your voice when you come to a question mark"; we can ask them to attend to the ends of paragraphs in the passage (after some metalinguistic talk about what a paragraph is and why we need them), and to stop briefly when they come to end of each paragraph in the passage; between repeated readings, they can be asked metalinguistic questions, such as "What's your favorite word in the passage?" or "Which word appears more than once?" or "Can you find two words you read that mean pretty much the same thing (synonyms)?"

Readers' Theater rehearsals can also provide opportunities for metalinguistic discussions about why the author chose a particular word, how the author uses the language s/he chose to create a feeling within the story, and how they can best convey that feeling through their performance. Leahy and Justice (2007) provide additional discussion on using Readers' Theater. Haager et al. (2007) provide additional activities for developing fluency.

Other metalinguistic activities can support the development of students' writing. Students can be asked to rephrase a sentence or paragraph, simply finding another way to say the same thing. Later activities can include rewriting a textbook passage for a younger student, recasting a text selection as a picture or cartoon, and reworking material from textbooks as diagrams or maps. All these activities can help students focus on the form of communication.

Editing is an excellent activity to develop metalinguistic awareness. Students with LLD can edit their own and each others' classroom written work with input from the SLP, either in small groups or in metalinguistic activities taught collaboratively with the whole class. The clinician can begin by offering a sample, in which some intentional mistakes have been inserted. Errors of syntax ("We took bus a on a field trip"), morphological marking ("Our class visit a museum yesterday"), word use ("Everything in it was modern, at least a hundred years old"), conjunction choice ("We were late so the bus had a flat tire"), spelling ("We were glad to have a day away from skool"), capitalization and punctuation ("the bus ride was long?"), and logic ("We knew we'd get back in time for lunch, so we ate at the museum") can be included, depending on the students' levels and the activity's goals. In initial editing work, one type of error at a time should be included. Later, errors of different types can be interspersed in the selection. As the students identify the clinician's errors, discussion about what the error is, why it

is wrong, and what should be done to change it can occur. Books that encourage metalinguistic awareness, like those in Box 12-6 can also provide opportunities for metalinguistic discussion.

Students can then be asked to write a related sample, intentionally including errors of the type they just discussed. Work can be exchanged so that students can discover these intentionally inserted errors. This introduction helps students to feel that errors are OK and that working with errors is what editing is all about. No one produces perfect work the first time. What is important is to be able to evaluate our own writing and recognize and correct errors when they appear. As a final step, students' classroom assignments can be exchanged for editing. Pretending to be newspaper editors working on each other's copy (even wearing green eye shades or using a blue pencil, like old-time editors) can add extra interest to this activity. Using the edited writing to compile a class newspaper or magazine that is distributed to other students or parents on paper or via the Web can provide a meaningful outcome.

Spelling activities are another excellent context for metalinguistic discussion. Using word study approaches to spelling, like those discussed earlier, sets the stage for focusing attention on the sound structure and meaning relations among words. Apel and Masterson (2001) and Scott (2000) provide additional ideas for metalinguistic spelling instruction.

Metacognition: Organizational and Self-Regulation Skills

We've talked about the importance of helping our students with LLD become more aware of the processes needed for successful participation in school. Developing skills for organizing and evaluating a variety of thinking processes involves *metacognition*—the ability to assess our own cognitive processes. Although the development of metacognitive skills is a dominant theme in our work with adolescents with LLD, we can begin to build these skills at the L4L level. Moreover, work on metacognition is an additional source of material for classroom collaborative lessons. What teacher wouldn't want a specialist to help his or her whole class improve organization and study skills? In this chapter, we'll look at some beginning metacognitive activities and examine some more advanced ones in Chapter 14.

Comprehension Monitoring

Dollaghan (1987) presented a series of activities that has been successful in helping elementary students learn to monitor and assess their comprehension. Using this method, the clinician tells the student to do something in a voice that is too soft to be heard, spoken too fast to be understood, or spoken with competing noise (knocking on the table with a wooden block). Before hearing each direction, students are told to ask if they don't understand the message. To follow our principle of making intervention relevant to the classroom, we can use directions like those the teacher typically gives. When students have experienced several sessions of this training and consistently request clarification for the inadequate messages, more complex inadequacies are introduced. At this next level, adequate directions are interspersed with those that are inexplicit or ambiguous, contain unknown words, or are inordinately complex. Students might be told, for example, to "Write an *epistle* to your mother" (unknown word), "Put your name here" (no gestural cue; inexplicit), or "If you have ever been to California and have never been to Arizona, then put your name in the lower left-hand corner of the paper" (overly complex). Again, each direction is preceded by an instruction to ask if the message is not clear. Dollaghan (1987) reported that 10 sessions of this type of training over 4 to 5 weeks was effective in increasing comprehension monitoring

in students with LLD, even after the intervention had ended. She advocated comprehension-monitoring instruction as a beneficial supplement to other activities to increase classroom comprehension skills in these students.

Organizational and Learning Strategies

These strategies involve teaching students to actively control, coordinate, and monitor their learning activities and processes. Several kinds of strategies are available, such as the following:

- *Creating inferential sets* by invoking all the background information and prior knowledge we have about a topic when attempting to learn new information about it and asking ourselves a set of prereading questions, such as "What do I already know about this topic? What questions can I ask about it?" These questions help students foreground their prior knowledge and look for relevant information in the text. Heller (1986) proposed using a "What I Know" chart to follow up the reading. On the chart, students fill in what they knew before reading, what they learned from the reading, and what they still need to know. An example of a "What I Know" chart appears in Figure 12-12.

- *Self-questioning.* After creating an inferential set, students are taught to stop during an assignment and ask themselves questions, such as those that could fill in their "What I Know" chart. In addition, students are taught to ask themselves a series of self-guiding questions as they work through a classroom assignment, individually or in cooperative learning groups. After the clinician models and has the students practice asking themselves the questions, they can be posted prominently on a poster in the class or intervention room. Students can make the poster themselves, as one of the activities that use the self-guiding questions. Questions appropriate for students in the L4L period can be posted and students can be referred to them:
  - What is my job; what am I supposed to do?
  - What is my plan; how can I do it?
  - Am I using my plan?
  - How did I do?

- *Think alouds.* The clinician models the thought processes that go into the completion of a literacy-based task by voicing each

Intervention for students with LLD can involve using language for planning and problem solving

step. For example, you might model writing a book report for students by saying, "OK, I need to tell who the characters in this book are. Well, I remember a character is someone who is important in the story. In this story, the important characters are Fantastic Mr. Fox, and . . . . Then I want to talk about where the story happened. I remember a lot of what happened in this story is in the Fox's den, and the Farmers' cellar, so I'll put that in the book report . . . "

- *Reciprocal teaching and buddy programs* involve grouping or pairing students to accomplish a task, and having students cue each other to use the following strategies while completing their assignment:
  - Predict
  - Generate questions
  - Summarize
  - Clarify

- *Graphic organizers and sensory imaging.* Students are taught to draw, map, or visualize material to help them comprehend and recall it.

Metacognitive strategies like these can be introduced by the clinician in clinical sessions, or in classroom collaborative lessons. They can also form part of the Tier II and III intervention in areas of reading comprehension for classrooms using an RTI model. Follow-up can be provided by the classroom teacher in consultation with the SLP. SLPs can also consult with classroom teachers about incorporating learning strategies like these into Tier I instruction for all students. Boulware-Gooden et al. (2007) showed that using these strategies is effective in increasing reading comprehension.

Topic: Solar system		
What I need to learn: How do the parts of the solar system move?		
What I knew before reading	**What I know now**	**What I don't know yet**
Earth goes around sun	Moon goes around earth	Why isn't moon always full?
Earth turns to make day and night	Axis	Why is there midnight sun in Alaska?
Other planets are in solar system	Mars is near Earth	Names of all planets

FIGURE 12-12 "What I Know" chart. (Adapted from Heller, M. [1986]. How do you know what you know? Metacognitive modeling in the content areas. *Journal of Reading*, *29,* 415-422; and Wallach, G., & Miller, L. [1988]. *Language intervention and academic success*. Boston, MA: College Hill.)

INTERVENTION CONTEXTS IN THE L4L PERIOD

Scheduling

One problem that often comes up in choosing contexts for intervention in school settings is the scheduling difficulties attendant on providing services in more than one school building. Traveling from one school to another often makes it difficult for an SLP to

engage in collaborative work or to provide curriculum-based instruction because there is little time for working with teachers and other school personnel. Besides limiting the SLP's ability to provide innovative service, this situation often leaves SLPs feeling isolated and not really a member of the community of any of the schools served.

Taylor (1992) suggested a solution to this problem*: intensive cycle scheduling*. Instead of seeing students for 30 to 45 minutes once or twice weekly over the course of a school year, students are seen in more concentrated time periods, perhaps four or five times a week for 6 to 10 weeks, then "furloughed" to be picked up during another cycle later in the year. This schedule allows SLPs to spend longer periods in each school, get to know the faculty, have time to do classroom observations and curriculum-based assessments, coordinate with teachers to provide collaborative lessons, consult with teachers on Tier I instruction, and meet with parents. It is especially helpful for SLPs in rural districts, where schools may be far apart. Here intensive cycle scheduling can eliminate the need to spend large amounts of the day traveling between sites instead of delivering service. IEPs can easily be written to stipulate a total number of hours of service to be provided over the course of the school year, rather than a number of hours per week. This type of intervention planning gives the SLP flexibility to develop the scheduling model that serves students best.

Soliday (2004) described another alternative, the 3:1 model. Here, traditional, direct intervention to students is delivered for three consecutive weeks, followed by a week of consultative services. Intervention time is planned on the IEP by the month, rather than the week. Activities during the consultative week include the following:
* Consultation with teachers, paraprofessionals, parents, other specialists
* Student evaluations
* Completion of third party medical billing
* Participation in special education meetings
* Participation in small group workshop/instruction

Soliday (2004) reported that this model allowed for greater planning opportunities with classroom teachers, in order to bring therapy goals into line with the general curriculum and also resulted in high levels of satisfaction among clinicians, teachers, and parents.

These examples demonstrate that a creative clinician has a variety of options for planning and delivering services "outside the box" of traditional intervention where all students are seen only in direct therapy settings on the same schedule every week.

Agents of Intervention

We talked in Chapter 9 about using paraprofessionals and peers as agents of intervention. The National Joint Committee on Learning Disabilities (1999) emphasizes that the main purpose of paraprofessionals in schools is to increase the frequency, intensity, efficiency, and availability of instructional help and to assist with generalization of newly learned skills to multiple settings. Blosser and Neidecker (2002) review the guidelines for permitted and non-permitted activities for SLP assistants under the supervision of SLPs in schools. These appear in Table 12-6.

Paraprofessionals can deliver structured CD or hybrid intervention to individuals or small groups, under the direction of the clinician, who decides on intervention goals and procedures. The clinician designs a lesson plan in detail, including the linguistic stimuli to be used; materials and activities to be employed; targeted responses; and reinforcement or corrective feedback to be given; and gives the plan to the paraprofessional to administer. Alternatively, the clinician might provide a commercially available lesson. Either way, responsibility for assessment, IEP development, intervention planning, ongoing evaluation, and parent-teacher communication remains with the clinician.

Another potential agent of intervention for the school-aged client is an older or same-age peer. Algozzine et al. (2009) showed that peer "coaches" were especially effective in improving reading fluency and comprehension in struggling elementary school readers. Some portion of Tier II instruction may include coaching by peers, particularly when reading fluency is the goal. Peer coaches can be enlisted in Readers' Theater activities to provide extra practice in rereading to increase fluency.

Beverly (2009) also suggests that peer coaching is an effective tool for improving student writing. She suggests assigning roles to peers within a group, such as "capitalization captain," "spelling supporter," "conclusion coach," "punctuation pilot," and "content commando." Each student is then instructed to focus on his assigned skill in editing the paper of a classmate. Students are then directed to have their rough draft edited by each type of editor before doing their final draft.

Cooperative learning groups are another excellent opportunity for peer interaction and instruction. In these groups, a problem or

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TABLE 12-6 Examples of Permitted and Nonpermitted Activities for SLP Assistants

Permitted Activities	Nonpermitted Activities
Conduct speech, language, and hearing screenings.	Conduct standardized testing or diagnostic assessment.
Follow documented treatment plans.	Interpret test or assessment results.
Document client progress in therapy and mainstream settings.	Provide counseling.
Assist during assessment.	Write IEPs.
Prepare clinic materials and perform clerical duties (filing, etc.).	Implement treatment without supervision.
Program AAC devices.	Select or discharge students from intervention.
Prepare schedules.	Make referrals.
Display data on charts, graphs, etc.	Share clinical information with anyone or communicate with family or staff without SLP direction.
Check and maintain equipment	Represent self as SLP.

Adapted from Blosser, J., & Neidercker, E. (2002). *School programs in speech-language pathology: Organization and service delivery* (4th ed.) Boston: Allyn & Bacon.

Students with LLD can benefit from the use of technology to aid the development of metacognitive skills.

assignment must be completed by the group as a whole, students work together to devise a solution that involves the entire group. For example, each group can be assigned to write a story about a classroom topic, with at least one sentence contributed by each group member. The students can help each other edit their sentences, but each member must provide an original contribution. In activities like these, peers can share their skills, and students with LLD can see competent skills modeled. Using cooperative learning groups in collaborative classroom work requires careful placement of students in groups, so that students on IEPs get exposure to more linguistically advanced peers. It's also a good idea to include a task in some part of the activity that the students with LLD are good at, so they can feel competent, too. If one student with LLD is a good artist, build drawing into the assignment. If another is a sports expert, require knowledge of sports trivia as part of the activity. Kuder (1997), McCormick (1997a), and Paul (2003b) presented guidelines for facilitating interactions between students with disabilities and their typical peers in learning groups. These are summarized in Box 12-17.

Service Delivery Models

We've talked before about the major contexts for intervention: the RTI model, the clinical model, the language-based classroom, and the collaborative and consultant models. For clinicians working in school settings, any of these models can be relevant. The spirit behind IDEA legislation urges that children should in every case possible be placed in the general education class that they would attend if they did not have a disability. This placement option is referred to as *inclusion*. Inclusion should be about restructuring classrooms and schools to support and provide for the special needs of children with disabilities (McCormick, 1997b), not just having them passively "sit in." Although this ideal is not always met in practice, it does mean that children with all types and degrees of communication disorders will be found in public school settings, because IDEA says that, generally, they belong there and not in segregated special placements. Although we have concentrated in Chapters 11 and 12 on the assessment and intervention needs of children with LLD who function close to the same level as their chronological-age peers, we should remember that school SLPs will find children functioning at all levels of development on their caseloads. If schools adhere to the spirit of IDEA, many of these lower-functioning students will be served, at least part of the time, in general education classrooms. McCormick, Loeb, and Schiefelbusch (2003) provide extensive guidance to clinicians working in inclusive settings for meeting the wide range of educational and communicative needs these children present. Like everything else in our field, though, inclusion is not universally accepted as the optimal approach for all students. Simon (1998), for example, raised questions about whether students with moderate to severe disabilities can receive sufficiently intense language intervention in a full inclusion setting. And the American Speech-Language and Hearing Association (ASHA; 2010) reminds us that inclusive practices consist of a range of service-delivery options and recommends that an array of models be used to implement services to students with communication disorders. One size doesn't fit all, and some students can benefit from specialized services, at least some of the time.

BOX 12-17   Guidelines for Facilitating Interactions between Typical Students and Those with Disabilities in Learning Groups

Provide service in the least-restrictive environment, as required by law.

Students with LLD can tutor younger peers to practice communication strategies.

Increase the clients' opportunities for interacting with the mainstream teacher and peers, decreasing the amount of classroom content "missed" because of being pulled out, and making the students' day more cohesive and integrated.

Target success in the natural environment with relevant tasks that encourage participation in both the overt and the hidden curricula.

Make students and teachers see language intervention as more meaningful because they perceive its relation to their daily work in school.

Provide greater opportunities for generalization across curriculum areas.

Provide beneficial input or modification of classroom instruction that helps not only the identified client but other students in the class.

Encourage teamwork and transdisciplinary practice among teachers, special educators, and SLPs, making SLPs a more integral part of the school community.

Provide peers with concrete strategies to use in interaction, such as prompting the student with a disability to produce a particular behavior (you make a list of all the cities in the state we need to study), and praising completed work.

Adapted from Kuder, S. (1997). *Teaching students with language and communication disabilities.* Boston, MA: Allyn & Bacon; McCormick, L. (1997a). Ecological assessment and planning. In L. McCormick, D. Loeb, & R. Shiefelbusch (Eds.). *Supporting children with communication difficulties in inclusive settings* (2nd ed.). (pp. 235-258). Boston: Allyn & Bacon; Paul, R. (2003). Enhancing social communication in high functioning individuals with autistic spectrum disorders. *Child and Adolescent Psychiatric Clinics of North America, 12,* 87-106.

With such variation in the level of functioning and extent of the needs of their students, school SLPs have a big job to do! Unfortunately, the scope of our responsibilities does not always limit the size of our workload as it should. O'Connell (1997) reported that the national caseload average is 52, and some school SLPs have caseloads in the 70s, 80s, or even 90s! Although ASHA (2002) does not recommend a workload maximum, it does argue that the workload should be compatible with appropriate and effective intervention. Moreover, it advocates using the concept of workload, which subsumes all the activities in which the SLP participates, rather than just the number of "cases" served. Workload takes into account not only the number of students an SLP treats, but also the paperwork, consultation, collaboration, conferencing, and supervision we provide. Clearly, we have some work to do in advocating for both caseloads and workloads that allow us to serve our varied client base in public schools with the level of service they require. That said, let's discuss the various service delivery models that are appropriate at the L4L level.

The RTI Model

Montgomery (2008) explains that RTI models have the potential, through serving children within the general education program, to significantly decrease special education paperwork by preventing special education identification and thus eliminating the need for IEPs, yearly meetings, parent contracts, etc. This results in more time available to serve students' needs. As we've discussed before, the SLP has an important role to play in RTI classrooms. This role includes many of the other service delivery options we'll be discussing, including:

- Consulting with classroom teachers on providing the highest quality, scientifically based instruction in language and literacy for all students, at Tier I
- Participating in assessment and progress monitoring of students in Tier I to determine need for additional support
- Developing and monitoring intensive small group instruction programs to be delivered by paraprofessionals, volunteers, or peers for children requiring Tier II instruction
- Monitoring progress in Tier II to identify when students no longer require additional help, or show needs for Tier III instruction or special education
- Participating in evaluations to determine the need for individualized instruction at Tier III, or special education placement
- Designing and delivering Tier III and special educational support in language and literacy

The Clinical Model

The traditional clinical, or "pull-out," model of intervention is, of course, one aspect of service delivery in schools. Many children in the L4L period can benefit from the relatively quiet, less-distracting setting provided in the clinical model, as well as from the intensive attention and scaffolding that can be given in this setting. We also may want to consider, though, supplementing the clinical model with some other forms of service delivery. One possibility is the "pull-out/sit-in" approach. Here, part of the client's intervention time is spent in a clinical setting and part is spent in the classroom with participant observation-based intervention (Nelson, 2010) or with the clinician doing a collaborative lesson with the whole group.

The advantage of this approach is that the student with LLD can be "prepped" in the clinical session. That is, the clinician can give the client a preview of a classroom lesson and prime the student to produce appropriate responses. Alternatively, the clinician can use clinical sessions after classroom work to evaluate and "go meta" on some of the material introduced in the classroom. Using participant observation, the clinician can sit in with the student during a classroom activity, then talk about his or her performance and how to improve it in a clinical session later.

O'Connell (1997) also suggested that clinical sessions are useful for developing basic skills that may not be relevant to the rest of the classroom, such as motor placement cues for sound production. She also advocates using clinical sessions to review recordings of the client's communication during classroom activities. This is a "sit-in/pull-out" rather than "pull-out/sit-in" approach, in which the clinician does work in the classroom, then encourages the client to monitor his or her own performance from the recorded information.

The Language-Based Classroom

Feinberg (1981), McBride and Levy (1981), and Moore-Brown and Montgomery (2001) provided models of self-contained language stimulation classrooms at the primary-grade level. Generally, these classrooms will be designed to serve more severely impaired students with communication deficits that would make it difficult for them to participate in the mainstream class. In these programs, the SLP serves as the classroom teacher and creates a program focused on developing oral language skills and emergent literacy. Some SLPs especially like this model because it allows them to spend the whole day with a small group of students, getting to know them in a way they never could get to know a caseload of 40. Many of the activities we have discussed for addressing vocabulary, syntax, classroom discourse, and literate language styles are appropriate in these settings. Theme-based and naturalistic approaches are often incorporated in these programs, along with more structured activities focused on the development of listening, speaking, and reading and writing skills.

Some SLPs in schools may work as resource-room teachers in classrooms for children with LLD. The clinician may work closely with a special educator in these settings. Students generally spend part of their day in the resource room and part in the regular classroom. Often resource rooms focus on content mastery; that is, helping students to succeed in the curriculum being taught in the regular classroom. For this aspect of the resource-room curriculum, the SLP is especially well-equipped to provide metacognitive instruction that focuses on comprehension monitoring and learning strategies. In addition, the SLP can help provide curriculum-based assessment of the linguistic demands of the curriculum. Reviewing textbooks and observing in the mainstream class for teacher talk and hidden curriculum patterns can help the clinician provide focused intervention activities that address the specific requirements of the classrooms in which our clients must function.

A second function of the SLP in the resource-room setting is to provide instruction in general communication skills, especially in literate language style. The activities that we have discussed for developing more elaborated language, in conversation and classroom discourse and in work on narrative and other literate language materials, can all be used in the resource room, as well as in the clinical model. These activities help students to build the oral language foundation needed for success in school. Bruder (2005), Dodge (1998), Hesley (2005), and Plourde (1985; 1989) provided additional materials for developing a variety of communication skills at the elementary level that can be used effectively in the resource-room setting (see Table 12-3).

Consultation and Collaboration

Simon (1987) was one of the first to argue for the importance of moving SLPs out of the "broom closet" and into the mainstream of the school environment. As of this writing, staying in the closet is no longer an option for most school SLPs; the need to "leave no child behind" in terms of literacy development has created an "all hands on deck" atmosphere in schools, where SLPs are actively recruited to assist with literacy instruction and preventing reading failure. And the 2004 reauthorization of IDEA puts the law behind the effort to bring SLPs into the classroom and our services to bear on success in the curriculum. Let's look at each of these service-delivery models and talk about how they can be implemented.

Consultation

When working in a consultative role in an RTI framework, our goal is to help teachers identify the most effective literacy instruction, based on the most current scientific evidence, and to support the development of literacy through enhancing oral language skills, especially for children who struggle to learn to read. Other consultative goals include helping teachers support students on IEPs within the mainstream setting. Let's take these one at a time.

Consultation in an RTI format involves helping teachers select programs and instructional strategies for providing Tier I lessons in literacy. Here, SLPs can focus on making sure teachers attend to all five key components of effective reading instruction identified by the National Reading Panel (2000):

- Phonemic Awareness
- Phonics
- Vocabulary
- Fluency
- Comprehension

When consulting with primary grade teachers, SLPs will want to help teachers focus their instruction on the first three of these, being especially careful to help teachers understand the difference between phonemic awareness (being able to segment words into their component sounds) and phonics (the rules for associating sounds with letters, and spelling), and to realize that children will need explicit, direct instruction with extensive guided practice in both these areas. SLPs' special expertise is in phonemic awareness and vocabulary instruction, and many of the activities discussed in this chapter can serve as a basis of consultation suggestions in these areas.

For teachers of intermediate grades, SLPs will want to support their instruction in vocabulary, fluency, and comprehension. We've already talked about ways SLPs can support vocabulary and fluency, and these can be shared with teachers or modeled in collaborative classroom lessons. To support comprehension, SLPs can work with teachers to implement the seven evidence-based strategies identified by the National Reading Panel, many of which we have already discussed in this chapter:

- Comprehension monitoring, where readers learn how to be aware of their understanding of the material
- Cooperative learning, where students learn reading strategies together
- Use of graphic and semantic organizers (including story maps), where readers make graphic representations of the material to assist comprehension
- Question answering, where readers answer questions posed by the teacher both before and after reading
- Question generation, where readers ask themselves questions about various aspects of the story

- Story structure, where students are taught to use the structure of the story as a means of helping them recall story content in order to answer questions about what they have read
- Summarization, where readers are taught to integrate ideas and generalize from the text information to produce a brief synopsis of the material they read

By working with teachers to become aware of and implement these scientifically-validated instructional strategies, SLPs can have an important impact on Tier I instruction.

Consultation to Support Students on IEPs

In working with teachers in a consultative role, it is important to remember that teachers are the experts on classroom issues. Our job is not to criticize or tell the teacher to teach differently. An effective approach to consultative sessions is to present the problems that we see our client having in the classroom and ask teachers how we can best help them to help the student succeed. Once areas of shared concern and ways in which the teacher is willing to modify the curriculum have been identified, the SLP can make concrete, specific suggestions. The SLP ought to be willing to do some of the modification for the teacher, if necessary, such as recopying tests with larger print and fewer questions per page or arranging for a volunteer to audio record classroom readings for the student to use. This makes the modification a shared activity, not one imposed on the teacher by the SLP. Sharing responsibility for the student's success is what consultation should be all about.

O'Connell (1997) reminds us that serving in a consultant role does not need to mean being an "expert" who knows more about everything than the teacher. In many cases, in fact, we can learn a lot from teachers about managing classroom lessons, or choosing developmentally appropriate curricula and materials. What consultation does mean is using the special insight we have developed into the nature and structure of communication to help teachers sharpen their observation skills in these areas and perhaps think about their own and their textbooks' language more critically. For example, a teacher may tell us that a student "refuses" to complete social studies assignments. The consulting SLP might suggest that he or she and the teacher review the instructions in the textbook. While reviewing them, the SLP might exclaim, "Wow, look at this sentence! It's got three subordinate clauses. I wonder if that's why Maria isn't doing her work. Maybe she can't understand what she's supposed to do. Is there anything we could do to simplify these directions for her?"

Another important function the SLP can serve in a consulting role concerns in-service education for teachers. Cirrin (1989) suggested three formats for in-service education that can help us to share information about the needs of our students and foster a sense of joint responsibility for their learning. In the *demonstration* format, specialists from several disciplines can demonstrate materials (such as Westby's [2005] book report forms), methods (such as cognitive behavior therapy), or activities (such as PA) that could be used in the classroom to foster success for clients as well as mainstream students. The *case-study* method provides an opportunity for specialists and regular educators to discuss a particular case in depth, so that principles and problems can be seen from a variety of points of view. Using a case from a previous year, for example (with names removed, of course), is a great way to practice transdisciplinary program planning. A *literature* session allows professionals to get together to talk about some readings they have selected. One or two disciplines might choose articles to provide to the participants, who would read them before the in-service. The in-service itself would give participants an opportunity to discuss

their responses to the material. Another way to use the literature format is to provide the group with selected children's literature and work together to find ways to address oral and written language goals through the use of these selections. Prelock, Miller, and Reed (1995) also provided an outline of a series of in-service presentations to encourage collaboration between SLPs and classroom teachers. It appears in Box 12-18.

Collaboration

Providing collaborative intervention by "sitting in" or "guest teaching" in mainstream classrooms is another extension of our role as SLPs. While it may be challenging to those of us who consider our primary role to be clinician rather than teacher, collaborative intervention's advantages, such as the ones previously discussed, are powerful enough to warrant taking on this challenge. There have been

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BOX 12-18 In-Service Training for Teachers and SLPs Who Are Collaborating to Provide Services to Children with Communication Disabilities in the Regular Classroom

TRAINING COURSE OUTLINE

Session I: Language in the Classroom: Getting Perspective on Collaborating, Sharing Roles, and Teaming

Objectives
1. To share the perspectives of participants involved in collaborative service delivery on meeting the needs of at-risk students with communication disorders in the regular classroom.
2. To recognize those roles shared by teachers and speech-language pathologists as they assess and intervene with students.
3. To understand a transdisciplinary philosophy for teaming, including role exchange, role release, and role support.

Activity
Video viewing of collaborative planning meetings, classroom activities, and follow-up

Session II: Normal Communication Development and Communication Disorders in the Classroom

Objectives
1. To understand normal communication and language development in school-age children.
2. To recognize communication disorders common to the classroom.
3. To understand the pervasive nature of language deficits in children with disabilities.

Activity
Role playing an initial collaborative meeting

Session III: Identifying and Managing Classroom Language Demands: What Are the Scripts?

Objectives
1. To gain a broader understanding of the impact traditional classroom methods have on the student with communication disorders.
2. To identify scripts in the classroom.
3. To explain a process-based approach for managing classroom language demands.

Activity
Developing and implementing a communication skills "script" in the classroom

Session IV: Assessing Communication Problems in the Classroom: A Collaborative Approach

Objectives
1. To understand curriculum-based language assessment.
2. To provide a framework for collaborative assessment using language-based curriculum analysis, checklists, and observation logs.
3. To suggest ways of establishing collaborative data collection practices during classroom activities.

Activity
Practicing team assessment

Session V: Strategies for Managing the Language of Math

Objectives
1. To recognize the language complexity in the math curriculum and in text materials.
2. To gain skills in adapting curriculum materials for elementary students with communication disorders.
3. To learn strategies for collaborating with students to enhance their performance in math application, computation, and problem solving.

Activity
Explaining math problems in third grade

Session VI: Using Literature in the Classroom

Objectives
1. To examine the development of oral and written language.
2. To learn strategies for implementing literature use in elementary classrooms.
3. To recognize and manage the reading difficulties of at-risk students and students with communication disorders.

Activity
Sharing a writing project

Session VII: Issues in Collaborative Service Delivery: Scheduling, IEP Development, and Conflict Resolution

Objectives
1. To explain a process for determining the type(s) of service delivery a student with communication disorders should receive.
2. To recognize the role of regular and special education teachers, parents, and students in developing IEPs for students with communication disorders.
3. To discuss barriers to effective communication when working with a team.

Activity
Conflict resolution through role-play

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a few studies, too (Cirrin et al., 2010; Ellis, Schlaudecker, & Regimbal, 1995; Farber & Klein, 1999; Throneburg et al., 2000) that demonstrate the effectiveness of this approach, at least in early primary grades. Creaghead (1994) discussed the essential elements in successful collaboration. They include building administrative support, developing relationships with teachers, and creating effective collaborative lessons and curricular units. Let's see how we can accomplish each aspect of the development of these intervention programs.

Building Administrative Support

SLPs interested in collaborative intervention may need to do some groundwork with school administrators to convince them to provide the coordination time necessary, especially in settings that do not use RTI models. One important aspect of this support is the availability of time for collaboration with other teachers. We need to talk with the teachers involved, not in the hall or during recess duty, but in regular, specified meetings. These meetings are a crucial first step in establishing workable collaboration and consultation. Administrative support for the development of these service delivery models is essential for their success. DeKemel (2003), Moore-Brown and Montgomery (2001), and Prelock, Miller, and Reed (1995) discussed some methods of building this administrative support. RTI and the mandates of No Child Left Behind also argue for collaborative service. By working alongside classroom teachers and modifying and enhancing the learning both of students with a variety of difficulties, as well as those who are struggling but who do not have identified special needs, we help to ensure the success of all students.

Using intensive cycle scheduling or the 3:1 model (Soliday, 2004) are additional ways to support collaboration for SLPs. By working consistently in one building for some time, scheduling collaborative or "pull-out/sit-in" service delivery models becomes less of a strategic nightmare. Keeping faculty and administrators aware of your schedule by posting it in the school office or Webpage helps to increase your visibility and accountability.

Developing Collaborative Relations

Building relationships with teachers is the next step in successful collaboration. Blosser and Neidecker (2002) and O'Connell (1997) suggested that the best relationships are usually built one teacher at a time. SLPs frequently begin collaborative intervention with one teacher with whom they have a good personal relationship, work in that class for a few months, and let the word spread. Prelock et al. (1995) suggest that SLPs attend curriculum and grade-level meetings to become familiar with classroom content and procedure. They also advocate offering teachers a "gift of time" by grading the papers of students on IEPs or decorating classroom bulletin boards. These activities not only delight the teacher, but allow the SLP to get to know clients' class work and support language goals within the classroom environment. Pena and Quinn (2003) emphasize the importance of providing meaningful incentive to teachers for collaboration, particularly through recognition by administrators. And of course, in-service presentations are always a good opportunity to plug your program.

A variety of ways to implement collaboration in classrooms are discussed by Blosser and Neidecker (2002), DeKemel (2003), Moore-Brown and Montgomery (2001), and O'Connell (1997). These arrangements are displayed in graphic models, suggested by Friend and Bursuck (2002), in Figure 12-13.

It is probably unrealistic to expect that collaboration is possible with every teacher in a school. But after a successful year, you might approach a teacher with whom you work particularly well and ask whether he or she would be willing to cluster several of your clients in that class for the following year. If the teacher is
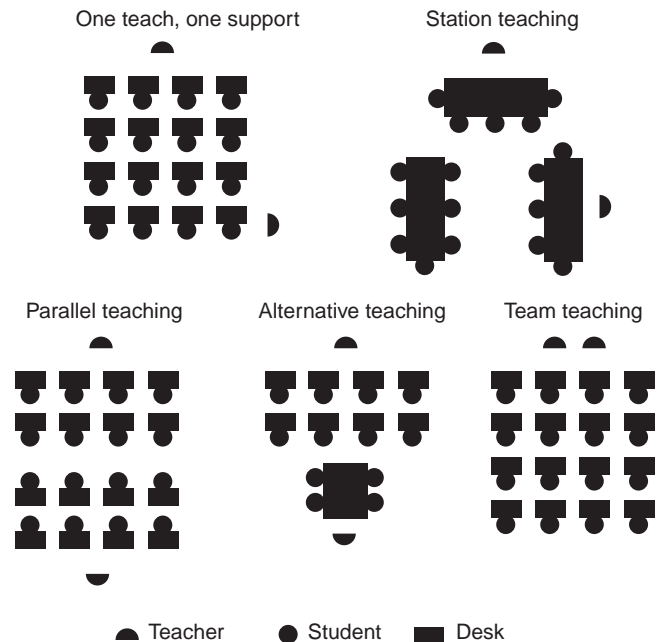
FIGURE 12-13 Models of collaborative teaching. (Reprinted with permission from Friend, M., and Barsuck, W.D. [2002]. *Including students with special needs: A practical guide for classroom teachers* [3rd ed.] Boston: Allyn & Bacon.)

willing, administrative support should also be sought. Clustering this way maximizes the efficiency of your intervention and ensures a receptive classroom for your clients.

Effective Lesson Planning

The third piece of the collaborative intervention program is the classroom lesson itself. Christensen and Luckett (1990) provided helpful guidelines on developing these lessons. It is a good idea for the SLP to take the lead, at least at first, in lesson development. This approach avoids the potential difficulty of the SLP being "used" as an aide in the classroom. It is important, though, to consult with the teacher about the lesson, to ensure that it is something he or she wants for the whole class, and to intertwine it with other activities and themes going on in the classroom. Many of the activities we discussed in the sections on hybrid intervention techniques also can be adapted to the classroom setting.

In addition to the content of the lesson, the structure also is important. One way to structure the lesson is by means of cooperative learning groups. The SLP can present the lesson, break the class into groups, and supervise half of the groups directly while the classroom teacher supervises the other half. Usually the SLP arranges to have the clients with IEPs in the groups he or she supervises. A second way is to use what Waldron (1992) called "Academic Clubs." In this model, the SLP works in the classroom with part of the group on a lesson developed for those "club" members, while the teacher works on another lesson with the rest of the class. The "club" includes the students on IEPs but also includes others in the class. The "clubs" can be organized around student interests. For example, the client and all other students in the class who are interested in basketball might join the "Dribblers' Club." The SLP can prepare lessons with a basketball theme that address the needs of the client as well as other class members. They might use statistics on the web to write a report of a recent game, for example, then edit, rewrite, and "publish" the report. The "club" can last for several weeks, then another "club" can be formed with a different theme, involving different mainstream students. A "Secret Agents' Club,"

for example, might address higher level PA skills for the client and others in the class whose reading might need improvement. Letting students in the club just because they want to learn secret agent techniques is fine, too!

Kuder (1997) suggested some techniques that can work well in these groups. They can be given an assignment to complete with a set of materials from which they must choose. For example, if the collaborative lesson is on predicting story outcomes, students may be given four incomplete stories. Their job is to choose the group's favorite, then choose an ending for it together. Rewriting for varying audiences is another activity that can be useful. Each group in the class, for example, may be assigned to write their story's ending for a different audience. One might be assigned to a kindergarten audience, another, an audience of science teachers, and so on. Once each group has written its story, they then can be asked to listen to the other groups' stories and then rewrite their ending for a different audience.

Christensen and Luckett (1990) also stressed the importance of providing a well-structured lesson plan, both for the teacher's benefit and for our own. If you are not too familiar with classroom intervention, you will probably feel more secure having a written-out plan to refer to in case nerves interfere with your memory! Christensen and Luckett provided a structured framework for classroom lessons, which appears in Box 12-19.

Christensen and Luckett reminded us to involve the teacher in the lesson by providing him or her with the lesson plan ahead of time and by suggesting specific activities for the teacher to perform during the lesson. In addition, it is crucial to maintain discipline during the lesson. Talking with the teacher before beginning the collaborative program about the discipline techniques to which the students are accustomed is often helpful. Working with the teacher to gear the lesson to classroom themes and content, being on time, and providing materials for follow-up also help to keep the collaboration going smoothly. And it is smart to ask the classroom teacher for a critique of your lessons. This can provide helpful feedback and let teachers know that we are willing to learn from their expertise in the classroom.

Collaborative Curriculum Planning

As we've seen, IDEA legislation promotes including children with disabilities in the regular education curriculum. This means that one of our important roles will be finding ways to work with classroom teachers to design and modify the curriculum and provide appropriate accommodations so that our students learn what the other students in the class do. Freedman and Wiig (1995) developed a set of forms to aid in this collaborative planning process. The forms appear in Appendix 12-2. They can be used to help structure our interactions with teachers and provide a means of thinking together about the prerequisites, content, and accommodations necessary to enable our students to get the most out of their participation in the classroom. Once team members have used forms like these a few times to plan curriculum units, the process becomes familiar and routine, so that planning can proceed quickly and efficiently.

BOX 12-19   A Framework for Collaborative Classroom Lesson Plans

CREATE AN ANTICIPATORY SET
Focus students' attention on the topic to be discussed. ("Today we'll talk about how characters in a story make plans to solve their problems.")

STATE THE OBJECTIVE
Tell the students what you expect them to learn as a result of the lesson. ("We'll learn to look for ways characters plan their actions in a story.")

GIVE THE PURPOSE OF THE LESSON
Tell students how the learning will benefit them. ("It helps us understand stories better if we look for the ways characters make and carry out their plans.")

PROVIDE AN INPUT MODEL
Tell the students what to look for; provide an example, check for understanding, monitor and adjust the instruction if necessary. ("You read the story *Curious George Rides a Bike*. Remember that George wanted to make a boat. He used his newspapers and made a whole fleet. But then he had another problem! What was it? Can you tell how he tried to solve that problem?")

PROVIDE GUIDED PRACTICE
Have the students complete an activity under adult supervision and scaffolding. ("How did George try to solve this next problem? What was his plan? Can you think of another way he might have tried to solve it? Let's make a list.")

CLOSE THE LESSON
Review the objective and purpose and ask students to tell what they learned. ("Poor George got himself into trouble quite a few times in this story. Each time he came up with a plan to solve his problem. What was his first problem? How did he plan to solve it? What was the next . . . ? Each time George came up with a plan. The plan didn't always work out just the way he wanted, but he tried to solve his problems by planning his actions. That's what characters in stories often do. They try to plan a way to solve their problems.)

PROVIDE DISTRIBUTIVE PRACTICE
Leave follow-up activities for the teacher to do so students can review and practice in a different setting what they learned in the lesson. ("Your teacher will be reading you another story this week. When I come back, I'd like each of you to have a list of some of the plans the character in your new story used to solve the problem in that story. Maybe you can act them out for me!")

Adapted from Christensen, S., & Luckett, C. (1990). Getting into the classroom and making it work! *Language, Speech, and Hearing Services in Schools, 21,* 110-113.

Older Students with Moderate to Severe Disabilities Who Function at the L4L Level

For adolescents and young adults functioning at elementary grade levels of language and literacy, the main goal of intervention is to foster independence in vocational and living situations to as great an extent as possible. Having functional social discourse skills is very important in making this transition, as is having some functional literacy. Bedrosian (1985), Kilman and Negri-Schoultz (1987), and Paul (2003) presented examples of programs for developing social discourse skills in older clients with moderate to severe language disorders. Since these clients may not develop all the "fine points" of language, intervention targets must be chosen on the basis of providing a functional repertoire, whether spoken or employing AAC, for the environments in which the client must manage. Matching the client's language skills to the requirements of the social or vocational situation is vital.

Falvey, Grenot-Scheyer, and Luddy (1987) argued that curricula for these students should be *community referenced*. That means we should relate targets to the major domains in which the student must function. These domains would include domestic, recreational, and vocational settings. For each, ecological inventories can be used to assess what communication skills are needed. This often involves making contact with community settings to which the student will eventually transition and beginning to set up links before the student leaves school. Intervention can focus on providing the skills needed for these most crucial environments.

For all students with moderate-to-severe disabilities, teaching functional communication skills is essential (Sigafoos et al., 2004). Functional communication skills, as we've discussed before, are those that can be used to express basic wants and needs, and enable the speaker to obtain desired outcomes through the mediation of a listener. These will need to be matched to the environments in which the student will be involved, relying on ecological inventories and observations.

While these students are in school, every effort should be made to maximize literacy. Besides continuing to read and hear stories,

Intervention for older clients at the L4L stage is community referenced.

the adolescent at the L4L stage should be given focused instruction in PA, letter-sound correspondence, reading comprehension, writing, and spelling. Erickson, Koppenhaver, Yoder, and Nance (1997) found that the *Making Words Program* (Cunningham & Cunningham, 1992), which teaches children to systematically combine letters to form words, was easily adapted for use with a student with multiple disabilities. An additional promising technique that has some research support for increasing literacy in students with disabilities is *Precision Reading* (Freeze & Cook, 2005), which is outlined in Box 12-20. Basil and Reyes (2003), as well as Hetzroni and Schanin (2002), report that computer-assisted programs that involved massed practice and scaffolding were successful in promoting literacy in students with severe disabilities.

For older students at the L4L level, practice reading job applications, newspaper and web advertisements, and magazines on topics of interest should be part of the literacy program. Writing work should focus on filling out forms of various kinds, writing letters of inquiry about jobs and housing, and developing writing skills important for domestic independence, such as copying and organizing recipes, paying and filing bills, making shopping lists, and keeping household records. Clients also should be taught "meta" skills for deciding when they do not understand something they read, such as a contract or work agreement, so they know when they need to seek assistance to avoid being taken advantage of.

Ideally this literacy instruction should be integrated with other activities in the student's educational program (Blackstone, 1989). For example, reading vocabulary for ordering food from a restaurant menu can be taught in the context of a community living or recreation unit on going out to eat. Writing skills can be taught in conjunction with a unit on shopping and menu planning, as the student writes a shopping list and searches for the food on the list on the grocery shelves. Reading and writing should be integrated within the student's program systematically throughout the day, rather than in one short instructional session (Calculator & Jorgensen, 1991; Erickson, Koppenhaver, Yoder, & Nance, 1997).

Students with ASD

While most students on an SLP's caseload struggle with oral language and literacy development, students with ASD may be exceptions to this rule. Many show normal to superior skills in vocabulary and syntax. They may be precocious readers, and may excel in some aspects of the curriculum such as math, science, art, or music. The areas in which they have difficulty center on the ability to engage in conversation, to interact successfully with peers, to regulate their emotions, and to master the organizational skills necessary for academic success. These difficulties fall into two main areas of SLP practice: metacognition and pragmatics.

Addressing Metacognition for Students with ASD

Students with ASD often have trouble regulating their feelings and behaviors, and these difficulties can lead to school problems in both academic and social areas. In addition, Abdelal (2009) pointed out that many of the metacognitive problems these children show affect their ability to use language and interact with others appropriately, so pragmatic and metacognitive areas really are related. Robinson and Westby (2009) suggest that using stories to work on metacognitive skills, by having students recognize the feelings, thoughts, and intentions of characters, and guiding them to talk about feelings explicitly can help them learn to make reasonable inferences about these internal states in ordinary pragmatic settings.

BOX 12-20   Components of Precision Reading

COMPONENT	EXAMPLE
Format texts	Make materials more accessible by increasing print size, adding additional spacing for lines and paragraphs, simplifying sentence structure (but not vocabulary).
Focus on fluency	Use repeated readings with corrective feedback to increase speed, smoothness and word recognition: Student reads same passage each day for 10 days; readings last only one minute. Over the ten days, the amount the student can read in one minute increases. Teacher identifies misread words, which are presented to students on cards for additional practice.
Support vocabulary	Once words originally misread are read fluently, teachers work on meaning of these words through elaborated exposure techniques.
Teach comprehension strategies	Teach retelling, QART, reciprocal teaching, and other evidence-based comprehension strategies to enhance understanding.
Use complementary strategies	Supplement instruction with sustained silent reading, choral reading, buddy reading, and home-based reading.

Adapted from Freeze, R., & Cook, P. (2005). Learning to read against all odds: Using precision reading to enhance literacy in students with cognitive impairments, extreme academic deficits, and severe social, emotional, and psychiatric problems. *Exceptionality Education Canada, 15* (1), 79-109.

Many of the metacognitive techniques we talked about earlier for students with LLD can help with the academic organizational side of this issue. In addition, Timler, Olswang, and Coggins (2005) developed a program specifically for addressing these problems in children with social-communicative difficulty. "Do I Know What I Need to Do?" is a small group intervention program that targets mental state verb production, uses role-play, and provides a checklist to elicit the thinking about others' perspectives. A clinician reads a script that introduces a hypothetical situation, such as needing a friend to play a game with. The clinician then assigns roles to play out the problem, and periodically "stops the action" in the role play to prompt the children to read and answer questions from the checklist. The checklist guides the children's thinking about actions and perceptions, using questions such as:

Did I pay attention to the problem?
What do I know? How do I know it?
Did I pay attention to what others saw, heard, and thought?
What does everyone else know about the problem? How do they know it?
Do I know what I need to do? What is my best choice? Why?

Another approach that has evidence of efficacy for improving self-regulation in students with ASD is the use of social stories. We talked about this method earlier in this chapter and, although it has been shown to be helpful for children with a variety of diagnoses, it was first developed as a self-regulation tool for students with ASD, and a large literature with this population supports its use (e.g., Graetz et al., 2009; Karkhaneh et al., 2010; Ozdemir, 2008; Spencer et al., 2008). Abdelal (2009) suggests a variation on social stories for children with ASD: personal pragmatic stories (PPS). The clinician develops these stories, which follow a simple narrative format that incorporates a problem faced by a particular child. The target child's name is used for the story's main character. For example, if "Jayden" frequently has trouble allowing peers to choose a topic during a group Writers' Workshop project, the clinician might write the following PPS:

Jayden and his friends were told by their teacher to choose a topic from their American History chapter and write a paragraph about it. Jayden wanted to write about the different kinds of engines on the trains that met when the first coast-to-coast railroad was completed. But his friends wanted to write about the golden spike that was used to connect the last set of tracks. Jayden was mad that his friends didn't want to write about his idea. But he decided not to argue about it. Instead, he told them he would draw a picture of the two engines that met up at the golden spike, and he would show all the ways they were different from each other in his picture. That way his friends could write about what they were interested in, and he could make a good picture to go with their story. Jayden explained his idea to his friends, asked what they thought about it, and said they could come up with the paragraph together, but he would draw the picture, since he knew a lot about how train engines looked. Everyone agreed it was a great idea. He was glad he had thought of a compromise.

Using Peer Models

Research on improving social interactions in children with ASD has one other clear result: interventions for social skills are more effective when peer models are involved (Paul, 2008b; Timler, 2009). Several programs that involve peer models have demonstrated efficacy in case studies. Some examples are outlined in Box 12-21.

Evidence-Based Pragmatic Programs for Students with ASD

Although there have been a huge number of commercial programs and social skills interventions developed to address these needs for student with ASD in recent years, there is not a lot of evidence about their effectiveness. For example, Bellini et al. (2007) reported that,

BOX 12-21 Examples of Evidence-Based, Peer-Mediated Social Interaction Programs for Students with ASD

PROGRAM	REFERENCE	DESCRIPTION
Peer group entry	Beilinson & Olswang, 2003	Student with ASD is taught to: • Walk over to your friend. • Watch your friend. • Get a toy like your friend is using. • Do the same thing as your friend. • Tell an idea. Peers are coached to welcome and facilitate group entry.
Special interest game group	Baker, et al. 1998	• Student with ASD is encouraged to develop a board game based on special/obsessive interest. • Game time with small group of peers is arranged (e.g., "lunch bunch"). • Target student teaches game to peers. • Group takes turns choosing games to play during interactive game time (target student must play games of others' choice as well as his own).
Peer support networks	Banner, 2008	Popular peers chosen based on teachers' recommendation. Peers receive four training sessions: • Introduce the nondisabled peers to the characteristics of students with ASD. • Following three sessions include the student with ASD. • Social interactions are observed in conversation; taking turns, and sharing are modeled and practiced. • Peers assigned to "buddy" target child for specific periods; each responsible for coaching/ mentoring the student with ASD for one period of time (e.g, lunch, Phys. Ed.).
Pivotal response training	Harper, Symon, & Frea, 2008	Peers given 7 training sessions and taught to: • Gain attention: say the target student's name and then give the prompts "look" and "listen" while making eye contact. • Vary activities: offer target student different play options using cue cards or by verbally giving choices of preferred activities. • Narrate play: comment and narrate their own play; provide examples of appropriate play with play materials; describe what he or she is doing with materials (e.g., "let's bounce the ball,"). • Reinforce attempts: praise the target student for any attempt at functional play. • Take turns: offer turns or demonstrate sharing.

despite the wide use of social skills groups in school settings for students with ASD, a meta-analysis of the efficacy of these approaches showed they were minimally effective. Prelock, Paul, and Allen (2011) reviewed the literature on programs for children with ASD and identified only two evidenced-based techniques for improving pragmatic skills: script-fading and video modeling.

Script-Fading

This technique is aimed at providing students with ASD a starting point in making conversation and interacting with peers. The clinician develops a script to show the student what to say in a particular social interaction. McClannahan and Krantz (2005) have provided a detailed guide for developing these scripts, including procedures for addressing communication from the prelinguistic level up through procedures that are appropriate for fluent readers. The scripts can consist of audiorecorded material, picture symbols, or written text. Students are taught to imitate or read the script in a role-played interaction with the clinician. Once the child can produce the script, portions of it are "faded" or deleted from the model, so that a script that originally read, "I like to play videogames," would be faded first to "I like to play . . . ," then, "I like . . . ," then to "I . . . ," until the child can produce most of the script independently. Then the child would continue to rehearse the scripts with various adults and peers. Krantz and McClannahan

have presented data suggesting this method leads to improvement in conversation for children with ASD.

Video Modeling

Video modeling takes a similar approach. Here, a child watches the prerecorded behavior of another, and uses what was observed on the video in his own interactions. Generally video models are produced by individual clinicians, using either peers or children with ASD themselves as "actors." There are also some commercially produced materials designed for use in video modeling activities (e.g., "My School Day" by Silver Lining Multimedia, 2009). Video modeling helps focus the attention of the child with ASD on the relevant behaviors in the video so that with practice and rehearsal the child retains and displays the targeted language and behavior that was modeled (Prelock, 2006). Video modeling also fosters a child's ability to take what is learned in a video modeling session and generalize that information to aspects of daily life (Bellini & Akullian, 2007; Shipley-Benamou, Lutzker, & Taubman, 2002). Charlop-Christy and colleagues (2000) showed that video modeling resulted in faster acquisition of skills than did modeling from live demonstrations, and was effective in promoting generalization.

When designing a video model, it is important to incorporate motivating play and interaction activities in the conversational language being modeled. The video can be paused to point out

specific information that the child is expected to consider. Viewing can be followed by a debriefing to review what was seen and heard, identify any new language heard as well as note the prosody and emotional expression of the models (Charlop & Milstein, 1989). Research suggests that generalization and maintenance are increased when children watch the video interaction, then rehearse it verbally before re-enacting the scenario. Re-enactments occur first with the clinician, later with other adults, and finally with peers (Paul, 2003b). New, inexpensive methods of videorecording on computers, cameras, and smart phones make this method now very accessible.

CONCLUSIONS

Children like Willie—whose difficulties in school include not only basic oral language but also reading, writing, and functioning in the classroom—need help that goes beyond addressing vocabulary and syntactic skills. Work with these students must focus on the oral and written language skills needed for success in school and in life. To be fully successful, this kind of intervention involves more than a few sessions a week of isolated "speech therapy." It needs to be coordinated and integrated with the rest of his educational program. Let's see how we might design an intervention plan for a student like Willie to achieve this kind of integrated service delivery.

In May of Willie's second-grade year, Ms. Johnson met with the assessment team that had recently completed Willie's evaluation. The first order of business was to review Willie's audiometric data and design an assistive listening system that would increase his ability to receive auditory input from the teacher. It turned out that Willie's hearing aids needed adjustment and that the classroom amplification system had not been working properly. As a result, Willie had not been receiving optimal auditory input. Ms. Johnson felt that this could be part of the reason for the deterioration in Willie's behavior. Ms. Johnson and the audiologist worked with the classroom teacher to show her how to "troubleshoot" Willie's auditory equipment each day and to report any malfunctions to them immediately. Willie also was taught to check the batteries on his hearing aid himself, to increase his independence and "ownership" of his hearing needs.

The team agreed that Willie also needed help with basic reading comprehension. Ms. Johnson explained that, although Willie's oral language sounded adequate to the naked ear, he needed to work on understanding and producing more complex language forms and meanings that are used in the literate language style. His classroom discourse skills, particularly in understanding teacher talk and textbook language, were poor. Ms. Johnson felt this might be a result of his not having heard very well throughout the year, and also might be the cause of some of his behavior problems. The team discussed behavioral issues and decided to see how the change in his aural rehabilitation devices and the work on reading and language skills would affect behavior before taking any further steps.

The team met with Willie's family to plan his third-grade program. Initially, the classroom teacher suggested that Willie spend half his day in a resource classroom to work on curricular content mastery, behavioral issues, and language and reading skills. Willie's parents were opposed to this plan, however. They felt Ms. Johnson had worked with him before to good effect and thought that with her help as well as that of the other specialists, he could function in a regular classroom. After some discussion, the team decided that Willie would be placed in Ms. Dunthorpe's third-grade classroom for the first semester of the next school year. Ms. Dunthorpe had two other of Ms. Johnson's clients slotted to be in her class and had been working collaboratively with Ms. Johnson for 2 years now. Ms. Johnson thought that she and Ms. Dunthorpe could develop an appropriate program for Willie in the classroom, if the parents would agree to support all the behavioral interventions the team suggested, to manage his hearing aids carefully at home, and to learn along with Willie to troubleshoot the devices daily. They also were asked to agree to reassess the situation at the end of the first semester to see how it was working. The family agreed to this plan.

Ms. Johnson was using a 3:1 schedule that year. She arranged with Ms. Dunthorpe to see Willie in a small group for curriculum-based language work 3 times a week during her direct service weeks and to present three collaborative lessons in the classroom for each of her collaboration weeks. During week 2 of the 3:1 schedule, Ms. Johnson and the reading specialist worked collaboratively to address comprehension of both oral and written language. The learning disability specialist worked on a consultative basis with Ms. Dunthorpe to keep on top of behavioral issues in the classroom and to help devise modifications of classroom instruction that would help Willie succeed. The audiologist worked with both Willie and Ms. Dunthorpe to make sure they understood how to test and troubleshoot his hearing aids and auditory-training device, and consulted monthly on how the troubleshooting was going. Ms. Johnson met monthly with the team—consisting of the teacher, reading specialist, LD specialist, audiologist, and herself—to monitor and provide input and consultation on Willie's classroom program. At the end of the third 3:1 cycle, Ms. Johnson "furloughed" Willie from direct speech and language service, but continued to meet monthly on a consultative basis with his team, and to provide a monthly collaborative session in Willie's class on "listening skills." At the end of the first semester, Ms. Johnson did a classroom-based assessment. Willie was managing in class, and behavioral problems were significantly reduced. The parent-educator team met again, and everyone felt that Willie was progressing satisfactorily, although he still had some difficulties. Willie's mother was eager for Willie to receive some more direct service from Ms. Johnson, who agreed to pick him up again for once-a-week sessions during her direct service weeks.

STUDY GUIDE

I. Planning Intervention in the L4L Stage
  A. What is transdisciplinary intervention? How can it be incorporated into IEP development?
  B. What kinds of modifications of the classroom program might be included in an IEP for a school-aged child?
  C. Discuss family involvement in the intervention program for a school-aged child.

D. How can the student be involved in intervention planning?

E. Discuss behavior management techniques that can be used in classroom intervention for students in the L4L stage.

II. Intervention Products in the L4L Period

A. What principles should guide intervention at the L4L stage?

B. How does the SLP function in an RTI model?

III. Intervention Processes in the L4L Period

A. What is the role of CD intervention in the L4L period?

B. What kinds of goals are appropriately targeted with CD approaches at the L4L level?

C. Discuss forms of scaffolding that can be helpful to students with LLD.

D. Describe the basic principles and some activities for addressing vocabulary development in the L4L stage.

E. How is vocabulary development related to reading comprehension?

F. Discuss approaches to word-retrieval problems.

G. What are some ways to work on semantic integration and inferencing ability?

H. How does advanced syntax support reading comprehension?

I. Discuss methods for addressing the development of advanced morphological markers. How can this work be used to work on spelling, too?

J. What is the connection between literate language forms and reading comprehension?

K. How can conversational discourse skills be targeted in an intervention program?

L. Describe methods for working on classroom discourse skills.

M. What are some intervention approaches for developing narrative comprehension?

N. Describe a story-grammar approach to intervention for narrative production.

O. Discuss some methods for developing cohesive marking in stories.

P. Describe the sequence of development of phonological awareness and give some activities that can be used to develop each level.

Q. Discuss some curriculum- and literature-based metalinguistic awareness activities.

R. How can editing student writing be used as a metalinguistic activity?

S. Describe Dollaghan's comprehension-monitoring program.

T. Describe some organizational and learning strategies that can be taught at the L4L stage.

IV. Intervention Contexts in the L4L Period

A. Discuss some alternative forms of scheduling for the school SLP.

B. Discuss the role of SLP assistants in school settings. How should they interact with clients?

C. What are the advantages and disadvantages of a clinical or pull-out model of service delivery in schools?

D. Discuss the roles an SLP can play in a language-based or resource classroom. In RTI?

E. Why is collaborative or consultative intervention an important adjunct to service delivery in schools?

F. How can SLPs support teachers in their development of scientifically-based Tier I instruction in RTI models?

G. Describe three types of in-service presentations an SLP might give in a school setting.

H. What are some strategies for developing administrative support for a collaborative program?

I. Discuss positive behavioral support and the SLP's role in it.

J. Describe several different forms of implementation of collaborative teaching.

K. Describe the framework for an effective classroom lesson.

L. What are some ways we can involve teachers as we develop collaborative programming?

V. Considerations for the Older Client and the Student with ASD at the L4L Stage

A. What is the goal of intervention for an adolescent or young adult at the L4L stage of development?

B. What is a community-referenced curriculum, and how can it be implemented?

C. What are some ways to develop functional reading and writing skills for these students?

D. Describe some evidence-based methods for improving pragmatics, social skills, and self-regulation in students with ASD.

Student _____

Birthdate _____

Least Restrictive Environment Considered

1. Placement Options: _____ Full-time regular education
   _____ Regular class with support   _____ Full-time special education
   _____ Other _____
   Provide reasons for rejecting other options _____

2. Location: _____ Neighborhood school   _____ Other school in district
                 _____ Home-based instruction   _____ Other (specify) _____
   _____
   Provide reasons for rejecting other options _____

3. Opportunities for interaction with peers: _____ Lunch _____ Recess
   _____ Class time   _____ Transportation   _____ Small group/tutoring
   _____ Other (specify) _____

4. Nonacademic and Extracurricular Involvement   _____ Sports
   _____ Intramurals   _____ Clubs   _____ Performing arts
   _____ Other (specify) _____
   If none, explain _____

	Estimated hrs/yr	Anticipated dates Start	End
Placement			
Regular classroom			
Special education			
Support services			
Speech and language			

Extended school year (ESY)   Physical Education
_____ Student qualifies for ESY   _____ Regular
_____ Student does not qualify for ESY   _____ Special ed.
_____ Decision deferred until May   _____ P.E. requirement completed

Vocational program
_____ Special designs   _____ Regular education

Signatures of IEP participants
Parent or surrogate parent _____
Teacher or therapist _____
District representative _____
Other _____
Other _____

PARENTAL DECISION

My rights and responsibilities have been shared with me in writing in a manner which I fully understand. I have had the opportunity to participate in the development of the Individualized Education Program for my child and agree with its contents. I fully understand my child's present levels of performance and understand all programs and services which will be provided. I have participated in the development of the annual goals and objectives and I understand that the objectives which I have reviewed will be revised as progress is demonstrated towards the attainment of annual goals. I am aware that my participation and cooperation are needed if the Individualized Education Program is to be successful and I offer my support. I grant permission for my child/ward to participate in all aspects of this program. I understand that the program will be revised no later than one year from the date of my signature and that I will be notified if major changes in the program are necessary.

Parent or guardian   **APPROVAL**   Signature _____ Date _____
(or adult student)
Parent or guardian   **REJECTION**   Signature _____ Date _____

Continued

Present Level of Performance

Academic:

Physical:

Adaptive:

Communication:

Related Services and Program Modifications

Transportation needs or restrictions:

_____ Regular bus

_____ Special education bus

_____ Wheelchair

_____ Carseat

_____ Special restraints

_____ Other _____

_____

_____

_____ Must have adult meet bus

_____ Child cannot walk to bus stop

_____ Child cannot cross in front of bus without assistance

_____ Child needs help on and off the bus

_____ Other _____

_____

_____

Program modifications:

_____ Pass/fail grading

_____ Classroom aide

_____ Auditory training equipment

_____ Preferential seating

_____ Modification of testing

_____ Written material presented orally

_____ Classroom interpreter

_____ Other _____

_____

_____

Parental Participation

Describe plans for parent participation in implementing the student's individualized education program.

Instructional Objectives

Student's Name _____ School _____ Grade _____

Service Provided _____ Teacher/therapist _____

Annual Goal _____

BENCHMARK	PROFICIENCY	MEASURED BY	PROJECTED BEGINNING	PROJECTED ENDING	ACTUAL COMPLETION

Parental Participation

Describe plans for parent participation in implementing the student's Instructional Objectives.

CURRICULUM – SPECIFIED GOALS OR OUTCOMES

- **PRIORITIZE**
- **LOOK BEYOND THE OBVIOUS**
- **BE MEANS-END DIRECTED**
- **IF THEY LEARN NOTHING ELSE . . .**
- **WHAT IS MEANINGFUL . . .**

CORE VOCABULARY

ESSENTIAL EVERYONE MUST LEARN THIS

MOST SHOULD LEARN THIS

IF THEY CAN .. . I WANT SOME TO LEARN THIS

What prior knowledge or PRECONCEPTS must they have? What processes or skills must they know?

How can I probe for these preconcepts, processes? What questions can I ask? Will this be part of an orienting unit?

SEQUENCING THE UNIT

<table>
<tr>
<td>

1. What will I do for students who do not have the necessary preconcepts, processes, or skills—preteach, use cooperative learning, design a preteaching unit for some and enriching activities for others, extend the orienting unit . . .

</td>
<td>

MODIFICATIONS FOR STUDENTS WITH SPECIAL NEEDS

</td>
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<td>

2. **TEACHING THE CONCEPTS—(IN OUTLINE)**
   REMEMBER TO USE GUIDED QUESTIONING, MEDIATION, AND SCAFFOLDING.
   How will I develop the VOCABULARY for the CONCEPT(S)?

</td>
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</table>

What activities or aspects of the whole unit will ensure generalization and develop:

ORAL LANGUAGE	READING	WRITTEN LANGUAGE	SPECIAL SKILLS (e.g., study skills research, etc.)

MODIFICATIONS FOR STUDENTS WITH SPECIAL NEEDS

3. **EVALUATION**
   - **Did every student have equal access to the learning opportunity because I ensured that they all had the necessary preconcepts, vocabulary, skills, and modifications for special needs?**
   - **Has every student learned something and how can I evaluate this range of learning?**

Assessing Advanced Language

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. Describe typical language development in adolescence.
2. Discuss issues of student-centered assessment at the secondary school level.
3. Discuss screening, case-finding, and eligibility for services for students in secondary schools.
4. Describe the uses of standardized tests, criterion-referenced methods, and observational assessment at the secondary level.
5. Outline methods of assessment of functional communication for adolescent students with severe disabilities and autism spectrum disorder (ASD).

Crystal had two younger brothers who were both diagnosed with fragile X syndrome when she was in third grade. At that time, Crystal was tested, too, and found to be positive for the syndrome. Before that, she'd been thought of by her teachers as something of a "slow learner," who had barely managed to stay at grade level. Once the diagnosis was established, she received a thorough assessment. She was found not to be eligible for services in third grade, since she was functioning within normal limits, although near the borderline. She was put on monitoring status and reevaluated 1 year later. By that time, her scores on a battery of oral language and reading tests had slipped below the cutoff and qualified her for services in language and reading. She received intervention throughout fourth and fifth grades and was able to function in regular classes. By the end of fifth grade she was making satisfactory progress, had age-appropriate oral language skills in most areas, and was reading on a fourth-grade level. It was decided to send her on to middle school with her class, to furlough her from direct intervention, and to monitor her progress.

Mr. Janis was the speech-language pathologist (SLP) charged with monitoring Crystal's progress in middle school. He gave her the *Clinical Evaluation of Language Fundamentals—4* (CELF-4) Screening Test (Semel, Wiig, & Secord, 2004) during her sixth-grade year and found her performance to be broadly within normal limits, although at the low end. In talking to her teachers, Mr. Janis gathered that Crystal was having a few problems but wasn't failing any courses and wasn't showing any behavioral difficulties, although they noted that she had some trouble paying attention. The teachers felt they could give her a little extra help in the classroom, and she would be able

to get by. Mr. Janis gave them some information about fragile X syndrome in girls, provided some tips for modifying classroom assignments and presentation, and asked them to let him know whether things changed. He placed Crystal on monitor status for another year. When he gave her the CELF-4 screening again in seventh grade, though, her score fell just short of passing. He talked to some of her teachers and found that she was beginning to have trouble with the lecture material presented in class, with completing independent assignments, and with keeping up with reading. They felt she sometimes seemed lost in the shuffle. Mr. Janis decided to do a full-scale assessment and find out what Crystal needed to help keep her on track.

Crystal is like many children who have language learning disorders (LLD) that stem from a variety of sources. She is one of what Launer (1993) called "the porpoise kids," whose deficits go below the surface at times and then leap up again at points when the demands of the curriculum increase. These points often occur in fourth and seventh grades, where, in each case, new and taxing changes in the curriculum and in teachers' expectations of students come into play. Crystal is typical of adolescents with LLD in another way, too. Most don't appear on the SLP's doorstep with no history. Almost always, unless they have recently suffered a traumatic injury, they have been assessed and have received services before. That means that they don't enter our caseloads as clean slates. A great deal of information about their language and learning history is available. The goal of assessment for this period of advanced language development is to use the data available in their files to select assessment questions and focus on the most relevant areas for in-depth appraisal.

LANGUAGE DEVELOPMENT IN ADOLESCENCE

What do we mean by *advanced language development?* In general, we mean the language normally learned when children are in the adolescent years, from age 12 through early adulthood, when they attend middle and high school. Of course, some students in secondary schools are functioning at lower levels of language development. Some are still in the language-for-learning (L4L) stage, with few literate language and literacy skills. Some with severe disorders are still at developing language levels. There may be students with profound disabilities who still function at emerging language or prelinguistic stages. For these students, the SLP uses assessment procedures appropriate for developmental level, using functional assessment, such as ecological inventories, to determine these

students' communicative needs in community-referenced environments, as we discussed previously.

Adolescents who are functioning at advanced language levels have not only mastered the basic skills of the developing language period but also achieved some of the goals outlined in Chapter 12. They can produce and understand true narratives and some complex sentences, make some inferences, carry on marginally adequate conversations, engage in some metalinguistic discussions, and so on. While these abilities may be present in some aspects of their interactions, though, their skills are, in Nelson's (1998) words, "wobbly." Oral language facility can easily be disrupted by stress, when dealing with unfamiliar material or new vocabulary, or when faced with some new communicative goal (such as asking for a date) or cognitive function (such as formulating a scientific hypothesis). Word finding often continues to be a problem.

The new skills that normal adolescents are learning during the period of advanced language are primarily concerned with the development of language for more intensive social interactions, with language at the literate end of the oral-literate continuum, and with abilities related to critical thinking (Whitmire, 2000) and executive function (Ciccia, Meulenbroek, & Turkstra, 2009). Vocabulary acquisition involves literate language forms (Nippold, 2007; Westby, 2005) such as the following:

- Advanced adverbial conjuncts (*similarly, moreover, consequently, in contrast, rather, nonetheless*)
- Adverbs of likelihood (*definitely, possibly*) and magnitude (*extremely, considerably*)
- Precise and technical terms related to curricular content (*abscissa, bacteria, pollination, fascism*)
- Verbs with presuppositional (*regret*), metalinguistic (*predict, infer, imply*), and metacognitive (*hypothesize, observe*) components
- Words with multiple meanings (*strike* the ball, *strike* at the factory; *run* for office, *run* the office)
- Words with multiple functions (*hard* stone, *hard* water, *hard* feelings)

Adolescents acquire more than just a larger vocabulary. They learn to elaborate and expand the meanings of known words (*cold* meaning temperature; *cold* meaning affect) and to understand connections among words related in various ways, such as by derivation (*clinic, clinician*) or by meaning (antonyms [for example, *reluctant* and *enthusiastic*]); synonyms [for example, *huge* and *enormous*]); or sound (homonyms [for example, *pair* and *pear*]) (Nippold, 2007). They also acquire more sophisticated abilities for defining words. Nippold, Hegel, Sohlberg, and Schwarz (1999) showed that, between sixth and twelfth grades, students increased in their ability to provide the most advanced type of definition for abstract nouns, the *Aristotelian* type. This type of definition contains a superordinate term and a description with one or more characteristics (for example, *happiness* is a feeling [superordinate term] of pleasure or gladness resulting from a positive experience [description of characteristics]). Sixth-graders produced only one or two of 16 responses at this level, whereas twelfth-graders produced an average of six of 16. Finally, vocabulary development in the secondary years includes increasing understanding of derivational morphology) (Nippold & Sun, 2008), the recognition of root words, prefixes, and suffixes that can change the part of speech and pronunciation of base words (e.g, *graph, telegraph, telegraphic*). Larsen and Nippold (2007) outline the ways in which morphological development not only supports advanced vocabulary development,

but also the expansion of decoding, reading comprehension, and spelling skills.

New syntactic skills include growth both within sentences (intrasentential) and between sentences (intersentential). Growth within sentences is seen in small but regular increases in sentence length throughout the school years. Longer sentences are used for particular purposes, though, including narrative, persuasion, and writing. Nippold (2007) reported data showing children used longer sentences in narrative than conversational tasks. Reed, Griffith, and Rasmussen (1998) reported that adolescents used morphosyntactic markers (verb marking, negative forms, etc.) more frequently than did younger children. Nippold, Ward-Lonergan, and Fanning (2005) showed that persuasive contexts elicited the most advanced syntactic forms in adolescents' writing; Nippold, Mansfield, and Billow (2007) showed that explanation of peer conflicts elicited the longest and most complex sentences in oral discourse. These results indicate that the use of increasing numbers of basic grammatical markers is one means by which sentences become longer during the adolescent years. Intrasentential growth, then, is seen both in the use of newly acquired forms, as well as in increased density of earlier-acquired forms within sentences.

Intrasentential growth also is seen in the increasing use of subordinate and coordinate clauses, as well as in the use of low-frequency syntactic structures associated with literate language style. Intersentential growth in the forms used to link sentences also is an important part of adolescent language development. The use of conjunctions and other forms of cohesive devices becomes more frequent and effective during the secondary school years (Nippold, 2007).

In addition to these new semantic and syntactic skills, typical adolescents develop a variety of new pragmatic abilities. They begin to use and understand language that has a figurative, rather than literal, function (Nippold, 2007; Nippold & Haq, 1996; Nippold, Moran, & Swartz, 2001; Quals & O'Brien, 2003). They make puns, use sarcasm, and gradually learn to use and comprehend metaphors ("she's a whirlwind"), similes ("like a diamond in the sky"), proverbs ("a stitch in time saves nine"), and idioms ("raining cats and dogs"). Slang and in-group language become important, and the ability to discern the appropriate uses of this slang helps to determine group membership and peer acceptance (Nippold, 2007). Also, adolescents become significantly more proficient at using communication for purposes such as persuasion, negotiation, and establishing social dominance (Nippold, 1994). Moreover, unlike in earlier childhood when friendship revolved around shared activity, in adolescence, talk itself becomes the major medium of social interaction. It represents a new aspect of the teen's relation to the social world, where friendship is negotiated primarily by "just talking," sharing intimacies and experiences for the sake of communication alone (Raffaelli & Duckett, 1989).

School also plays a role in the normal adolescent's language development. New forms of discourse, such as class lectures and expository texts, are introduced in the curriculum, and students need to learn to process and produce them. Secondary school requires students to produce more extended written forms of communication than they did at the elementary grades. Students are required to produce not only stories, but expository and persuasive texts. The understanding of these texts undergoes a predictable sequence of development during the secondary school years (Scott, 2005). These written forms require a great deal of metacognitive and metalinguistic activity.

Formal operational thought is the new cognitive development of the adolescent period. It allows teens to move beyond concrete

experiences and begin to think abstractly, reason logically, draw conclusions from the information available, and apply all these processes to hypothetical situations. Formal operational thought greatly extends the student's capacity to think about thinking processes and to entertain hypotheses, coordinate abstractions, and use logical operations. Formal operational thought emerges during this period in normal development (Kamhi & Lee, 1988; Nippold, 1998) and is elaborated throughout the secondary school years. School work builds on formal thought capacities by teaching mathematics and science that make use of and provide practice in exercising these skills. Formal operational thinking also allows teens to develop a variety of verbal-reasoning and critical-thinking skills (Nippold, 2007). Analogical or inductive reasoning ("Apple is to fruit as potato is to vegetable") develops. Adolescents learn to use syllogisms or deductive reasoning, in problems such as "John is taller than Mary. Mary is taller than Pete. Who is tallest—John, Mary, or Pete?" These formal-operational and verbal-reasoning skills, in normal teens, also allow for a much greater range of metacognitive activities than are typical of elementary-age children. Again, the school curriculum both demands and provides forums for practicing these skills.

Adolescents with LLD

The kinds of demands that the middle and high school curriculum place on students were discussed by Montgomery and Levine (1995), Schumaker and Deshler (1984), and Whitmire (2000b). These are summarized in Box 13-1. These demands draw on many of the abilities we've been discussing that normally evolve during the adolescent years. For adolescents with LLD, as we've seen, the oral language and literacy skills developed during the elementary years may still be "wobbly." These shaky skills can form a weak foundation for the advanced language required by the more intense demands of the secondary curriculum.

For these reasons, children who had difficulties acquiring oral language and literacy at the L4L stage continue to have problems with advanced language during the secondary school years. A variety of studies looking at children with histories of language impairments find that these impairments do not disappear in older children and adolescents. Both Conti-Ramsden et al. (2009) and Rescorla (2009) reported on adolescent outcomes of children with histories of language delay. Both report that not all of these individuals require special education throughout their school years, although they do continue to score, on average, lower than peers on tests of language, verbal memory, and verbal reasoning. Still, Durkin et al. (2009) reported that three-quarters of these students received some form of academic support, and that educational attainment was consistently poorer than that of typically developing peers. They and Nippold (2010a) emphasize the importance of evaluating children with a history of language delay as they make the transition from primary to secondary school, in order to provide the levels of support they need to complete their education. Moreover, Wadman, Durkin, and Conti-Ramsden (2008) also report that it is not only academic abilities that are affected. Older student with LLD are at risk for low self-esteem and shyness, despite a desire to make friends and "fit in." These findings should lead us to conclude that secondary students with LLD will continue to require targeted supports for both academic and social functions. Let's talk about how we can assess these advanced language skills to identify ways to help our students with LLD manage in the secondary school environment and its social setting.

STUDENT-CENTERED ASSESSMENT

We've talked often about the importance of the client's family in any successful program of assessment and intervention. We still want to keep families involved and informed in an adolescent's program,

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BOX 13-1   Curriculum Demands at Advanced Language Levels

- Deal with multiple teachers, with varied teaching styles and modes of communication, and follow classroom rules for each.
- Use already automatized skills (e.g., reading fluency) and increasing base of knowledge to gain information from material written at middle and high school reading levels.
- Be able to retrieve prior knowledge of several different procedures (e.g., writing a business letter; recalling technical names for parts of a business machine written about in letter; using writing conventions such as spelling, capitalization, punctuation) simultaneously in order to complete classroom assignments.
- Be able to increase the amount of work produced (e.g., write longer reports, more frequent written assignments), necessitating quicker, more efficient production, use of organizational strategies and problem solving skills for scheduling tasks, etc.
- Be able to use "working memory" to reason, process large chunks of material, follow multistep instructions.
- Be able to deal with the stress of using more focused and sustained attention for increasing periods of time.
- Use self- and comprehension-monitoring and metacognition to determine priority and saliency of classroom material.
- Work independently with little help from the teacher.
- Master increasingly decontextualized, abstract, symbolic material to participate in discussions and assignments about curricular material.
- Complete homework and other assignments independently.
- Gain information from lectures, films, and student reports.
- Take notes independently.
- Demonstrate knowledge by studying and recalling information for tests with various formats (essay, multiple choice, true/false).
- Express oneself in writing in various formats (essays, descriptions, narratives, and explanations).
- Use logical and critical thinking to evaluate information presented.

Adapted from Montgomery, J., & Levine, M. (1995). Developmental language impairments: Their transactions with other neurodevelopmental factors during the adolescent years. *Seminars in Speech and Language, 16,* 2; and Schumaker, J., & Deshler, D. (1984). Setting demand variables: A major factor in program planning for the LD adolescent. *Topics in Language Disorders, 4,* 22-40.

using some of the techniques we talked about in Chapters 11 and 12. However, one of the hallmarks of adolescence is the beginning of a movement away from the family of origin as the primary social unit, toward more independence and peer-group orientation. We need to think about this developmental shift in planning assessment for this age group. We can attempt to provide a *student*-centered program when working with clients at advanced language levels. Let's see how we might do it.

McKinley and Larsen (2003) discussed the importance of student motivation in assessing adolescents. They suggested, first, that the clinician have no "hidden agenda" in the assessment process. Larson and McKinley (1995) advocated telling the student what behaviors (listening, speaking, thinking, writing, etc.) are going to be assessed. Tests and other methods to be used in the assessment can be introduced to the client and the purpose of each explained. Other assessment methods to be used, such as speech, narrative, or writing sampling, also can be previewed, with an explanation of the uses to which the clinician will put each procedure. Teens also need to know why particular behaviors are being assessed. Clinicians can explain, for example, that it is important to know about the student's listening and understanding of words and sentences in order to figure out how problems with listening might be getting in the way of succeeding in the classroom or interacting successfully with friends. It is important to emphasize to adolescents that the skills we are assessing are important not only for succeeding in school but also for interacting with peers and for developing vocational and independent-living opportunities.

The goal of such a student-centered approach to assessment is to establish a cooperative partnership between the teen and the clinician. Only through this partnership can we get the clearest picture of the adolescent's abilities. And, if we decide intervention is warranted, this partnership stands us in good stead for achieving the full cooperation of the client and eliciting the most highly motivated performance. One method that can be used to assist in this student-centered assessment is to ask the student to do some self-assessment. Grambau (1993) provided one example of such a self-assessment inventory; an adaptation is given in Figure 13-1. This form can be given to the student at the beginning of the evaluation. The student's self-assessment can be used to guide the process, focusing the clinician's attention on areas in which students perceive themselves to be having trouble. These areas can be investigated in depth as part of the assessment.

SCREENING, CASE FINDING, AND ESTABLISHING ELIGIBILITY WITH STANDARDIZED TESTS IN THE ADVANCED LANGUAGE STAGE

Some secondary school programs may use responsiveness to intervention (RTI) models to identify students who struggle with curricular demands (e.g., Vaughn et al., 2008). However, this approach does not yet have strong evidence at the secondary level (Brozo, 2009; Cobb et al., 2005) and is difficult to accomplish in the block-scheduled culture of most secondary schools. While some students may be referred to SLPs and other special educators through the progress monitoring process in RTI programs, most secondary students will find their way onto SLP caseloads in other ways.

Larson and McKinley (1995) suggested that mass screening for language disorders in secondary schools is probably not an efficient use of the SLP's time. Instead, they proposed focusing screening on at-risk populations. These would include adolescents placed in special classrooms, students receiving remedial reading assistance, those in danger of dropping out of school, and those having academic problems that aren't caused primarily by lack of motivation. Both Blanton and Dagenais (2007) and Sanger et al. (2003) have reported an unusually high prevalence of unidentified language disorders among adolescent delinquents, so it is important to screen students who seem to be having behavioral or social difficulties, even if they have not been previously thought to have communication problems. Such students may have unidentified LLD and could benefit from assessment and intervention with the speech-language pathologist. A sampling of screening tests available for use with students at advanced language levels appears in Appendix 13-1. These screening measures need to be used with some caution, though. Nelson (1998) pointed out that many screening tests developed for adolescents may not be sensitive to the problems that can occur at advanced language levels and have an impact on school and personal adjustment. If an at-risk student passes one of these screenings but the clinician has a "hunch" that the passing score is not a good reflection of the student's functional language ability, a talk with some of the student's teachers may be warranted. If the teachers confirm the clinician's hunch that language disabilities are getting in the student's way, some standardized testing in greater depth may be warranted to determine whether the student would be eligible for services on the basis of scores from more extensive testing.

Other sources of referral are most likely to be the teachers and counselors who work with students in the school. For these referral sources, it is especially important to provide practical criteria for making referral. Using a pragmatically oriented checklist, like the one in Figure 11-1, can be helpful for eliciting referrals from these sources. So can a referral checklist that focuses on skills that are required by the secondary curriculum. Figure 13-2 gives an example of a checklist that incorporates the pragmatic aspects of Figure 11-1 and adds some of the curricular demands of Box 13-1. A checklist like this can be given to teachers at in-service programs that discuss adolescent language and the needs of students with LLD at this level. Alternatively, it can be distributed to teachers with a short cover note explaining the clinician's interest in helping students to acquire language skills that will increase success in the classroom. Teachers can be asked to fill out the form for any student whom they suspect may have "wobbly" language abilities. If teachers are unwilling to fill out the forms, the SLP might arrange a short meeting with the teacher and ask the teacher to think of any students who might be having trouble. The clinician can simply ask the questions on the form and record the answers for each student about whom the teacher has concerns.

Students who show significant problems on an inventory like the one in Figure 13-2 can be assessed for eligibility using standardized test batteries. A screening test would not be necessary, since the screening was done by the teacher by filling out the checklist. When choosing and interpreting standardized tests at advanced language levels, we need to bear in mind all the warnings we have discussed all along for standardized tests. Several are particularly germane in the advanced language period. The need to identify pragmatic as well as semantic and syntactic areas of need is especially important, since pragmatics may be the area of greatest deficit in adolescents with LLD. And of course, we will need to attend to the ways in which the student's oral language skills support reading and writing in the curriculum.

Like screening tests, standardized tests at advanced language levels may not be sufficiently sensitive to higher level language

Learning skills	I'm good	I'm ok	I get by	I need some help	Aah! Help! Help!
Answering questions about my reading					
Asking questions when I don't understand					
Editing my writing					
Engaging in extended discussions of curricular topics with teacher and peers					
Finding main ideas in textbooks					
Finding time to finish all my work					
Finishing assignments					
Following directions					
Interest in school work					
Organizing my thoughts					
Participating in class discussion					
Participating in group assignments					
Penmanship					
Reviewing and studying for tests					
Spelling and punctuation					
Taking notes					
Taking tests					
Understanding teachers' lectures					
Understanding what I read					
Using a dictionary or other reference books					
Vocabulary					
Writing papers					

FIGURE 13-1 A sample student self-assessment form for focusing evaluation in the advanced language stage. (Adapted from Grambau, M. [1993]. *Study smarter, not harder*. Kent, WA: Classic Printing; and Westby, C. [2007]. There's more to passing than knowing the answers: Learning to do school. In T. Ukrainetz [Ed.], *Contextualized language intervention* (pp. 310-388). Eau Claire, WI: Thinking Publications.)

skills to identify deficits in students with minimally adequate basic oral language abilities who are still having trouble with secondary school work. They also may fail to sample the extended discourse contexts that are necessary for success in school, like narratives and expository prose. Nelson (1998) suggested that the most appropriate uses of standardized tests of advanced language include identifying the dimensions of the language disorder—dimensions such as oral language, written expression, and comprehension of language forms in listening and reading. We can, then, select standardized tests for adolescents using a strategy similar to the one discussed for elementary students in Chapter 12. That is, we can use standardized tests that sample a broad spectrum of oral and written receptive and expressive abilities. If necessary, the assessment for eligibility can be supplemented with tests of pragmatics and tests of learning-related skills to establish eligibility, as we

discussed in Chapter 11. At the advanced language level, some tests particularly helpful in this regard include the following:
- *Test of Word Knowledge* (Wiig & Secord, 1992a): assesses aspects of lexical skill including definitions, synonyms, antonyms, metalinguistics, and figurative language.
- *Test of Language Competence—Expanded* (Wiig & Secord, 1989): provides assessment of structural ambiguities, figurative language, and ability to draw inferences.
- *Test of Adolescent and Adult Language—4* (Hammill, Brown, Larsen, & Wiederholt, 2007): provides broad assessment of syntactic forms in the Listening Grammar, Speaking Grammar, Reading Grammar, and Writing Grammar subtests.
- *Clinical Evaluation of Language Fundamentals—4* (Semel, Wiig, & Secord, 2003): the Formulating Sentences, Recalling

Student name _____
Grade/subject _____
Teacher_____
Date_____
To the teacher: Please mark any item below if it is of concern (+) or serious concern (++).

Reading

_____ Gains information from independent reading assignments at grade level
_____ Studies for tests effectively
_____ Identifies main ideas in reading
_____ Follows written directions without difficulty
_____ Uses references (dictionaries, Internet, atlases) effectively

Writing

_____ Expresses thoughts clearly in writing
_____ Uses forethought to plan writing assignments
_____ Has legible handwriting
_____ Uses adequate spelling
_____ Uses correct punctuation/capitalization
_____ Uses appropriate grammatical complexity
_____ Takes adequate notes
_____ Completes written assignments
_____ Applies adequate editing skills
_____ Can perform on short-answer tests
_____ Can perform on essay tests

Speaking

_____ Speaks with adequate pronunciation, fluency, and correct grammar
_____ Uses age-appropriate complexity
_____ Gives accurate information
_____ Can follow discussion agenda set by teacher

_____ Produces responses without long delays
_____ Discusses everyday topics appropriately
_____ Participates adequately in class discussions on curricular topics
_____ Uses appropriate specific vocabulary
_____ Organizes thoughts adequately when speaking
_____ Keeps to the point in speaking, without undue redundancy
_____ Asks questions when clarification is needed
_____ Follows classroom rules for speaking
_____ Uses and "gets" humor appropriately
_____ Is polite and tactful
_____ Can express opinions clearly
_____ Has no trouble finding words during speaking

Listening

_____ Follows oral direction the first time
_____ Can understand class lectures
_____ Understands idioms, proverbs, slang in context
_____ Can follow material presented in films, student reports, Web-based materials
_____ Can answer questions based on lecture and other orally presented material
_____ Can later recall and relate information from orally presented material

Organization

_____ Can work independently
_____ Organizes material in assignment books, planners, calendars, etc.
_____ Seems "with it" in class discussions
_____ Can think problems through, using reasoning skills and thinking out loud

FIGURE 13-2   A sample checklist for referral at the advanced language level.   (Adapted from Damico, J. [1985]. Clinical discourse analysis: A functional language assessment technique. In C.S. Simon [Ed.], *Communication skills and classroom success: Assessment of language-learning disabled students* [pp. 137-139]. Gaithersburg, MD: Aspen.)

Sentences, and Sentence Assembly subtests tap various aspects of grammatical production.

- *Test of Language Development-Intermediate—4* (Hammill & Newcomer, 2008): the Sentence Combining and Word Ordering subtests have shown good correlations with production in spontaneous discourse (Scott & Stokes, 1995).
- *Test of Written Language—4* (Hammill & Larsen, 2009): measures structural elements in writing in students to age 17.
- *Comprehensive Assessment of Spoken Language* (Carrow-Woolfolk, 1999b): measures semantic, syntactic, pragmatic, and supralinguistic aspects of language.
- *Oral and Written Language Scales* (OWLS; Carrow-Woolfolk, 1996): Measures written expression, oral expression, and listening comprehension for children ages 5 through 21.

Appendix 13-2 provides a list of standardized tests that are appropriate for students at advanced language levels.

A third source of referral at the secondary school level is the students themselves. In order to make this referral route a viable option, several conditions need to be met:

Activity with the SLP must result in academic credit toward graduation (Larson, McKinley, & Boley, 1993). Students will not be willing to devote time voluntarily to activities for which they receive no credit.

Standardized assessments of advanced language include written and spoken language.

Larson and McKinley (2003b) also suggested taking care in naming programs, so that they sound like academic courses rather than therapy. *Communication Studies, Effective Communication,* and *Communication Laboratory* are some examples of likely titles.

The program should emphasize the interactions among speaking, listening, reading, and writing and their effects not only on academic but also on interpersonal and vocational success. Pamphlets, notices, and talks to classes about communication services should focus on how improving language skills helps students succeed in both school and life.

Of course, students who refer themselves must qualify for services, just as students referred from other sources do. Using a self-assessment checklist like the one in Figure 13-2 can be an effective screening measure for adolescent self-referrals. If the student checks only a few of the areas on the form, the student's problem may not qualify him or her for intervention services. The clinician might talk briefly with such students to give them focused tips on study skills or peer communication or in whatever area they were feeling inadequate. Alternatively, the SLP might refer these students to the school counselor.

CRITERION-REFERENCED ASSESSMENT AND BEHAVIORAL OBSERVATION IN THE ADVANCED LANGUAGE STAGE

We've talked several times about the fact that standardized tests are needed to establish eligibility for services but are limited in their ability to serve as a basis for intervention planning. This principle still holds at the advanced language level. Criterion-referenced assessments and structured behavioral observations form the bulk of the assessment procedure at this stage. The errors and difficulties seen in the speech and writing samples we collect early in the assessment can point us toward the kinds of criterion-referenced evaluations we will want to complete. Let's look at the major areas of development of advanced language and give some ideas for criterion-referenced procedures to use to examine each one. Remember, though, that it probably won't be necessary to assess all areas for all students. Standardized testing, referral information, and the conversational and writing samples we collect can be used to focus the evaluation. And because our students at advanced language levels almost always have histories of assessment and intervention, this information, too, is important in focusing on areas for assessment.

The first thing we need to do after establishing a student's eligibility for services is to decide whether the student is functioning in the advanced language stage or at a lower level. In the L4L stage, we used a short conversational sample to place the student in a general level of development to plan further assessments. This sample can be useful in the advanced language stage, too. A good supplement to the conversational sample, though, is a short sample of the student's writing. We can ask the student to come to the first assessment session with a sample of a homework assignment or an English composition recently completed. Examining these artifacts can help us to decide whether the student has achieved some of the basic skills of the L4L stage, such as the ability to write more-or-less grammatical sentences, to spell with some degree of accuracy, and to organize a sequence of thoughts and express them somewhat comprehensibly. We'll talk more about detailed analysis of writing skill later. It's important to remember, too, that adolescents referred for assessment may have significant difficulty with written expression, even when they are functioning at the advanced language stage of oral expression. However, looking at a writing sample briefly as part of the preassessment decision-making can help to decide whether advanced language tasks are relevant for this student or whether the student is functioning more at an elementary level of oral and written language.

Students at an L4L level will probably make a few grammatical errors in speech and will display writing samples that are brief; contain short, simple sentences; show difficulty with the mechanics of spelling, capitalization, and punctuation; have little or no organization or macrostructure; and show sparse expression of ideas. In other words, their writing will be like that of a second- or third-grader rather than a secondary student. Students functioning at advanced language stages may display word-finding problems, limited vocabulary, and pragmatic errors in conversation, but will have mastered basic oral language rules. Their writing will be less mature and sophisticated than that of their peers but will display some competence with mechanics, some limited use of complex sentences, and some degree of organization and semantic content (Dockrell, Lindsay, & Connelly, 2009; Scott, 1999). For students appearing to function at L4L stages in the secondary school years, assessment can focus on areas outlined in Chapter 11 along with some assessment of functional skills needed to survive in the academic and vocational environments that students must face. For students who have basic oral and written language skills, assessment of areas of advanced language development can proceed. Let's look at some of the areas that can be a part of this assessment.

Semantics

The Literate Lexicon

Nippold (2007) discussed the importance of the development in adolescence of a "literate lexicon," the words needed to understand and produce language near the literate end of the oral-literate continuum. Table 13-1 provides some examples of the kinds of words and morphemes secondary students typically encounter in the academic curriculum. Many of these words will be new to our clients, and will have to be learned in order to participate in this curriculum. Nipold (2007) highlights three main avenues of vocabulary learning for older students:

- Direct instruction
- Contextual abstraction
- Morphological analysis

Direct instruction may take place in the mainstream classroom, but, unfortunately, students with LLD may not be able to absorb all the information presented there. In addition, they may have a smaller base of lexical knowledge to begin with, so that many of the words they do not know will be assumed to be familiar and not directly taught. It will be important, then, to assess students' ability to acquire new words using the other two learning strategies available to them.

Contextual abstraction (Sternberg, 1987) is the ability to infer the meaning of a new word from the linguistic cues that accompany it. We can assess students' ability to do this by having them read (or listen to the clinician read) a passage that has some difficult, unfamiliar words. We can ask students to guess what the difficult words mean and to tell why they think so. Students who have trouble using context to infer meaning in these activities can be given practice in doing so as part of the intervention program.

TABLE 13-1   Examples of Words and Morphemes Typically Encountered in the Secondary Curriculum

Example Words

MORPHEMES
Prefixes:

Anti-	anticlimax, antifreeze, antiaging
Co-	coauthor, coexist, copilot
Dis-	disability, dishonest, distrust
Mal-	maladaptive, malpractice, malnourished
Mis-	misfire, mislead, mismatch
Multi-	multicultural, multimedia, multisensory
Non-	nonfat, nonverbal, nonprofit
Pre-	precautions, pre-existing, prefabricate
Re-	rebuild, recall, refinance
Sub-	subgroup, submarine, substandard
Un-	unable, unavailable, uneasy

Noun Suffixes:

-cide	genocide, germicide, homicide
-ism	criticism, symbolism, journalism
-ist	activist, colonist, pathologist
-ology	biology, geology, herbology

Verb Suffixes:

-ate	activate, evaluate, gravitate
-ize	colonize, fertilize, naturalize

Adjective Suffixes:

-able	enjoyable, manageable, testable
-ese	Japanese, legalese, motherese
-ful	artful, painful, pitiful
-less	ageless, flawless, matchless
-some	bothersome, wearisome, wholesome

Adverb Suffixes:

-fully	gratefully, peacefully, skillfully
-ly	angrily, quietly, sadly

CURRICULAR AREAS

Math	additive, algebraic, associative, commutative, factorization, tesselation
Science	alkaline, bimetallic, crystalline, echolocation, endothermic, ferromagnetic, molecular, unsaturated
Social Studies	circumnavigate, domesticate, federalism, imperialism, mercantilism, nationalism, pilgrimage, subcontinent

Adapted from Nippold, M. (2007). *Later language development: School-age, children, adolescents, and young adults* (3rd edition), (pp. 50-55). Austin, TX: Pro-Ed.

Morphological analysis can be assessed in a similar way; that is, we can give students a list of words such as

copilot	misadventure
counterattack	nondairy
herbicide	reform
illegible	predate
irresponsible	unaware

They can then be asked to tell what the words mean and how they know. If they cannot demonstrate use of morphological analysis strategies in this brief exercise, such strategies might be targeted as part of the vocabulary intervention program.

Nippold (2007) identified several categories of words particularly important for the literate lexicon. These include nouns for technical and curriculum activities (*salutation, oppression, circumference, proton*). Words like these can be identified and assessed using curriculum-based methods such as those discussed in Chapter 11. Artifact analysis is a particularly useful format here. Students' written work can be analyzed to see which curricular vocabulary items are misused or avoided. These words can be focused on in the intervention program.

Another class of words in the literate lexicon is verbs used in discussions of spoken and written language interpretation and for talking about cognitive and logical processes (Nippold, 2007). They include verbs that refer to both metacognitive (*remember, doubt, infer, hypothesize, conclude, assume*) and metalinguistic (*assert, concede, imply, predict, report, interpret, confirm*) activities. Verbs with presuppositional aspects in their meaning also would be included in the category. Two types of verbs have presuppositional components: *factives* and *nonfactives.* Factive verbs presuppose or assume the truth of the following clause ("We *regret* that your application is denied."). They include examples such as *know, notice, forget,* and *regret.* With nonfactive verbs, the truth of the following proposition is uncertain ("I *suppose* my application was denied.") They include verbs such as *think, believe, figure, say, suppose,* and *guess.*

Nippold (1998) reported that these verbs continue to develop and expand in meaning in the vocabularies of normally developing adolescents. There is good reason to believe, then, that they can cause difficulties for students with LLD. Assessment of vocabulary with standardized tests can be supplemented with informal assessment of verbs like these, since they are likely to cause problems and are necessary to establish competency with literate language. Here a metalinguistic approach to assessment can be used. The clinician can simply present a list of curriculum-related words gathered from classroom teachers and ask clients to tell what they know about them. A "Knowledge Rating Checklist" like the one in Table 12-1 can be helpful. Students can fill out the chart for each word on the clinician's list, and the clinician can work with students on words whose meanings are shaky for them.

Scott (2010) suggests using qualitative analysis of literate vocabulary. She reports that asking college students to identify "high level" words in the writing of secondary students resulted in high levels of agreement, even with only minimal instruction as to what constituted a "high level" word (i.e., find words that are more adult-like and less frequent). You might like to try your hand at identifying the "high level" words in the passage in Box 13-2 (our answers appear in Appendix 13-3). Another qualitative metric for assessment of literate vocabulary is simply word length. Scott suggests using word processing software that calculates the average number of characters/word as one index. Similar software can also be used to identify words that are *not* among the most common 1000 words in an on-line word frequency list (e.g., Word Frequency Text Profiles [Edict, 2008]). These counts can be used both to compare values between a client's writing sample (or speech sample transcribed by the clinician), and a similar sample from several peers. They can also be used to track change in vocabulary over the course of an intervention program.

Word Retrieval

Research suggests that 25% to 50% of children with LLD have problems with word finding (Messer and Dockrell, 2006). When we talked about word-finding difficulties for children in the L4L stage, we discussed the fact that a large discrepancy between scores on a receptive vocabulary test and an expressive vocabulary test is one signal of this problem. At the advanced language level, tests such as the *Receptive One-Word Picture Vocabulary Test—2000 Edition* (Brownell, 2000) and the *Expressive One-Word Picture Vocabulary Test—2000 Edition* (Brownell, 2000), as well as the *Peabody Picture Vocabulary Test—IV* (Dunn & Dunn, 2006) and the *Expressive Vocabulary Test—2* (Williams, 2006), might be used for this purpose. Tests specifically designed to assess word retrieval include the *Rapid Automatized Naming Task* (Wolf & Denckla, 2005) and the *Test of Adolescent/Adult Word Finding* (German, 1990). Teacher report of word-finding problems or referral checklists would be another. A clinician-made form, like those we've discussed, or a commercially available one, like German and German's (1993) *Word-Finding Referral Checklist* can be used. German and Newman (2007) suggest further that oral reading assessments that include unusual or unfamiliar words be used, followed with recognition responses (e.g., multiple choice) for words missed in the oral reading, since children with word finding difficulties can often recognize words that they have difficulty retrieving on their own. We also might hear some word-finding problems in the short conversational interaction with which we began the assessment session. In fact, Tingley, Kyte, Johnson, and Beitchman (2003) suggest that it is always important to supplement single-word testing with a conversational sample in assessing word finding, since their research suggests only weak relationships between single-word tests and disruptions in conversational speech.

Word Definitions

We use the standard expressive and receptive vocabulary tests just discussed to give a general picture of vocabulary development. Crais (1990), however, emphasized the limitations of these tests in that they give a "yes or no" answer as to whether a particular word is "known," when in reality there are many levels of "knowing" involved in lexical acquisition. Having a partial representation of the meaning of a word is not adequate, for example, to produce a complete definition of the word.

Using word definition tasks to assess advanced language stages is appropriate, since the ability to define words is generally acquired by the time normally developing children reach this stage (Nippold,

2007). Several tests of adolescent language have definition subtests that can be used as criterion-referenced assessments. These include *The Comprehensive Receptive and Expressive Vocabulary Test—2nd Edition* (Wallace & Hammill, 2002), *The Test of Word Knowledge* (Wiig & Secord, 1992a), and *The Word Test 2—Adolescent* (Huisingh et al., 2005). We also can simply ask students to give definitions for words derived from textbook or literature selections that they are studying in class. We can assess these informally elicited definitions using the following scoring rubric suggested by Nippold, Hegel, Sohlberg, and Schwarz (1999) and Pease, Gleason, and Pan (1993):

- **2 points**: contains an accurate superordinate term and describes the word with one or more accurate characteristics (X is a Y that Z; a robin is a bird that has a red breast)
- **1 point**: contains an accurate superordinate term but does not describe the word accurately (X is a Y; "happiness is a feeling"); describes the word with one or more accurate characteristics, but does not contain an accurate superordinate term (X is when Y; "happiness is when you're glad")
- **0 points**: attempts a response, but it does not contain an accurate superordinate term or accurate description/characteristic; no response

Nippold and Haq's (1996) results suggest that students in sixth grade should receive at least one point for more than half the words presented; those in ninth grade should receive at least one point for more than 75% of the words presented, and those in twelfth grade should receive 2 points for more than half the words presented.

If students have difficulty producing definitions, then we should work on enhancing their understanding of the meanings and uses of the words in the intervention program. We should also provide students with experience in word definition tasks as part of the program. These experiences include looking up, reading, reproducing, and eventually generating definitions for the words targeted in the treatment program.

Word Relations

To be competent with words, we need to know more than what the words mean. It also is necessary to know how words are related. Students at advanced language levels need to be able to consider that words may have more than one meaning. They have to be able to substitute words with similar meanings to avoid using the same word over and over again in their writing. They need to compare and contrast word meanings to choose the best word to express their idea. They also must choose correct spellings for words that are pronounced similarly (*their, there*) and use context to decide which meaning is being expressed by a spelling with more than one pronunciation ("I *read* the paper every day," "I *read* the paper yesterday").

Again, subtests of standardized instruments are available to use as criterion-referenced assessment for looking at these kinds of skills. *The Clinical Evaluation of Language Fundamentals—4* (Semel, Wiig, & Secord, 2003) has sections testing semantic relationships, as does the *Detroit Test of Learning Aptitude—4* (Hammill, 1998), the *Test of Language Competence—Expanded Edition* (Wiig & Secord, 1989), the *Test of Language Development—Intermediate—III* (Hammill & Newcomer, 2008), the *Woodcock Language Proficiency Battery—Revised* (Woodcock, 1991), and *The Word Test 2—Adolescent* (Huisingh et al., 2005).

Understanding of multiple meanings can be assessed with definition tasks. We might give a student a word, such as *run,* that has several common meanings and ask the student to give one

definition, and then give another one. We can observe whether students are able to generate alternative meanings without support. If they can't, some dynamic assessment can be tried, in which we give "clues," such as "Tell me what *run* means when you're talking about a race. What does it mean when you're talking about an election?" If these clues help students who were at first unable to generate multiple meanings, a learning-strategy approach might be used to help the student use self-questioning to determine whether multiple meanings of a word need to be invoked, to understand jokes, for example. If the "clues" don't help, more direct attention to words with multiple meanings might be provided in the intervention program.

Artifact analysis is another way to obtain criterion-referenced assessment of word-relation skills. Going over a student's writing to look for inability to substitute words with similar meaning, so that the same word recurs frequently, can clue us in to the need to work on synonyms and develop sets of synonymous words in the intervention program. Other usage errors in writing, such as writing *red* when the student means *read,* are also clues to the need for work in the area. So are misuses of words, such as using *assess* when *access* is meant.

Other curriculum-based forms of assessment also can be used. These would include reading a passage with a student, from a classroom literature selection, for example. The clinician could ask the student to substitute a synonym for several of the words, ask for antonyms for words, have the student compare and contrast the meanings of related pairs of words in the passage, and ask the student to generate other meanings for a word in the passage that could have more than one. For example, the clinician might present the following passage from *The Call of the Wild* (London, 1963, pp. 3-4):

> Buck did not read the newspapers, or he would have known that trouble was brewing, not alone for himself but for every tidewater dog . . . Because men, groping in the Arctic darkness, had found a yellow metal, and because steamship and transportation companies were booming the find, thousands of men were rushing to the Northland . . . These men wanted dogs . . . to toil . . .

You might ask the student to supply a word that could be substituted in this context for *brewing, groping,* or *booming.* You could ask what *brewing* means in this context and what else it could mean, what the opposite of *Arctic* or *toil* is (*tropical, play*), and how the words *Arctic* and *Northland* are related in meaning. All these activities, of course, require a good deal of metalinguistic skill. If the student cannot perform them, the failure may be a result of poor metalinguistic ability rather than a lack of lexical knowledge. Still, both levels of knowledge, lexical and metalinguistic, are necessary to be fully competent with language at the literate end of the continuum. Assessing these skills with metalinguistic tasks will give us an idea of whether students can handle the demands of the metalinguistics of word relations. If they can't, practice with such activities in a curriculum-based intervention program will improve both lexical and metalinguistic ability.

Figurative Language

As we've discussed, the ability to use language in nonliteral ways is one of the important developments of the advanced language period. Both Cain and Towse (2008) and Rinaldi (2000) showed

that children with LLD had difficulty inferring the meaning of unfamiliar figurative language forms in both oral and written contexts. A few adolescent test batteries have figurative-language processing subtests. The *Test of Language Competence—Expanded* (Wiig & Secord, 1989) and the *Comprehensive Assessment of Spoken Language* (Carrow-Woolfolk, 1999) are two examples. We also can use curriculum-based assessment to document deficits in this area. Literature selections from the student's English class can be analyzed by the clinician for similes, metaphors, idioms, and proverbs. These figures can be presented in context to the student, who is asked to provide an interpretation. We can look at our *The Call of the Wild* (London, 1963, pp. 4–6) example again:

> Buck lived in a big house in the sun-kissed Santa Clara valley . . . . And over this great domain Buck ruled . . . for he was king . . . . He had a fine pride in himself, was ever a trifle egotistical as a country gentleman . . .

A clinician could ask the student to decide whether the sun really kissed the valley and whether Buck were really a king. The student could be asked to explain what these metaphors did mean and why the author might use them. A similar procedure could be used for the simile *egotistical as a country gentleman.* Again, these metalinguistic activities require more than basic comprehension of the figurative language forms. But these activities are the kind that will be demanded by the curriculum in which students must function. If assessment of figurative language in contexts like these indicates weakness on the part of the student, intervention that encourages work with figurative forms at a variety of levels can be instituted. In general, figures that refer to concrete objects ("The early bird catches the worm") are easier than those with abstract words only ("Two wrongs don't make a right"). Familiar sayings ("Too many cooks spoil the broth") are easier than unfamiliar ones ("Two captains will sink a ship"). However, Nippold and Taylor (2002) showed that there is a developmental progression in the understanding of idioms from childhood to adolescence so that the familiarity of the idiom becomes less important in determining its difficulty for older students, as they gain greater skill in using context to determine meaning. Qualls and O'Brien (2003) showed that context generally facilitates idiom comprehension (although less for students with LLD than for typical students), so that presenting idioms within a story setting may help students in determining their meaning. We can give students practice hearing, reading, interpreting, talking about, and creating figurative forms in a variety of contexts to increase both comprehension and metalinguistic awareness of these modes of expression.

Qualls and O'Brien (2003) selected a list of 24 idioms that represented a range of familiarity to speakers of English. These are presented in Table 13-2. Students who have difficulty inferring and explaining the meaning of common figures in tasks such as these can benefit from exposure to and metalinguistic discussion about idioms in the intervention program that employs contexts in which the students are encouraged to infer the idiom's meaning.

Semantic Integration

We talked at length in Chapter 11 about assessing semantic integration in the L4L period. Many of the same procedures, using grade-appropriate material, can be used in the advanced language stage

TABLE 13-2   Common Idioms in English, at Three Levels of Familiarity

Low Familiarity	Moderate Familiarity	High Familiarity
Take down a peg	Go into one's shell	Let off some steam
Vote with one's feet	Strike the right note	Go around in circles
Paper over the cracks	Keep up one's end	Put one's foot down
Hoe ones's own row	Cross swords with someone	Breathe down someone's neck
Talk through one's hat	Blow away the cobwebs	Put their heads together
Lead with one's chin	Make one's hair curl	Skate on thin ice
Rise to the bait	Throw to the wolves	Beat around the bush
Have a hollow ring	Go against the grain	Read between the lines

Adapted from Nippold, M., Taylor, C., & Baker, J. (1996). Idiom understanding in Australian youth. *Journal of Speech and Hearing Research, 39,* 442-447; Qualls, C., & O'Brien, R. (2003). Contextual variation, familiarity, academic literacy and rural adolescents' idiom knowledge. *Language, Speech and Hearing Services in Schools, 34,* 69-79.

as well. The Inference subtest of the *California Test of Mental Maturity* (Sullivan, Clark, & Tiegs, 1961) and of the *Test of Language Competence—Expanded Edition* (Wiig & Secord, 1989) also can be used as a criterion-referenced procedure to assess this area. Kamhi and Johnston (1992) devised the Propositional Complexity Analysis, which looks at the semantic content in spontaneous speech samples. This procedure can provide an additional means of assessing how the client combines ideas in discourse.

Verbal Reasoning

The language of thinking—used to solve problems, to plan, organize, predict, speculate, and hypothesize—becomes a major function of communication in the advanced language stage. The ability to use language to extend thinking, reflect on thinking, and entertain several cognitive viewpoints at once are hallmarks of formal operational thought. Students who cannot engage in this kind of language use will be at a distinct disadvantage in many areas of the curriculum, including science, mathematics, and in social studies topics such as history and geography. Several standardized tests assess verbal reasoning. These include the *Cornell Reasoning Tests* (Ennis et al., 1965), and the *Matrix Analogies Tests* (Naglieri, 1985). Subtests of some comprehensive batteries also can provide helpful criterion-referenced information on a student's facility with verbal reasoning. The *Woodcock Language Proficiency Battery—Revised* (Woodcock, 1991), the *Illinois Test of Psycholinguistic Abilities—3rd Edition* (Hammill, Mather, & Roberts, 2001), *Wechsler Intelligence Scale for Children—4th Edition* (Wechsler, 2005), *Differential Aptitude Test--—5th Edition* (Bennett, Seashore, & Wesman, 1990), and the *Test of Problem Solving*–2 (Dawes et al., 2007) have verbal reasoning sections. Students who have significant difficulties in these areas are helped by working on analogies, syllogisms, and using language to talk through logical problems in the intervention program. Nippold, Ward-Lonergan, and Fanning (2005) also suggest using persuasive writing contexts to scaffold students' verbal reasoning abilities.

Syntax and Morphology

Comprehension

Students at advanced language stages should be able to comprehend virtually all the sentence types in the language and should no longer use comprehension strategies for processing difficult sentences. Several language batteries for adolescents have receptive syntax subtests that can be used as criterion-referenced assessments. Some examples include the *Clinical Evaluation of Language Fundamentals—4* (Semel, Wiig, & Secord, 2003), the *Test of Adolescent and Adult Language—4* (Hammill, Brown, Larsen, & Wiederholt, 2007), and the *Test of Language Development—Intermediate—3* (Hammill & Newcomer, 1997). If deficits are identified on receptive syntactic testing or if comprehension strategy use is seen to persist on these measures, intervention should include an input component, as we've discussed for earlier stages of development. Activities aimed at eliciting production of advanced language forms should be supplemented with literature-based and curriculum-based script activities. These activities should provide intensive exposure in context to the forms for which comprehension is "wobbly," and metalinguistic discussion about their meaning to build the comprehension base for these structures.

Production

You probably are familiar by now with the arguments about using a language sample to assess syntactic production. Sampling how a student uses language to communicate in real interactive situations provides the most ecologically valid assessment of productive syntax. But what kind of sample should we elicit from a student in the advanced language stage? The use of forms toward the literate end of the oral-literate continuum is the major area we are interested in assessing at this age range. Hadley (1998) suggested that contextual factors are especially important for selecting a sampling situation at this stage. Many interactive situations, such as peer conversations or even informal discourse with adults, do not elicit the advanced forms we are interested in sampling. So we want to select a context that gives us a good chance of observing some of these advanced language forms. This suggests that communication tasks near the literate end of the continuum may be a better source of information on these variables than conversation.

Sampling Contexts for Literate Language

Many researchers looking at the syntax of advanced language have used narrative tasks (Blake, Quartaro, & Onorati, 1993; Hadley, 1998; Klecan-Aker & Hedrick, 1985; Morris & Crump, 1982; Nippold, 1998; O'Donnell, Griffin, & Norris, 1967; Scott & Stokes, 1995; Scott & Windsor, 2000; Ukrainetz & Gillam, 2009; Wetherell, Botting, & Conti-Ramsden, 2007). These sampling contexts have several advantages. First, much of the data on syntactic production in adolescents is based on these kinds of tasks. Using them in assessment, then, makes the client's sample more directly comparable to those in the literature. Second, narrative

samples also can be analyzed for other aspects of advanced language, such as cohesion, use of literate lexical items, and narrative stage. Finally, narratives from students at this developmental level have been shown to contain more complex language forms than conversation does (Hadley, 1998). Narratives are, then, more likely to provide examples of the literate language that we hope to elicit. For these reasons, narratives provide one important context for speech sampling with adolescents.

A second important sampling context for adolescent oral language is exposition, or explanation. Nippold, Mansfield, Billow, & Tomblin (2008) showed that expository, but not conversational, samples, differentiated adolescents with LLD from those with typical development, and T-unit length and complexity were greater in expository texts than in conversation for both groups. Both narrative and expository samples can be helpful for getting a picture of the most complex syntax a student has available.

Finally, it will be important to contrast syntactic complexity in oral samples with that in written contexts. For this reason, we will want to examine syntax in the student's writing, as well as in speech. Let's talk about how we might elicit each of these kinds of language samples.

Eliciting Narrative Samples
As we discussed when we talked about assessing narrative in younger children, there are several ways to elicit these samples. Weiss, Temperly, Stierwalt, and Robin (1993) suggested using cartoon strips from the newspaper, with the words "whited-out," to elicit narrative samples. Ukrainetz et al. (2009) used a short picture sequence of a common event, such as having trouble getting to school on time. Wordless picture books, such as *A Boy, a Dog, and a Frog* (Mayer, 1967), or films, filmstrips, or videos based on them (for example, *Frog, Where Are You?* [Osbourne & Templeton, 1994]) can also be used, by asking the student to first look through the pictures and then to tell the story as if reading to a child for whom he or she is baby-sitting. Hadley (1998) suggested a two-step procedure. Students are first asked to retell an episode from a story after looking at pictures or a film of it. They then are asked to generate an ending for the story. This procedure provides an opportunity for clinicians to see whether students do better (as we would expect) when some visual support is provided, and how a student is able to organize and generate a story episode independently.

Eliciting Expository Samples
Nippold et al. (2008) used an interview about favorite games to get adolescents to elicit exposition. Nippold, Mansfield, Billow, & Tomblin (2009) used an addition expository task involving an explanation of peer conflict resolution. The prompts used for both these tasks appear in Box 13-4.

Using Written Samples to Assess Syntactic Complexity
Because of the importance of written expression at the advanced language stage, it is wise to assess syntactic and morphological production in written as well as oral samples. Windsor, Scott, and Street (2000), for example, showed that middle schoolers with LLD were more likely to make morphological errors in their written language samples than in spoken language samples. Beers & Nagy (2009); Nippold, Mansfield, and Billow (2007); and Nippold, Ward-Lonergan, and Fanning (2005) all reported on the use of persuasive writing as a context likely to evoke higher levels of syntactic complexity that other sampling contexts in adolescents. So it seems that asking students to write, or share a written sample from a curriculum area that attempts to persuade is a valuable piece of information about students' maximal levels of syntactic complexity. And getting both a written and a spoken sample using the same sampling context—whether it be a personal narrative, retelling a film plot, narrating a picture book or comic strip, or making a persuasive argument—can be valuable for looking at the ways in which oral and written skills compare.

Nippold (2007) and Scott and Stokes (1995) suggested analyzing three aspects of syntactic and morphological production at the advanced language stage: T-unit length, use of subordination, and use of literate language structures. All three have been analyzed in the literature in both spoken and written language samples of students at advanced language levels (Scott, 2005). Let's see how we might apply these three analyses to samples of spoken and written language that we collect from our adolescent clients.

T-Unit Length
We talked in Chapter 11 about the use of T-units to analyze speech samples from children in the elementary years. We use this method to correct for long, run-on sentences that could bias scoring. A T-unit, remember, is one main clause with all the subordinate clauses and nonclausal phrases attached to or embedded in it. All coordinated clauses are separated out into separate T-units, unless they contain a co-referential subject deletion in the second clause ("She swings and misses"). Clauses that begin with the coordinating conjunctions *and, but,* or *or* would be considered to comprise a new T-unit.

Loban (1976) documented small but steady increases in T-unit length in words during adolescence, with bigger changes in writing than in speech. Table 13-3 gives the values Loban reported for T-unit lengths in words for oral and written samples from students from sixth through twelfth grades. Notice that T-units for adolescents in the literature have been calculated in words, not in morphemes. When we do T-unit analyses for adolescents and want to compare them to published norms, then, we need to remember to use words rather than morphemes as the unit of analysis.

TABLE 13-3 T-unit Lengths in Words for Spoken and Written Samples Collected from Adolescent Students

Grade	Average T-Unit Length in Words Produced in Spoken Samples	Average T-Unit Length in Words Produced in Written Samples
6	9.8	9.0
8	10.7	10.4
10	10.7	11.8
12	11.7	13.3

Adapted from Loban, W. (1976). *Language development: Kindergarten through grade twelve*. Urbana, IL: National Council of Teachers of English.

We should note another important feature of the information in Table 13-3. In early adolescence, in sixth and seventh grades, oral T-unit lengths are greater than those produced in written samples. In mid-adolescence, at eighth or ninth grade, the oral and written samples have about equal T-unit lengths. By late adolescence, in about tenth grade, though, written samples contain longer T-units than do oral ones, and this difference increases up through twelfth grade. It is useful, then, to use T-unit length to document this important shift. When sampling oral and written expression at these age levels, it will be important, particularly for students in mid- to late adolescence, to determine whether T-unit length in written production is catching up to and eventually exceeding that of oral language. If it is not, we need to be sure to augment work on advanced oral language forms with activities aimed at increasing the complexity of written language as well. But it is also important to remember the importance of sampling context, and that several studies by Nippold and colleagues (2007, 2008, 2009) showed that more demanding expository and persuasive contexts elicit longer T-units, in both speech and writing.

Box 13-3 contains a sample of an oral narrative describing a movie seen by an adolescent student, "Charlie." Why not try dividing it into T-units and computing average T-unit length in words for this sample? Our analysis appears in Appendix 13-4. You may want to consider whether Charlie's T-unit length in spoken narrative is appropriate for a tenth-grader.

Clause Density

Scott and Stokes (1995) suggested another index of syntactic complexity that can be used to assess adolescent language samples: an index of the density of clauses within sentences, often referred to as the subordination index. They define clause density as "a ratio of the total number of clauses (main and subordinate) summed across [T-units], and divided by the number of [T-units] in a sample" (p. 310). In other words, if a T-unit contains just one main clause, it receives a clause count of 1. The T-unit from Charlie's sample, "It was for monkeys and chimpanzees," contains just one main clause. A T-unit such as, "Then after they graduated, they took them into this plane," would receive a clause count of 2: one for the main clause, "they took them into this plane," and one for the adverbial clause, "then after they graduated." The T-unit, "There was a boy who was about 21 who stole a plane with a woman and champagne in the cockpit," would receive a clause count of 3: one for the main clause "there was a boy," one for the relative clause "who was about 21," one for the relative clause "who stole a plane with a woman and champagne in the cockpit."

The number of clauses for each T-unit in the sample would be summed, then divided by the number of T-units, to obtain the subordination index for the sample. Nippold (1998) reported values for Loban's (1976) study of subordination in speech and writing of secondary school students. These appear in Table 13-4. Notice again that in early adolescence, the subordination index is higher in speech than in writing. In mid- to late adolescence, the values in written samples are similar to or slightly higher than those seen in speech. Note, too, that the increases in this score throughout adolescence are very small, suggesting that we should not expect to see big changes in this measure through the secondary school years. Nippold et al. (2005) and Scott (2005) remind us, too, that the use of subordination is highly dependent on the situation and audience. That's why it is especially important to choose a sampling context that falls near the literate end of the continuum if we are looking for more advanced sentences.

To interpret clause denisity analysis, a rule of thumb would be to see whether the subordination index is at least 1.3 in spoken samples for all adolescents and whether the index in written samples is at least equal to the index in a spoken sample for students in

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BOX 13-3 Oral Narrative Sample: Retelling of a Movie Plot Produced by "Charlie," A Tenth-Grade Student

There was a boy who was about 21 who stole a plane with a woman and champagne in the cockpit, and then he got court-martialed for that and then they sent him to a research study. It was for monkeys and chimpanzees. They taught them how to fly, and then what they would do is to have three classes. White would be a freshman, blue a junior, and red a senior and they would teach them how to fly. Then after they graduated, they took them into this plane. There's this one area, called the radiation area and they put them in a simulator and exposed them to radiation treatment and they wanted to see how long they would fly until they would die and so they could see how long humans could fly if they could pilot their missions if the Russians had an attack on us and then what the boy did is he had a friend, a chimpanzee that knew sign language and he talked to him and he taught the other apes and they were going to kill his friend with the radiation thing. There were these people from the Air Force Patrol and they were watching the studies and he didn't want them to kill his monkey and so what he did was he called the lady who taught him sign language and she came and they stole a plane with the monkeys in it and they finally escaped.

TABLE 13-4 Subordination Index Figures in Spoken and Written Samples from Secondary School Students

Grade	Average Subordination Index Produced in Spoken Samples	Average Subordination Index Produced in Written Samples
6	1.4	1.3
8	1.4	1.5
10	1.5	1.5
12	1.6	1.6

Adapted from Scott, C. (1989). Spoken and written syntax. In M. Nippold (Ed.). *Later language development* (pp. 49-96). Boston, MA: College-Hill Press; and Loban, W. (1976). *Language development: Kindergarten through grade twelve*. Urbana, IL: National Council of Teachers of English.

mid- to late adolescence. If we see subordination indices at these levels, we can conclude that the student's expressive language is of adequate complexity. If the subordination index is close to 1.0 or if the index in a written sample from a student in eighth grade or higher is noticeably less than that of the spoken sample, work on increasing use of subordination in formal speech and writing can be included in the intervention program. Why not try computing a subordination index for Charlie's sample in Box 13-3?

Use of Literate Language Structures

Scott and Stokes (1995) and Nippold (2007) discussed a variety of syntactic structures that appear with relatively low frequency but serve as markers of an advanced, literate language style. Table 13-5 lists these structures. We can examine the oral and written narrative samples collected from adolescents for the presence of the forms listed in Table 13-5 as one aspect of our assessment. Students who provide several instances of several categories of these markers in a short narrative, expository, or written sample can be considered to be producing adequately complex forms of expression.

Two caveats need to be kept in mind when looking for these higher level structures. First, context is very important in eliciting these forms. They only appear in relatively formal situations (Eckert, 1990), and their use is never obligatory. It is always a matter of making an appropriate choice of form for a particular audience or genre.

Scott and Stokes suggest choosing contexts that involve cognitive planning in order to elicit these forms. Again, narrative is a good example of this kind of planned discourse. To increase the chances of finding some in our narrative samples, we can ask students, "Tell me the story of a movie you saw recently. I haven't seen it, so try to tell the story as clearly as you can. Tell it the way it would sound if I read about it in a magazine." For written samples, we can ask students to "write the story of the movie as if you were writing a book or magazine article about the movie." The Peer Conflict probe in Box 13-4 is also a task that may elicit these forms.

The second warning we need to bear in mind is that these are low-frequency forms. It is not likely that we will find more than a few instances of any of these forms in one short sample. Nippold et al. (2005) reported that 15% to 20% of adolescents' utterances included relative and adverbial clauses, for example, and this result was in the context of persuasive discourse, which tends to elicit higher-than-normal levels of these forms. Nippold et al. (2008) reported that the frequency of use of relative clauses was a somewhat sensitive indicator of the difference between typical students and those with language disorders in an expository task, though not in conversation. Furthermore, a given sample will not contain instances of all the types listed. In this analysis, we are not really looking for the appearance of any one particular structure, but only at whether several examples of these kinds of structures appear. If

TABLE 13-5 High-Level, Low-Frequency Structural Markers of Advanced Syntax

Syntactic Category	Structure	Examples
Morphology	Prefixes and suffixes	*Unplanned, replay, helpless, requirement*
	Nominalization (noun forms of verbs)	*Adaptation, establishment*
	Use of past and present participle forms of verbs as adjectives	Her *broken* CD player; *a growing* plant
	Later developing conjunctions	*Otherwise, instead, after all, only, still, though, anyway, in all, finally, when, because*
	Adverbial sentence connectives (conjuncts)	*Nevertheless, furthermore, therefore, for example, in addition*
Noun phrase (NP) elaboration	NP pre-modification with two or more adjectives	Her *cute, black* puppy
	NP post-modification with:	
	Past participles	A tree *called the willow*
	Present participles	A machine *controlling his brain*
	Infinitives	A good way *to fish*
	Appositives	Mr. Smith, *the mail carrier*
	Relative clauses	A woman *who lives nearby*
	Elaboration	Dogs such *as Collies, Spaniels, and German Shepherds*
	Prepositional phrases	The cyclist *in the lead position*
Verb phrase (VP) elaboration	Multiple auxiliaries	We *could have* missed it
	Perfect aspect	We *had been studying* all night
	Passive voice	The house *was designed by a* famous architect
Adverbial use	With adjectives	*extremely* large
	Adverbial phrases	*Awfully quickly*
Complex sentence types	More than one clause type in a sentence	He wants to pass, but he doesn't know how to study
	"Left-branching" clauses (clauses that appear near the beginning of the sentence):	*Getting into college* won't be hard for Amy to do
	Preposed adverbial clauses	*After we study,* we'll go for pizza
	Center-embedded relative clauses	The boy *who sits behind me* in English is cute
	Noun clauses as subjects	*Passing Mr. Haywood's class* is tough
	Sentences using word order variations for theme and focus, such as cleft sentences	*To get a C in biology* is an accomplishment
		It was our team that won the game
		The one who got there first was the winner
		What I really want is a different English teacher

Adapted from Nippold, M. (2007). *Later language development: School-age children, adolescents, and young adults,* (3rd ed.). Austin, TX: Pro-Ed; and Scott, C., & Stokes, S. (1995). Measures of syntax in school-age children and adolescents. *Language, Speech, and Hearing Services in Schools, 26,* 309-317.

BOX 13-4 Prompts for Eliciting Oral Exposition in Adolescents

TASK 1:

Favorite Game or Sport:

1. Can you tell me about your favorite game or sport?
2. Why is that your favorite?
3. I don't know too much about that. Can you tell me about it? Tell me about the rules, how many people play, what the object of the game is. Tell me whatever you can think of about it, so that someone like me who has never played before would know how.
4. What do you have to do to win this game? Are there some strategies that a good player should know?

TASK 2:

Peer Conflict Resolution:

1. Introduction: Everyone has to work out problems with other people sometimes. I'm going to read you a story about these kinds of problems. Then I'll ask you to tell the story back to me and answer some questions about it.
2. Story: Science Fair
   John's teacher assigned him to work with three other boys on a project for the science fair. They decided to build a model airplane that could actually fly. Everyone except Bob worked hard on the project. Bob refused to do anything and just let the others do all the work. This bothered John very much.
3. Please tell the story back to me in your own words. Tell me everything you can remember.
4. Here are some questions to answer about the story:
   a. What is the main problem?
   b. Why is that a problem?
   c. What is a good way for John to deal with Bob?
   d. Why is that a good way?
   e. What do you think will happen if John does that?
   f. How do you think they both will feel if John does that?

Adapted from Nippold, M. A., Mansfield, T. C., Billow, J. L., & Tomblin, J. B. (2008). Expository discourse in adolescents with language impairments: examining syntactic development. *American Journal of Speech-Language Pathology, 17*(4), 356-366; and Nippold, M. A., Mansfield, T. C., Billow, J. L., & Tomblin, J. B. (2009). Syntactic development in adolescents with a history of language impairments: a follow-up investigation. *American Journal of Speech-Language Pathology, 18*(3), 241-251.

they do, and findings on T-unit length and subordination index confirm the finding, we can conclude that the student has some command of literate syntax. If they do not and findings on T-unit length and subordination yield corresponding information, we can identify a deficit in advanced syntax. If such a deficit is identified, intervention would focus on developing a range of literate syntax forms. Exposing the student to literate language forms in reading material (reading to the student if necessary) will be part of this intervention.

Take a look at Charlie's sample in Box 13-3. Try making a list of the literate language structures from Scott and Stokes's list in Table 13-5 that appear in the sample. What would your assessment of Charlie's use of high level structures in this sample be? Our list is in Appendix 13-4. Looking across the three measures of expression computed for this sample, how would you rate Charlie's syntactic complexity? Our computation and evaluation are given in Appendix 13-4. Figure 13-3 presents a sample of Charlie's written expression. Try doing these three measures on the written sample and compare them to the spoken one. What would your conclusion about his expressive syntactic skill be on the basis of this comparison? Our assessment of the written sample appears in Appendix 13-5.

Pragmatics

Pragmatic skills acquired in adolescence, like skills children learn in the L4L stage, function to allow the student to operate in wider social circles and in a greater variety of discourse genres. While the changes that take place in semantic and syntactic development in adolescence are often subtle and need special contexts to be observed, the pragmatic changes that take place at this time are major and often painfully obvious to the adults who deal with young people in this stage of development. Sarcasm, for example, is one of the new functions of language that emerges in teenagers, often to their elders' dismay. We can look at two areas of pragmatic development that undergo these significant changes in adolescence: *conversational skills* and the expansion of competence in several *discourse genres*.

Conversational Pragmatics

Lapadat (1991) showed that adolescents with LLD performed like younger normally developing children in terms of their pragmatic skills. This work suggested that the flexible use of language finely tuned to interpersonal nuances, which is normally acquired during the teen years, may be lacking for our clients, even when basic semantic and syntactic skills are present. Both Adams (2002) and Gumpel (2007) reported on data that suggests pragmatic problems to be common in many students with a variety of communication and language-learning disorders. Adams (2002) suggested organizing conversational analysis around four major areas:

- Initiation and responsiveness
- Turn-taking and repair
- Topic structure
- Cohesion/coherence

These major aspects of conversation can serve as a starting point for developing a conversational analysis method. However, Reed, Bradfield, and McAllister (1998) reported that, although SLPs believed that discourse management skills were the most important pragmatic areas to address with adolescents, the youngsters themselves believed that language used for empathy and affiliation was

FIGURE 13-3 Charlie's written language sample (tenth grade)

> My best personal quality is that I am very friendly with people and to anyone that needs a friend. Where I go to school there are some people that are not nice. I dont Know that many Kids at my school could be nice. The people that go to my school could be nice. But there are people that are nice to othere people like me. I am very outgoing.
>
> For example, I like to work on school plays and help the new students around school. I am very hardworking at every thing that I do. For example, I do my homework, thing on the computer and puzzels.

more crucial for positive peer relationships. Turkstra, Ciccia, and Seaton (2003) examined conversational behaviors in typically developing adolescents engaged in 3-minute interactions with peers and found that behaviors occurring at the highest rates were looking at the partner (especially during listening), nodding and showing positive facial expressions, using back-channel responses indicating understanding and agreement (such as "uh-huh" or "yeah"), and giving contingent responses. Behaviors that occurred with very low frequency included negative emotions, turning away, asking for clarification, and failing to answer questions. These findings suggest that we need to be careful about choosing pragmatic targets in this age range. That is, while focusing on discourse structure and content aspects of conversation are important, these areas should be supplemented by a look at the use of appropriate paralinguistic behaviors in peer interactions. Moreover, we need to help teens find ways to express empathy and establish affiliation through conversation. Again, involving the student in the assessment process is a good way to keep priorities on track. And observing a peer-to-peer conversation, even a short one, such as Turkstra et al. used, can provide especially useful information. It is also important to know that Turkstra (2001) showed that there were significant differences in conversational behaviors of students with LLD when talking to adults as opposed to peers.

Using a general pragmatic assessment, such as Prutting and Kirchner's (1983) *Pragmatic Protocol* (see Figure 8-14), Damico's *Systematic Observation of Communicative Interaction* (1992), Bedrosian's (1985) *Discourse Skills Checklist* (see Figure 11-7), or Bishop's *Children's Communication Checklist* (2003) may point to some areas of difficulty for adolescents with LLD. But the specific deficits most likely to cause problems for this age group are often not represented on more global scales designed for younger children.

Larson and McKinley (2003a) designed a conversational assessment specifically for clients in the advanced language stage. Their *Adolescent Conversational Analysis* looks at linguistic and paralinguistic features and examines use of communicative functions and conversational rules. Figure 13-4 provides an abbreviated version of Larson and McKinley's procedure, which can be used to analyze an unstructured conversation between the adolescent and a familiar partner. Larson and McKinley suggested looking at several samples of the client interacting with different partners in various settings to get a complete picture of conversational competence.

Another method that can be considered for assessing conversational skill is Landa et al.'s (1992) *Pragmatic Rating Scale* (PRS). This measure was designed for use in a conversational context with adult family members of children with autism and related conditions. Paul et al. (2009) report that PRS scores from adolescents with typical development differ significantly from those of high functioning teens with autism spectrum disorders. Subjects in the typical group uniformly scored 5 or lower on this measure. These data suggest that scores above 6 on the PRS are likely to be indicative of a deficit in pragmatic ability. A rating form for the PRS appears in Figure 13-5. Additional assessments that can be considered include Bishop et al.'s (2000b) *Assessment of Language Impaired Children's Conversation* and Rinaldi's (2001) *Social Use of Language Programme*.

Looking at conversational skill in free speech interactions can yield valuable information. This method is, however, extremely time consuming and labor intensive. When doing initial evaluations to determine whether conversational pragmatics needs to be targeted in the intervention program, there are some shortcuts to conversational analysis that can give us useful information. These include norm-referenced instruments, structured behavioral observations, and nonstandardized role-playing procedures.

	Appropriate	Inappropriate	No opportunity to observe	Comments
Listener role				
Vocabulary				
Syntax				
Main ideas				
Cooperative manner				
Gives feedback				
Speaker role: language features				
Syntax				
Questions				
Figurative language				
Nonspecific language				
Precise vocabulary				
Word retrieval				
Mazes and dysfluencies				
Speaker role: paralinguistic features				
Suprasegmental features				
Fluency				
Intelligibility				
Speaker role: communicative functions				
Give information				
Receive information				
Describe				
Persuade				
Express opinion/belief				
Indicate readiness				
Solve problems verbally				
Entertain				
Conversational rules				
Verbal turns/topics				
Initiation				
Topic choice				
Topic maintenance				
Topic switch				
Turn-taking				
Repair/revision				
Interruption				
Verbal politeness				
Quantity				
Sincerity				
Relevance				
Clarity				
Tact				
Nonverbal				
Gestures				
Facial expressions				
Eye contact				
Proxemics				

FIGURE 13-4 Adolescent conversational analysis. (Adapted from Larson, V. and McKinley, N. (2003a). *Communication solutions for older students: Assessment and intervention strategies*. Eau Claire, WI: Thinking Publications.)

Norm-Referenced Conversational Assessments

Russell and Grizzle (2008) reviewed 24 instruments aimed as assessment of pragmatic language skills, including questionnaires, checklists, and portions of standardized tests. They identified the following as having the highest content validity:

- Children's Communication Checklist—2 (Bishop, 2006)
- Observational Rating Scale and Pragmatic Checklist from the Clinical Evaluation of Language Fundamentals—4th Edition (Semel, Wiig, & Secord, 2004)

	0	1	2
Inappropriate or absent greeting	___	___	___
Strikingly candid	___	___	___
Overly direct or blunt	___	___	___
Inappropriately formal	___	___	___
Inappropriately informal	___	___	___
Overly talkative	___	___	___
Irrelevant or inappropriate detail	___	___	___
Content 'out of sync' with interlocutor	___	___	___
Confusing accounts	___	___	___
Topic preoccupation/perseveration	___	___	___
Unresponsive to cues	___	___	___
Little reciprocal to-and-fro exchange	___	___	___
Terse	___	___	___
Odd humor	___	___	___
Insufficient background information	___	___	___
Failure to reference pronouns or other terms	___	___	___
Inadequate clarification	___	___	___
Vague accounts	___	___	___
Scripted, stereotyped discourse	___	___	___
Awkward expression of ideas	___	___	___
Indistinct or mispronounced speech	___	___	___
Inappropriate rate of speech	___	___	___
Inappropriate intonation	___	___	___
Inappropriate volume	___	___	___
Excessive pauses, reformulations	___	___	___
Unusual rhythm, fluency	___	___	___
Inappropriate physical distance	___	___	___
Inappropriate gestures	___	___	___
Inappropriate facial expression	___	___	___
Inappropriate use of gaze	___	___	___
Subject's total score:			_____

0, Normal; 1, Moderately inappropriate; 2, Absent or highly inappropriate.
Total scores of 6 or above are indicative of pragmatic disorders.

FIGURE 13-5 Score form based on Landa et al.'s (1992) *Pragmatic Rating Scale*. (From Landa, R., Piven, J. Wzorek, M., et al., (1992). Social language use in parents of autistic individuals. *Psychological Medicine, 22,* 245-254.)

- • Teacher Assessment of Student Communicative Competence (Smith, McCauley, & Guitar, 2000)

Several norm-referenced instruments are available for probing pragmatic skills at the adolescent level. These include the *Test of Language Competence—Expanded Edition* (Wiig & Secord, 1989), the *Comprehensive Assessment of Spoken Language* (Carrow-Woolfolk, 1999b), the *Test of Pragmatic Language—2* (Phelps-Teraskai & Phelps-Gunn, 2007), and the *Test of Problem Solving—Adolescent* (Bowers, Huisingh, & LoGiudice, 2007). These norm-referenced measures can be helpful for establishing eligibility for students at advanced language stages, who may perform adequately on tests focusing on semantics and syntax. Russell and Grizzle (2008) suggest using measures such as these to identify areas that we may want to examine in structured observations to determine whether intervention in these areas would be of use to the student.

Structured Observations

Adams (2002) suggested that, while natural conversational sampling is the most ecologically valid method, there may be some critical behaviors that simply fail to appear in natural interactions. We must not assume these behaviors are absent from the child's repertoire, simply because they don't appear in a short sample. Brinton and Fujiki (1992) suggested using probes within the interaction to solve this problem. That is, instead of, or in addition to, observing an unstructured peer-to-peer conversation with the client, the clinician can provide stimuli to examine critical aspects of conversational behavior within the interaction and evaluate the client's response to each probe. Table 13-6 presents the probes Brinton and Fujiki suggested. If using probes as a screening measure, students who are unable to respond to these probes appropriately can be given more intensive assessment, using a procedure like Larson and McKinley's (2003a) or Bishop et al.'s to examine a broad range of conversational skills.

Several authors have designed methods of structured observation that can be used to look at conversational pragmatics in the adolescent years. Simon's (1994) *Evaluating Communicative Competence* provides activities for looking at conversational skill in adolescents. Brown, Anderson, Shillcock, and Yule (1984) supplied procedures for examining presuppositional abilities. Adams and Bishop (1990) also provided a framework for looking at conversational exchanges in adolescents. They used pictures of common situations, such as a doctor examining a sick child, a girl

Conversational skill can be assessed in peer interactions.

having a birthday party, and a couple with a broken-down car, and asked students to describe experiences *of their own* that were similar to those in the pictures.

Role-Playing

Role-playing is a third method that can be used to assess adolescent conversational skill. Nippold (2007) discussed the development of two specific skills that contribute to conversational competence in adolescence: interpersonal negotiation strategies and the use of special speech registers for a variety of specific interactional contexts. Both these skills can be examined by creating hypothetical situations for students to act out in role-playing activities.

Negotiation Strategies

The ability to use language effectively to persuade others, to present our point of view, and to resolve conflicts has a great effect on self-esteem, popularity, and successful adjustment in adolescence and adulthood. These skills develop considerably during the secondary school years (Ciccia et al., 2009; Nippold et al., 2005; Nippold et al., 2007; Selman et al., 1986; Whitmire, 2000b) and represent areas in which adolescents with LLD can be expected to have difficulty.

We can use role-playing and hypothetical situations to get a sense of a student's ability to use linguistic negotiation strategies. McDonald and Turkstra (1998); Nippold et al., (2007); and Selman, Beardslee, Schultz, Krupa, and Podorefsky (1986) presented adolescents with

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TABLE 13-6 Probes for Eliciting Conversational Behavior in Adolescents

Clinician's Probe	Example	Target Elicited Behavior	Example
Topic initiation	"By the way, I was at the beach over the weekend."	1. Responsiveness 2. Topic maintenance 3. Relevance	"I went skiing." "My girlfriend went, too." "I love weekends!"
Questions	"So how was the dance?"	1. Responsiveness 2. Topic maintenance 3. Relevance 4. Informativeness	"It was OK." "I danced with four or five girls." "I knew most of the dances." "They had a hiphop group."
Requests for repair	"What kind of group?"	1. Responsiveness 2. Adjustment to listener 3. Repair strategies	"A hiphop band." "You know, they play rap music." "Do you know what hiphop is?"
Sources of difficulty	"Can you get that marker for me?" (no marker present)	1. Assertiveness 2. Comprehension monitoring 3. Clarification requests	"There's no marker here." "Did you say *marker*?" "Do you mean a pen?"

Adapted from Brinton, B., & Fujiki, M. (1992). Setting the context for conversational language sampling. In W. Secord (Ed.). *Best practices in school speech-language pathology* (vol 2, pp. 9-19). San Antonio, TX: Psychological Corp, Harcourt Brace Jovanovich.

hypothetical situations such as the following to determine the kinds of negotiation skills present in secondary school students:

> Dan and his girlfriend are out on a date together. Dan wants to start going out with other girls, but he doesn't think his girlfriend will like that. What should he say?
>
> Juan works in a grocery store after school. He is only supposed to work for 10 hours a week, but his boss keeps asking him at the last minute to work really late on Friday nights. Even though his boss pays him for his extra time, Juan doesn't like to be asked to work at the last minute. What should he say?
>
> Caitlin wants to go camping for the weekend with her friend Ani, but she knows her parents don't like Ani much. What should she say to them to convince them to let her and Ani go?

We can ask our clients to tell us, for each hypothetical situation, "What should he or she say?" We also can ask clients to describe the potential conflict, say why they chose the language they did, and talk about what feelings might come up in such a situation. In analyzing the student's response to situations like these, we can look at the degree to which the student can talk about feelings and long-term consequences of the protagonist's actions and determine whether the student attempted to find a solution that would preserve the two characters' relationship using compromise and mutual agreement. Less mature responses would involve solutions that benefit only one of the characters, that show less awareness of the participants' feelings and desires, and that opt for short-term over long-term solutions.

Assessing Register Variation

We can set up role-playing situations similar to those used for children in the L4L stage (see Figure 11-6) to look at the ways a student might change the form of speech to fine-tune to the interactive situation. Some examples of situations that can be presented to

adolescents for role-playing appear in Figure 13-6. McDonald and Turkstra (1998) also suggested assessing the ability to produce hints. These are indirect requests that do not directly mention their object. For example, a hint for a taste of some fresh-baked cookies might sound like, "Umm, something smells good in here!" Adolescents can be asked to produce a very polite hint in response to hypothetical situations such as hinting to a friend's mother that the student needs a ride home (e.g., "My dad wants me home right after school today.")

Another important aspect of register variation for adolescents is the ability to use slang and in-group language (Nippold, 2007; Rue, 2000; Whitmire, 2000b). Cooper and Anderson-Inman (1988) emphasized the importance of the ability to use slang to help teens achieve group identity, to separate themselves from adults and younger children, and to foster peer solidarity. Adolescents with LLD often lack the linguistic facility and flexibility to master the constantly evolving lexicon and subtle pragmatic rules of the slang vernacular.

Assessment of use of slang vernacular can follow procedures used by Nelsen and Rosenbaum (1972). Students can be asked to list all the slang words they know that can be used to talk about a particular topic. Topics such as popular people, unpopular people, dates, sports, money, music, parties, cars, and clothes can be listed on a sheet of paper for the student, who can be asked to list as many of the slang terms as he or she can think of for each. The clinician also can ask several normally achieving students of the same grade and gender to fill out a similar form. The client's responses can be compared with those of the mainstream students. If the client produces very few slang terms in comparison to peers or produces terms that are different from those given by the typical peers, some difficulty in using in-group language can be inferred. A metapragmatic approach may be used to address this area in intervention (see Chapter 14).

Discourse Genres

Some of the discourse genres we discussed for younger students continue to be a concern for adolescents. These include classroom discourse, which changes to include more formal lecture formats in

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Expressive activities

Have the student role-play producing each speech act in each context. Record the student's utterance and make a judgment as to whether it is appropriate for each context.

Speech act	Context	Student utterance	Appropriate?
Request use of car	1. Father 2. Friend who owns own car 3. Older sister who borrowed parents' car without permission		
Persuade	1. Supervisor to give time off so student can attend party 2. Friend to lend money 3. Teacher to accept late assignment		
Speculate	1. With a friend about what will happen on prom night 2. To teacher about the outcome of a science experiment 3. To parent about what grades will be this term		
Express opinion	1. To parent on appropriate curfew time 2. To teacher on current events topic 3. To friend on best musical group or sports team		

FIGURE 13-6   An example worksheet for use with role-playing activities to assess register variation skills in adolescents with LLD.

secondary school; and narratives, whose structures become more complex and elaborated during the adolescent years. Some new discourse genres also come to the fore in secondary school. These include increasing demands for a variety of written forms of expression on the part of the student, as well as the need to process expository and persuasive text structures in both receptive (e.g., textbooks and reference works) and expressive (essays, oral reports, research reports, laboratory reports) modalities. Let's look at how we can assess some of these discourse structures in adolescents with LLD.

Secondary-School Classroom Discourse

Classroom observation at the secondary level may be more complicated than it was for elementary school students, because adolescents participate in so many different classrooms in the course of a day. In addition, Nelson (1998) pointed out that adolescent students may be very easily embarrassed and would not respond well to a classroom visit by the SLP. Teachers can be asked to audiorecord a class in which the client is enrolled, so that the SLP can get a feel for the rules and expectations of the class and how the student with LLD responds to them. Alternatively, the SLP may interview teachers about the classroom performance of the client, with an eye toward gathering the kind of information that would help identify areas likely to present problems for the student. Box 13-5 presents a sample interview form that might be used to obtain information from teachers about a student's classroom performance.

Reed and Spicer (2003) reported on the communication skills high school teachers consider most important for students to display. Those receiving the teachers' highest ratings included the following:

• Narrative skills
• Logical communication
• Ability to clarify messages
• Ability to take another's perspective
• Appropriate turn-taking

Knowing these teacher priorities can help SLPs focus on helping students improve their classroom performance in areas that teachers consider most important.

Students also can provide information about their own classroom performance. Talking with students about their performance in various classes and asking questions similar to those in Box 13-5 can point the clinician toward the teachers who will be most crucial to interview. We would, of course, want to talk to teachers in whose classes our clients are having difficulty. But it would also be a good idea to interview the teachers with whom the client feels things are going well, or toward whom the client feels especially positive. These interviews can help us assess the accuracy of the client's perceptions about academic work. They also can help us identify environments that are supportive for our students, so we can find ways of extending that support to other settings in which the student needs to function.

One aspect of classroom discourse performance that is especially crucial in the advanced language period is listening skill. Recall that the majority of students' time in secondary classrooms is spent listening. Moreover, the listening demands of the secondary classroom include more than literal comprehension of the verbal material presented. Secondary students need to engage in what Larson and McKinley (1995) called *critical listening;* that is, the ability to differentiate fact from opinion; to detect a speaker's intent to persuade the listener or "sell" an object or idea; and to identify false reasoning, bias, or propaganda.

Larson and McKinley (2003a) suggested a two-stage analysis of listening skills for secondary students. The first involves looking at informational or literal-level listening. To examine informational listening, they suggested using a recorded lecture—either from one of the client's classes or perhaps a clip of a lecture from a video on the web. The student can be shown a 5- to 10-minute segment of the lecture, then asked to give the main idea and several relevant details. For additional dynamic assessment, Larson and McKinley suggested having the student listen to a second portion of the lecture, this time with a printed outline of the segment that lists major topics covered. If the student has difficulty with the unguided listening, but does better when the guide is available, consultation with the teacher can be used to find ways to provide such an outline to help the client function in the class.

To assess the second aspect of listening skill, critical listening, Larson and McKinley advised having a student watch a video of a commercial or a segment of a political speech. The client is then asked to draw an inference about what the communicative goal, or hidden agenda, of the segment was (to persuade, sell, or encourage listeners to rethink an opinion, etc.). The student can be asked to judge whether the text contained factual material, opinion, or propaganda. The client also can be asked to judge how effectively the intended message was conveyed. Was it convincing? What additional information would be needed to evaluate the claims

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BOX 13-5   A Sample Interview to Conduct with Teachers of Secondary Students with LLD

How is (client) doing academically in your class?
What are (client)'s strengths in your class?
How well-organized is (client)?
How does (client) do at following directions? Answering questions? Completing assignments? Understanding written material? Getting along with peers?
How would you rate (client)'s listening skills? Does he or she understand lectures and classroom conversation?
How would you rate (client)'s vocabulary?
What problems is (client) having in your class?
Are there particular routines in which (client) has trouble "getting with the program?"
Can you describe a recent classroom activity in which (client) took part that will give me an idea of the kinds of trouble he or she has?
What aspects of your curriculum present the greatest stumbling block for (client)?
What changes would you like to see in (client)'s performance in class?
What is your view of (client)'s realistic potential in this class this year?

Adapted from Work, R., Cline, J., Ehren, B., Keiser, D., & Wujek, C. (1993). Adolescent language programs. *Language, Speech, and Hearing Services in Schools, 24,* 43-53; and Nelson, N. (1998). *Childhood language disorders in context: Infancy through adolescence.* Columbus, OH: Merrill.

presented in the segment? Students who are unable to engage effectively in this kind of discussion would benefit from some intervention in critical-listening skill, even if their informational listening abilities are adequate.

Other Discourse Genres

Narrative Text

Rather than assessing story structure in general for secondary students, as we would for elementary students, we want to focus on aspects of narrative that cause the greatest difficulty and are likely to continue to show impairments in adolescents with LLD. A large body of research (summarized by Johnson, 1995; Scott, 1999; Westby, 2005) suggested that these areas include the use and understanding of story-grammar elements relating to characters' internal responses, plans, and motivations; the ability to draw inferences from narrative material and to summarize the story; and the provision of adequate cohesive marking within the text. Use of literate language forms in stories also would be a likely area in which deficits might persist and is one in which we might want to assess adolescents with LLD (Greenhalgh & Strong, 2001).

Assessing Story Microstructure. Wetherell, Botting, & Conti-Ramsden (2007) used story generation and personal narratives to assess narrative in adolescents with LLD and with typical development, using the protocols outlined in Box 13-6. They reported that there were differences between the two groups, including a greater number of semantic/syntactic errors on the part of students with LLD. They also found that these students needed more adult support, in the form of prompts, in order to complete their stories. Unlike younger children, adolescents with LLD did not produce shorter stories or significantly fewer complex sentences than their typically developing peers. Table 13-7 provides average ranges of the percentage of complex sentences and semantic/syntactic errors found in both types of narrative by Wetherell et al. (2007). These can serve as points of comparison when we assess narratives of our students with LLD.

Assessing Story Macrostructure. Normally developing children have acquired a basic story grammar by early school age (Richards & Singer, 2001), and even students with LLD produce narratives containing basic story grammar elements in the secondary school years (Roth & Spekman, 1989; Scott, 2005). However, Stephens (1988) showed that the internal responses of characters, including their intentions, goals, and plans for dealing with the

problems central to the story's plot, are the last story grammar elements to emerge in normally developing children. Westby (2005) pointed out that these elements are particularly difficult for students with LLD. In addition, we should be aware of an important change that takes place in narrative abilities in typical teenagers, as documented by McKeough and Genereux (2003). They found that at about 12 years of age, and increasingly throughout the teen years, students increase in two aspects of narrative ability: structural complexity and interpretive understanding. In terms of structure, they find adolescents increasingly able to embed complete episodes, such as flashbacks, within a narrative. In their use of interpretive understanding, they report a shift during adolescence from understanding behavior in terms of immediate feelings, thoughts, and plans to understanding characters' actions in terms of their personal history and experiences, and long-standing personality traits. As we work with adolescents on narrative tasks, we will want to help guide them toward these more mature perspectives.

We can use curriculum-based assessment to look at students' narrative skills. We can ask the student to choose a story that was read in English class and review the story with the student, having him tell about the main character, asking questions such as the following:

What was _____'s problem?

How did _____ plan to solve it?

What does _____ do to solve the problem?

Do any of the other characters know about the plan? If so, who, and how do they know? If not, why not?

What do other characters in the story think about what _____ is doing to solve the problem?

How does the plan work? Does _____ achieve the goal?

How does _____ feel at the end? Why?

What do other characters feel at the end? Do they feel differently than they did before they knew _____'s plan? Why or why not?

Asking the student to articulate the internal plans and responses of characters can give us an idea about whether these elements are perceived by the client. Having the client describe any deception the character plays on others in the story is especially helpful for

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BOX 13-6 Protocols for Eliciting "Frog" Stories and Personal Narratives

"FROG" STORY GENERATION:
- Two envelopes, each containing the same "frog" story book, are placed before the student.
- The student is told the two books are almost the same, with a few differences.
- The student is invited to choose one envelope, look at the book inside away from the examiner, and tell her the story. She will then guess which of the two books he chose.
- The student takes the book aside, looks through it, then returns to the examiner, and is given a screen to put the book behind so she cannot see it.
- The student is asked to tell the story "as if it happened yesterday/last week, so I will know exactly what happened and can guess which story you have."
- The examiner provides prompts to continue only when the student stops or looks away from the book.

PERSONAL NARRATIVE:
- The student is asked to think of the most annoying person he or she knows and tell the things the person does that are annoying.
- The examiner provides prompts to continue only when the student stops narrating.

TABLE 13-7 Narrative Production Measures from Adolescents with Typical Development (TD) and LLD

	Mean (and Average Range) % Complex Sentences	Mean (and Average Range) % Utterances with Semantic/ Syntactic Errors
TD Story Generation	17 (16–18)	4 (3–5)
LLD Story Generation	15 (13–17)	12 (10–13)
TD Personal Narrative	32 (24–39)	7 (5–9)
LLD Personal Narrative	24 (18–29)	15 (12–19)

Adapted from Wetherell, D., Botting, N., & Conti-Ramsden, G. (2007). Narrative in adolescent specific language impairment (SLI): A comparison with peers across two different narrative genres. *International Journal of Language & Communication Disorders, 42(5),* 583-605.

looking at whether the student comprehends the distinction between action and intention that is so important in understanding plans and goals. If students are unable to give adequate accounts of these elements of internal response in stories they read in classroom literature, some work on them in the intervention program will be of use.

Assessing Narrative Inferencing. We've talked before about the importance of being able to use prior knowledge to "read between the lines" and infer information that is not stated explicitly in a text. Stephens (1988) reported that, although normally developing elementary students are able to draw inferences from stories, inferential questions are more difficult for them than are questions about material that is directly stated. Similarly, Rinaldi (2000) and Roth and Spekman (1989) reported that, although students with LLD do make some inferences in comprehending texts, they do not use inferencing as efficiently as a strategy to aid processing and memory as students with normal language development do, and they have more difficulty with drawing inferences from nonliteral language forms. These findings suggest that students with LLD are less adept than their peers with advanced language at going beyond what is on the page both to draw conclusions and to organize information for the purpose of providing concise and accurate summaries.

We talked earlier about some ways to assess inferencing skill. To look specifically at inferencing in narrative texts, we've talked about reading students a part of a classroom literature selection, stopping at a crucial point, asking students to guess what will happen next and to tell why they think so. This kind of activity can tell us something about whether the student is able to use information in the text to make a plausible conjecture about where the story may be going. Inferential performance also can be elicited by reading a description of a character in a story and asking the student to infer something about the character from the description. For example, suppose clients are reading *Around the World in Eighty Days* (Verne, 1873) in English class. You might have the students read the following passage describing the main character, Phileas Fogg (pp. 11–12):

Was Phileas Fogg rich? Undoubtedly. But those who knew him best could not imagine how he had made his fortune, and Mr. Fogg was

the last person to whom to apply for the information. He was not lavish, nor, on the contrary, avaricious; for, whenever he knew that money was needed . . . he supplied it quietly and sometimes anonymously. He was, in short, the least communicative of men. He talked very little, and seemed all the more mysterious for his taciturn manner. His daily habits were quite open to observation; but whatever he did was so exactly the same thing that he had always done before, that the wits of the curious were fairly puzzled.

Students could then be asked to draw some inferences about Mr. Fogg by answering questions, such as the following:

What would Mr. Fogg do if a street beggar asked him for money?
What would Mr. Fogg say if you asked him what he did for a living?
Would Mr. Fogg own a big mansion?
If Mr. Fogg were alive today, would he go on a TV reality show his daily life?
What did Mr. Fogg's neighbors think about him?
Did Mr. Fogg like parties?

If students have trouble taking the information in the description and using it to make guesses about some of the character's hypothetical actions in questions like these, they may have problems in inferential comprehension. These problems can be addressed in the intervention program.

Assessing Summarizing Skills. Summarizing is a skill that typical students develop during the advanced language period (Stephens, 1988). When we retell a story, we report all the events included in the original narrative, recounting each episode and including all the events and elements that make it up. Summarizing, on the other hand, requires integration and condensation of the material in the story. Johnson (1983) identified six abilities that go into summarizing a narrative:

1. Understanding the individual propositions and events of the story
2. Understanding the connections among the individual propositions of the story
3. Identifying the story grammar elements that organize the story
4. Remembering the sequence of events in the story
5. Selecting the most salient information to be included in the summary
6. Generating a concise and cohesive version of that information

Before we assess the ability to summarize, then, we need to be assured that the student can perform the earlier steps in this sequence. These steps, which comprise what we might call basic, informational, or propositional comprehension, can be assessed using standard reading comprehension instruments. Examples of such tests would include the passage comprehension section of the *Woodcock Reading Mastery Test—Revised* (Woodcock, 1998), the paragraph reading subtest of the *Test of Reading Comprehension—3rd Edition* (Brown, Hammill, & Wiederholt, 1995), the *Stanford Diagnostic Reading Test—4th Edition* (Karlsen & Gardner, 2004),

or the *Gray Silent Reading Tests (Fourth Edition)* (Wiederholt & Blalock, 2000).

If students perform at primary levels on these measures, they are not ready to address higher level skills such as summarization. Instead, they need to develop more basic skills in comprehending the literal content of written material. Work addressed at comprehension of both spoken and written information at the L4L level, using techniques like those suggested in Chapter 12 is appropriate for these students. If, on the other hand, clients perform at least at a fourth-grade level on these measures (most of our adolescents with LLD will not be reading on grade level), we can infer that the student has minimally adequate propositional comprehension skills. We can then assess their higher level summarization skills by asking students to summarize short stories or book chapters they have read in English class or that we present them in the assessment session. It is important to be sure that the material we present them for summarizing is not at a reading level higher than the level they attained on the basic comprehension test. The adequacy of the summary can be judged by evaluating whether:

1. The summary presents an acceptable representation of the sequence of events in the story.
2. The information presented includes the most central elements of the story and excludes minor details.
3. The summary is concise and coherent, so that someone who had not read the text could get the gist of the story.

Students who demonstrate basic comprehension skills but who have trouble providing adequate summaries can be encouraged to develop this skill in an intervention program.

Assessing Cohesion in Narrative.   We talked in Chapter 11 about using a procedure based on Liles's (1985) work (see Box 11-10) for assessing use of cohesion in narratives produced by elementary students. This procedure also is appropriate for students at advanced language levels. If you collected a narrative sample to look at syntactic production, as discussed earlier, this sample also can be examined for use of cohesive devices, using the scheme in Box 11-10. As we've also discussed, written samples are especially informative in the assessment of students with advanced language. If both a spoken and written narrative were collected for assessing syntactic production, the written narrative is an especially fertile source of information on use of cohesive markers. If a written narrative was not collected as part of the assessment of expressive syntax, it may be useful to collect one to look at these markers of cohesion. If deficits in use of cohesive markers are identified with the assessment suggested in Box 11-10, intervention can focus on improving use of cohesive markers in both spoken and written narratives.

In addition to the categories suggested in Box 11-10, several other types of cohesion identified by Halliday and Hasan (1976) Horton-Ikard, 2009, and Richard and Elder (2008) can be examined in the written narratives of adolescents with LLD. These include the use of *lexical cohesion*, *reference*, and *substitution*. Definitions and examples of these markers appear in Box 13-7.

Students who demonstrate appropriate usage of these types of cohesive markers tend to be better writers than students who do not (Strong, 1985). Nelson and Friedman (1988) reported that there was a large decrease in errors of usage related to the first three categories of cohesion between fourth and seventh grades, although even college students made some errors on these markers. Nelson and Friedman found that the error rate for normally achieving secondary students was *one or two errors per 100 words in written samples*. If a written narrative sample of a secondary student contains more than three or four errors of cohesive markers per 100 words, some problems with the use of cohesion can be inferred. These problems also can be addressed in the intervention program.

Assessing Artful Storytelling with Literate Language.   In looking at literary language markers of artful stories, we can refer to the list of low-frequency, advanced syntactic forms in Table 13-5. If it hasn't already been done, we can analyze a client's written narrative sample for these forms. We also can look for evidence of a literate lexicon. This would include looking for the presence of metalinguistic and metacognitive verbs, as Nippold (2007) suggested. In addition, we can look for the use of adverbs and conjunctions as evidence of a literate language style, as Westby (2005) proposed (see Box 11-13).

One additional factor of artful storytelling that pertains to both cohesion and a literate language style can be inspected in

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BOX 13-7   Some Categories of Cohesive Markers for Assessment at the Advanced Language Stage

LEXICAL COHESION
The use of several words at different points in the text to link ideas to the same concept. These would include the use of comparative and superlative markers:
    "They were very proud of their team. Still, ours was *better*."
    "He eats the most junk food in our family. I eat *the least*."
It also includes the use of more general comparatives such as *same, similar, other, different, else,* and *likewise*:
    "Matt thought the student council was too conservative. Mandy held a *similar* opinion."
    "There were several dishes on the table. Jesse tried the caviar, and I tried the *others*."
    "Jamie's painting won first prize in the contest. I never dreamed he had *such* talent."

REFERENCE
The use of pronouns as well as the use of pro-verbs:
    "The plates beneath the earth move. When they *do*, an earthquake can occur."

SUBSTITUTION
The use of a synonym for a co-referent:
    "A goat had attacked our flower bed. When we saw it, we were amazed at the damage the *animal* had done."

Adapted from Halliday, M., & Hasan, R. (1976). *Cohesion in English.* London: Longman.

adolescents' written narrative samples. This is the use of connectives. Connectives are another class of cohesive markers identified by Halliday and Hasan (1976) as a significant means of linking propositions within texts. They also are an important component of the development of literacy and the ability to encode and interpret the connections between propositions in literate discourse (Nippold & Undlin, 1992), and they are considered additional forms of high-level syntax (Scott & Stokes, 1995; see Table 13-5). Connectives include both *conjunctions,* which link propositions within a sentence, and *conjuncts,* which link ideas across sentences. A list of these forms appears in Box 13-8. Nippold et al. (2005) found that use of adverbial conjuncts doubled (from .3% to .7%) between the ages of 11 and 17 in students' persuasive writing. We can examine the written narrative samples of adolescent clients for the presence of these connectives as a measure of literate language growth. If samples contain examples of several connectives (Scott's [1988] data suggested a minimum of five different connectives would be expected in a writing sample of 30 to 50 T-units in length), we can assume minimally adequate use of these markers. If connective use is very sparse in the sample, we would probably want to attempt to elicit use of connectives, using a sentence generation procedure ("Make up a sentence with *although* [or *but* or *if* or *unless*] in it"). Alternatively, we might write several conjunctions on cards and provide students with pairs of written sentences to combine by choosing one of the cards and coming up with a complex sentence that uses the conjunction to link the propositions. For example, the student might be given the propositions: "Jaime wanted to ask Megan to the dance" and "Megan had gone to the junior prom with Malik" and the conjunctions *and, if, when, although,* and *until.*

Nippold and Undlin (1992) provided an additional method for testing use of advanced connectives. They gave secondary students a sentence followed by a connective and had students complete the second sentence so that the whole passage made sense. Here's an item from their task (p. 35):

> Michael has become an excellent distance runner for the cross-country team. Similarly, _____.

Analogous passages can be constructed to assess other connectives of interest. If students perform adequately on probes like these, further work on connectives may not be necessary. If the students seem unable to use the connectives appropriately, though, we may want to probe their comprehension of these forms with a judgment task. Students can be read a list of sentences like those in Box 13-9 and asked to judge whether each "makes sense."

Students who have difficulty with comprehension and production of these advanced connectives can benefit from an intervention program that provides additional exposure to the forms, in literature-based script activities and metalinguistic talk about forms encountered in curriculum-based comprehension and comprehension monitoring work. If comprehension appears adequate and only production is sparse, intervention might focus on activities that encourage sentence combining (see Chapter 14).

At this point you may want to look at Charlie's written sample in Figure 13-3 again and try some of the analyses we've been discussing. Our version appears in Appendix 13-6.

BOX 13-8   A Sampling of the Connectives in English

COORDINATING CONJUNCTIONS
and [then]
or
but
both
neither
either
nor

SUBORDINATING CONJUNCTIONS
for
so
that
which(ever)
because
while
if
after
before
who(m)(ever), what(ever), when(ever), where(ever), why, how
though, although
whether
as
since, once
except
until
unless
whereas, whereupon

CONJUNCTS
Concordant
similarly
moreover
consequently
therefore
furthermore
for example
Discordant
instead
yet
however
contrastively
nevertheless
rather
conversely

QUASICOORDINATORS
as well as
as much as
rather than
more than

Adapted from Quirk, R., Greenbaum, S., Leech, G., & Svartvik, J. (1985). *A comprehensive grammar of the English language.* London: Longman; Nippold, M., & Undlin, R. (1992). Use and understanding of adverbial conjuncts: A developmental study of adolescents and young adults. *Journal of Speech and Hearing Research, 35,* 18-118; and Nippold, M. (2007). *Later language development: School-age, children, adolescents, and young adults (3rd edition).* Austin, TX: Pro-Ed.

BOX 13-9   Sample Sentences for a Judgment Task to Assess Adolescents' Comprehension of Advanced Connectives

Instructions: Listen to each sentence and tell me whether it makes sense *(OK)* or is silly *(S)*.

I like heavy metal, so I'll use my birthday money to buy some new discs. *(OK)*

I failed my exam because I gave all the right answers. *(S)*

Our team will have a chance at the state championship if we can get into the play-offs. *(OK)*

After you feel full, you always eat a big sub sandwich. *(S)*

Before you ask someone for a date, ask your folks for the car. *(OK)*

I'll graduate when I pass all my courses. *(OK)*

I'd like to go to the movies, although there's a movie I really want to see. *(S)*

Since you work after school, come home as soon as school lets out. *(S)*

Don't go to the basketball game until you've finished your homework. *(OK)*

I'll get a Super Video system for Christmas unless I get an A in English. *(S)*

I was looking forward to my date with Sam. However, I was worried about his car. *(OK)*

Brian has a history test tomorrow. Nevertheless, he studied hard. *(S)*

Min needs to take his medication at noon every day. Therefore, he never brings his pills to school. *(S)*

Carmen doesn't like to practice the piano. Instead, she works on the instrument at least an hour a day. *(S)*

Expository Texts

Understanding Expository Texts.   We talked earlier about the role of expository texts in the secondary school curriculum. Much of the curricular material that adolescents encounter, either as orally presented lectures or in written texts, takes an expository form. Conte, Menyuk, and Bashir (1992) showed that adolescents with LLD comprehend expository texts significantly less well than their normally achieving peers, although Scott and Windsor (2000) demonstrated that these texts are difficult for typically developing students, as well. Ward-Lonergan (2010) summarized the available literature to report that the kinds of deficits in expository text comprehension commonly found in students with LLD include:

- Poorer accuracy in answering questions about the literal content of the text
- Reduced ability to respond to inferential questions on the text
- Recall of fewer propositions and events from the text on retelling or summarizing
- Shorter retellings with reduced syntactic complexity and increased grammatical errors

These areas, then—the ability to answer both literal and inferential questions and to summarize or paraphrase a text heard or read—constitute important targets of assessment of expository comprehension skills.

Adaptations of reading comprehension tests can be a first step in assessing this area. If already completed by other educators, these test results can be used for criterion-referenced assessment by contrasting performance on the standard administration with what the student can do when the text is read aloud by the clinician. This comparison will help to determine whether the problem lies in reading skill alone (if the student does better when read to) or in more basic comprehension difficulties (if he or she does not). Kamhi (2009) suggests that reading comprehension tests used for this purpose should be those that focus primarily on basic reading and literal comprehension skills, such as *The Peabody Individual Achievement Test* (Dunn & Markwardt, 1970), the *Woodcock-Johnson Passage Comprehension Test* (Woodcock, McGrew, & Mather, 2001), and the *Qualitative Reading Inventory* (Leslie & Caldwell, 2005). Dynamic assessments can follow this initial comparison. For example, when "high level" vocabulary words are explained and discussed before reading or listening, does comprehension improve?

Nelson (2010) suggested that the best assessment of comprehension of expository texts is the use of curriculum-based activities. We will probably want to look at a student's comprehension of expository texts in a variety of settings. We've talked already about assessing informational comprehension in class lectures. We also might want to look at comprehension of written expository material using a classroom textbook. Laing Gillam, Fargo, and St. Clair Robertson (2009) and Sudweeks et al. (2004) provide empirical support for asking students to paraphrase or summarize an expository passage as an assessment technique. We can have the student read a passage, paraphrase or summarize it, and answer both literal and inferential questions posed by the clinician. Alternatively, we can have students answer questions in the review section of a textbook or demonstrate comprehension by drawing a map or diagram.

As Carlisle (1991) advocated, comparing students' comprehension of expository texts they read themselves with the same texts read to them can be informative. If listening comprehension exceeds comprehension of the same material when read independently, we can consult with teachers to provide recorded versions of reading assignments and work with the reading specialist to improve reading comprehension. If comprehension of oral exposition is no better than that of written material, though, we will need to concentrate on improving the student's overall ability to process this kind of text, starting with oral formats and integrating written texts as we go along.

If students have trouble with independent processing of any kind of expository material, we can, again, use dynamic assessment, providing scaffolding and support to see whether this aid is sufficient to allow them to complete tasks with expository texts. Just as we may have tried providing an outline to guide comprehension in a lecture format, a similar procedure could be used for written material. We might supply students with an outline of the written text, listing main headings with lines under each for the students to fill in relevant details. After reading and outlining the passage this way, students can be asked to summarize the passage, recall details, and answer literal and inferential questions. If these kinds of scaffolding improve comprehension of the text, then working on getting students to use a learning-strategies approach (see Chapter 14) to use these supports independently will probably be helpful. Some consultative intervention to encourage teachers to

provide such support in their classroom materials also would be beneficial. If dynamic assessment does not demonstrate much improvement of expository text comprehension with scaffolding and support, we may want to work more directly on expository text structure in the intervention program. We'll discuss some approaches to this procedure in the next chapter.

Snyder and Caccamise (2010) identify three processes that support the comprehension of exposition: *memory, strategic processing,* and *domain-specific knowledge.* When we find students who have difficulty with expository understanding, we may want to probe each of these processes to locate the source of the trouble. We might have students read or listen to an expository passage, and ask a series of literal questions regarding specific facts or events, using a multiple choice format to minimize the intrusion of other difficulties, in order to assess memory. To assess students' access to strategic processing, Snyder and Caccamise's discussion suggests presenting students with passages that contain incoherent or anomalous elements and asking the students to tell if there is anything in the text that is hard to understand, for example:

> "The oil slick extended throughout the Gulf of Mexico; fishing fleets were required to stop **its** activity for weeks"

or

> "The Boston Tea Party was a *direct action* by colonists in *Boston* . . . against the *British government* . . . . After officials in Boston refused to return three shiploads of taxed *tea* to Britain, a group of colonists . . . **saved** the tea by throwing it into *Boston Harbor*."

Students who do not identify these anomalies may not be using comprehension-monitoring strategies to check one portion of a passage against another to be sure that the meaning they are constructing as they process the passage coheres.

Finally, Kamhi (2009) as well as Snyder and Caccamise (2010) have argued for the importance of domain-specific knowledge in comprehension. That is, without adequate background information about a specific topic, understanding expository text on that topic becomes very difficult, as you can see for yourself, by reading the following passage from Wikipedia.org:

> In fluid dynamics, Bernoulli's principle states that for an inviscid flow, an increase in the speed of the fluid occurs simultaneously with a decrease in pressure or a decrease in the fluid's potential energy.

Even if you remember from your Speech Science course what the Bernoulli principle is, I would venture to guess you had trouble understanding this sentence, probably because you (like most people) have limited knowledge about the topic of fluid dynamics. This kind of difficulty can be especially acute for students with LLD, whose limited language processing abilities may have resulted in their acquiring less information about a range of topics than typically developing peers. Kamhi (2009) suggests that we treat the problem of the acquisition of domain-specific knowledge as separate from the basic problem of expository

comprehension, and work with students to develop adequate strategies to decode words and comprehend "domain-general" material—material that requires little specialized knowledge of any kind. In assessing comprehension of expository texts, then, we may want to follow Nippold's (2010b) advice to assess this skill using texts about familiar, motivating topics, such as instructions for playing a game popular with peers, building an engaging project like a terrarium, or making an appealing craft item like a duct-tape wallet.

Producing Expository Text. Scott and Windsor (2000) reported that students with LLD produce less mature expository structures, in terms of both form and content, than typically achieving peers. Many students in middle and high school participate in national and state-wide assessments that include the production of expository writing. These written samples, if they are available to the SLP, can serve as a starting point for artifact analysis. They can be examined, as Espin et al. (2005) recommended, for the following elements:

- *Premise*: a statement of the writer's position on the topic; stated in an introductory section
- *Reason*: an explanation to support or refute the premise
- *Elaboration*: an extension or examples of a premise, reason, or conclusion
- *Conclusion*: a closing statement

Scott (2010) suggests the alternative of using individualized standard assessments for the same purpose. Several standardized measures of written language include expository text production tasks, including the *Oral and Written Language Scales—Written Expression Scale* (Carrow-Woolfolk, 1996) and the *Test of Written Language-Fourth Edition* (Hammill & Larsen, 2009). Finally, we can use artifact analysis to look at the student's expository assignments from class work as a way of analyzing these elements. Weak or absent elements can be addressed in an intervention program. Because so many typical students have trouble with expository writing, this is an excellent area for collaborative teaching.

Many important aspects of advanced language that we have already discussed, including literate vocabulary, clause density, complex syntax, and discourse cohesion can be assessed in the context of expository text samples like these. In fact, Nippold (2010b) has argued that expository texts are ideal for this purpose because they are more likely than other genres to elicit the use of these literate language elements. However, Nippold cautions us that to see students' best performance we should encourage them to write about topics that interest and motivate them in settings that provide them with a real communicative purpose, such as teaching someone how to play a game or accomplish a task. She also reminds us, as Kamhi (2009) did, that there is a reciprocal relationship between skill with expository language and knowledge of domain-specific topics. While greater knowledge of a topic results in more organization, accuracy, coherence, and logic in expository productions (Nippold, 2010b), writing itself can serve to increase this domain-specific knowledge by requiring the writer to read and learn more about the topic being written about. Just as you had to do research and learn a lot of new information in order to write your last term paper, clients who are engaged in writing about topics that interest them will be motivated to search out new sources and information about the topic in order to complete their task. Our role as SLPs for students with LLD includes consulting with teachers on identifying topics that will be both educationally relevant and motivating to these students, providing scaffolding and encouragement as they plan and execute their research, supplying feedback and guidance as they compose and revise their texts, and

developing meaningful communication opportunities in which they can share their writing and celebrate their newly acquired knowledge. We'll talk more about these roles in the next chapter.

Persuasive and Argumentative Texts

Nippold (2007) and Scott and Erwin (1992) identified persuasion or argumentation as a new discourse genre that confronts secondary students. They suggested that competence with this genre develops even later than exposition, and as such, it may not enter the student's repertoire until late in the adolescent period. We looked at some ways to assess the comprehension of these kinds of texts when we talked about critical listening. Assessment of production of persuasive texts can be examined in oral modes using the role-playing procedures we talked about earlier. We'll look, too, at production of written argumentative texts in the next section as one aspect of the assessment of written communication.

Written Communication

One of the major new demands of the secondary school years is the increasing requirement to produce longer, more elaborated forms of written expression in a variety of discourse genres (Nelson, 2010), and writing has become an especially important area for intervention since the requirement of the No Child Left Behind (NCLB) legislation that students in special education must participate in district- and state-wide assessments, which frequently include writing (Schumaker & Deschler, 2003). Barry and William (2004) point out that students with learning disabilities are required to pass the same competency exams as students enrolled in general education in order to graduate to new grade levels and to earn a high school diploma.

Like most aspects of development, writing acquisition proceeds through a series of phases (Nippold , 2007; Scott, 2005; Silliman, Jimerson, & Wilkinson, 2000). And, as we would expect, students with LLD show slow progress through these phases and have significant difficulties (Ward-Lonergan, 2010). Mackie and Dockrell (2004) and Scott (2005) reported that students with LLD produce written texts that are shorter, contain more errors, are rated lower in overall quality, show less sensitivity to audience and genre, and contain less information than writing of typically achieving peers. Still, writing is difficult for everyone. Typically developing adolescents take years to master basic skills in effective written communication, and adolescents with LLD have even more difficulty (Englert & Raphael, 1988; Schumaker & Deshler, 2003; Ward-Lonergan, 2010).

There are some norm-referenced measures that assess writing ability. These include the *Picture Story Language Test* (Myklebust, 1965), the *Writing Process Test* (Warden & Hutchinson, 1992), and the *Test of Written Language—4* (Hammill & Larsen, 2009). Other standardized batteries for adolescents have written language sections. The *Test of Adolescent and Adult Language—4* (Hammill et al., 2007) and the *Woodcock-Johnson Psycho-educational Battery—Revised* (Woodcock & Johnson, 1990) are two examples. Like all standardized measures, these tests tell us whether an adolescent is different from other students in terms of written language abilities. To establish baseline function and identify intervention targets, we are likely to need to do some criterion-referenced assessment for students who demonstrate written language deficits on standardized instruments.

Scott (2005) and Scott and Erwin (1992) identified a variety of types of writing required of adolescents in school. These include personal experience narratives ("describe the best experience you ever had"), story retelling (book reports), factual retelling ("summarize the passage on the exploration of Antarctica"), fictional stories or guided stories ("write your own myth to explain how we

came to have four seasons, as the myth of Ceres does"), explanations on how to do something ("explain how to build a log cabin"), descriptions ("write a description of Massachusetts's main industries"), reporting ("write a report of a sports event you watched"), persuasive pieces ("write an editorial about why students should be allowed to eat lunch at local restaurants instead of the cafeteria"), business letters ("write a letter of application for a job"), and friendly letters ("write a letter to a friend asking him or her to visit during the summer"). When we assess writing in our students, we want to sample the kinds of writing required by the curriculum. We also want to find out to what extent students have access to, and know how to use, word processors for written assignments. This information will help us to determine whether to emphasize word processing or hand-written work in the intervention program. To the extent that word-processing equipment is available for student writing, it is to our advantage to make use of it, since students who learn this technology in school have an advantage in the transition to employment settings. If word-processing equipment is available, we may want to counsel students to take a keyboarding course to improve typing skills. It is important to be aware, though, that Scott (1999) has shown computer-produced writing of students with LLD contains more errors than hand-written products, but does not differ in terms of length, structure, or amount of revision. While using a computer may make writing less laborious, it does not automatically improve its quality. In addition, students may need to take high-stakes tests, such as state-wide assessments and SATs, by hand. Unless a student's disability qualifies him or her for access to a word processor during such testing, we need to support students in learning to produce writing legibly by hand, as well.

Phases of Writing. Jencks (2003) suggested that there are five steps involved in producing written texts. The first two are often referred to as the *writing process* or *planning*. The others can be considered the writing product. These appear in Table 13-8. A major difference between the written work of adolescents with LLD and that of their peers is that good writers spend much more time in the planning and revision processes than do poor writers (Espin et al., 2004). This suggests that assessing these processes may be just as important as evaluating the written product itself for understanding what a student needs to improve written communication.

TABLE 13-8 Writing Process

Writing Phases	Writing Stages	Elements in Each Stage
Process	Prewriting	Classroom discussion Graphic organizers Brainstorming
	Drafting	Free writing Concept mapping Outlining
Product	Revising	Peer responses Teacher conference
	Editing	Sentence combining Spelling, punctuation checking Peer review
	Publication	Word processing Author's theater Binding and illustrating

Adapted from Jencks, C. (2003). *Process writing checklist*. ERIC Document No. ED479389.
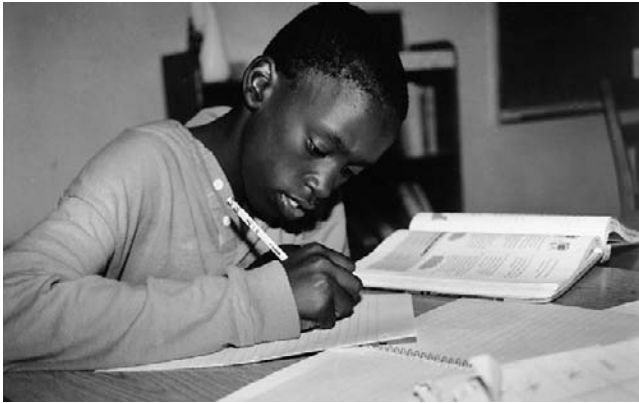
Written language assessment involves both the process and product of writing.

Assessing the Writing Process. We can assess the planning aspect of writing by asking students to produce a written sample under our observation. When we choose the kind of sample we ask the student to write, again, curricular considerations should be paramount. Box 13-10 provides some questions suggested by Scott and Erwin (1992) for learning about the writing demands of a student's curriculum. We can use the answers to questions like these to guide our choice of a writing assignment to use for process assessment.

Scott and Erwin (1992) discussed using a "Think-aloud Protocol," in which we ask students to verbalize all thoughts about writing as they write. The main goals of this procedure are to find out the following:

- Whether the student identifies the goal or purpose of the writing. This decision often includes the choice of the discourse genre to be used in the composition. In many cases, for students, the goal and genre are set by the demands of the assignment. Students may be asked to write an autobiography (narrative), a research or book report (exposition), or an advertisement or editorial (persuasive). When we set the goal by giving the student an assignment, we want to observe whether the student uses the goal as a guide to the writing, chooses the correct genre to fit the goal, and uses self-reminders of the goal throughout the process.

- Whether the student takes the audience into account. For students, the audience is often the teacher. We would like to see whether the student takes the teacher's presumed state of knowledge into account by giving the teacher all the necessary background information. On the other hand, often the teacher already possesses much of the information the student is being asked to convey, particularly in expository assignments. In this case, we want to observe whether the student understands the obligation to demonstrate knowledge to the teacher, even though the teacher may already have that knowledge.

- Whether the student uses the planning process to revise and refine thinking. This is perhaps the most critical aspect of planning in writing and the reason that many authors claim that they don't know what they think until they write it. *The Writing Process Test* (Warden & Hutchinson, 1992) also can be used in this phase of the assessment.

If students show very poor or limited planning abilities, providing some dynamic assessment through modeling alternative think-aloud procedures, suggesting the use of graphic organizers and outlines, and encouraging students to focus on planning as well as producing written communication can help to determine which elements of writing can best be addressed in the intervention program.

Assessing the Written Product. Espin et al. (2004) discussed the various forms of assessing student writing that are in common use. Often, these assessments involve presenting students with a writing "prompt." Example writing prompts appear in Table 13-9. Alternatively, students may be presented with a story starter in the form of a picture or sentence. The four primary methods of assessing writing samples such as these include the following:

- *Holistic:* The rater provides a numerical score, based on an overall impression of the writing. The score is norm-referenced in that the rater has in mind what typical writing for a given grade level should look like. This method is most useful for placing writing within a category or level that can be used to evaluate change with intervention, rather than for evaluation of the writer's instructional needs.

- *Primary trait:* The rater measures the sample against predetermined criteria, often in the form of a rubric that provides numerical ratings on a 4- to 5-point scale, with anchors such as

BOX 13-10 Questions to Determine Writing Demands of Curriculum

1. Did you write anything in school this month that was more than a paragraph long? What was the assignment?
2. Do you have homework for chapters in your textbooks that require writing a paragraph or more? What is the wording on these assignments?
3. Do you have essay questions on exams? Can you give me an example of one? How long is your answer? Half a page? A whole page? More?
4. Do you have to write book reports? Research reports? Biographies? Autobiographies? Journals? Lab reports? If so, how are they done? In school or at home? How long are they? Do you write them alone or with other students? Do you have to write more than one draft?
5. Where does the information for your writing come from? Is it all in your textbooks, or do you have to do additional research?
6. What does your teacher think about your writing?
7. What is the longest thing you ever wrote?
8. Do you do any writing on a computer? What kind of writing?
9. Do you take notes in class? Is there anything to copy from the board, or do you write down what you hear?
10. Do you plan before you write? Do you go back over your writing and make changes when you are through?
11. What kinds or writing are easiest for you? What kinds are hardest?

Adapted from Scott, C., & Erwin, D. (1992). Descriptive assessment of writing: Process and products. In W. Secord (Ed.), *Best practices in school speech-language pathology* (vol. II) (pp. 60-73). Austin, TX: Psychological Corp: Harcourt Brace Jovanovich.

TABLE 13-9   Example Writing Prompts for Secondary Students

Genre	Sample Prompt
Narrative	Everyone has a frightening experience once in a while. Think about a time when you were very worried or afraid. Write a story about this time. Tell what happened in the order it occurred and tell how it turned out.
Expository	There are many exciting places to visit in the USA. Think about a place you would like to visit. Write about what makes this place special or interesting to you and why you would want to visit there.
Persuasive	Some schools allow teachers or principals to censor the school newspaper and decide if certain articles will be published or not. Write a letter to your principal explaining why you think school newspapers should or should not be censored by teachers.

unsatisfactory, minimal, satisfactory, elaborated, or superior. This method is a criterion-referenced form of assessment, in that it measures the student's writing against a standard rather than against the work of peers.

- *Analytic:* Several specific aspects of the writing are each evaluated separately, using a standard evaluation tool. For example, syntax might be rated by using an index of subordination, or vocabulary might be rated using number of different words. This method is usually used with writing elicited through a prompt.
- *Curriculum-based measurement* (CBM): A short, timed sample of writing is elicited in response to a curriculum-based topic or story starter. The writing is analyzed according to criteria drawn from the curriculum goals in terms of both form (vocabulary, sentence structure, and spelling) and content. Alternatively, writing artifacts collected in a student's portfolio can be analyzed.

Because secondary students are required to produce several varieties of written products, we may want to look at more than one writing sample in doing this assessment. For this purpose, artifact analysis is especially useful. We can ask the student to bring writing samples from several class assignments for us to analyze. We can use the questions in Box 13-10 to guide us as to which kinds of assignments are most important to assess. We would probably want to focus on a few types of writing that are required most often and that the student perceives as most troublesome.

Scott and Erwin (1992) suggested a hierarchy of approaches to writing assessment that makes use of all Espin et al.'s (2004) methods. The clinician may choose to assess all of these at an initial evaluation; later we may want to track just one or two aspects of writing to assess progress in intervention.

The first element in this hierarchy is *fluency.* Fluency refers to the ability to provide products that are sufficiently long and elaborated for the topic and audience. Malecki and Jewell (2003) report that three analytic measures of fluency are typically used to assess timed writing samples (of 3 to 5 minutes), elicited with the CBM method. These measures are:

- The number of words written.
- The number of words spelled correctly.
- The number of correct word sequences; that is, each pair of adjacent words is examined, and the rater decides if the pair is correct and in terms of spelling, grammar, punctuation, and meaning. The number of correct sequences is counted.

The first two measures have been shown to be most important for writing at the elementary school level (Malecki & Jewell, 2003). However, many of our students with LLD will be writing below grade level, and these measures give us a way to easily document change over time in students' writing. As such, they can be helpful

pre-/post-intervention measures of fluency for secondary students with LLD. For students writing at higher levels, Espin et al. (2008) found that using 7-minute writing samples produced in response to prompts, and computing the number of correct word sequences minus the number of incorrect sequences, produces the most valid index of fluency.

A second aspect of student writing is *lexical maturity.* This can be assessed using a primary trait analysis. A simple method was suggested by Isaacson (1988). We can count the number of words with more than seven letters in a composition. This value has been shown to have a high correlation with scores on achievement tests. Alternatively, we can use the same criteria we talked about earlier in our discussion of the literate lexicon to examine the vocabulary used in the student's writing samples. We could look for the presence of words associated with technical and curriculum topics, metalinguistic and metacognitive verbs, and the use of adverbs and connectives. Scott and Erwin (1992) and Westby and Clauser (2005) suggested further that we look at the use of low-frequency words that add precision and color to the writing. As we saw in our exercise in Box 13-2, these can usually be identified with relatively high reliability. If students produce very few such words in their writing, work on exposing them to these words in literature- and curriculum-based activities and practice in producing written passages with such words may form part of the intervention program.

The third aspect of writing product assessment is to use an analytic approach to examining sentential syntax. Here we can use the same procedures we used earlier to look at syntax in the narrative samples we collected to analyze students' grammatical production. In examining T-unit length, subordination index, and use of higher level, low-frequency syntactic structures, we want to assess whether the student is using sentences that include the syntactic characteristics of a literate language style. If these forms are lacking in the student's writing, we will want to use literature- and curriculum-based activities to provide intensive exposure to these forms. Practice producing written passages modeled after the ones with complex syntax in literature-based activities also can be part of the intervention program.

An alternative method is to use a measure of the percentage of correct word sequences (%CWS), derived from the fluency measure we discussed earlier. The %CWS measure is computed by dividing the number of CWS from the fluency measure by the total number of possible two-word sequences in the writing sample. Several researchers (Espin et al., 2005; Malecki & Jewell, 2003) have shown this measure to be a valid index of writing accuracy. Moreover, Malecki and Jewell found that it takes less than 2 minutes to compute a %CWS on a writing sample taken from a 3-minute CBM probe. As such the %CWS provides an efficient way to measure change in writing maturity over time.

Both Jewell and Malecki (2005) and Espin et al., (2008) report that the number of correct word sequences minus the number of incorrect sequences (CIWS), discussed above, is another useful measure for this purpose.

At our initial evaluation, or for students who show low scores on the %CWS or CIWS, we may also want to look at students' writing for specific *grammatical* and *mechanical errors.* Remember that Scott and Windsor (2000) showed that the number of grammatical errors in writing is one of the best ways to distinguish the writing samples of students with LLD from typical peers. In doing grammatical error analysis, we are looking for misuse of tense; poor subject-verb agreement; failure to mark plurals, possessives, and other inflections; and use of nonstandard forms such as *ain't* and *I seen*. If these errors reflect dialect usage, we want to deal with them as "second-dialect" issues, as we discussed in Chapter 5. They may be appropriate speech forms within the home community but are not acceptable in the context of formal writing. Some grammatical errors, however, may be merely "slips of the pen," the result of inattention to details as the student focuses on the composition process. We know (Scott, 1999) that students with LLD make more of these errors than their typically achieving peers. For errors of this type, the function of the editing process must be emphasized in the intervention program. We want to convey the idea that writing is not finished with a first draft and that editing for grammatical and mechanical errors must *always* be part of the writing process.

Mechanical errors include poor legibility and errors in spelling, punctuation, capitalization, and paragraph segmentation. When legibility is very poor, it may be wise to use word-processing equipment instead of insisting students write by hand. This suggestion could be part of the consultation program, when the SLP talks with teachers about curricular modifications for the student with LLD. Other mechanical errors may be "slips of the pen" or they may be the result of incomplete understanding of the rules of writing mechanics. We can determine this by asking students to edit their work and determining whether the student can detect and correct mechanical errors. If not, we should include some work on spelling, punctuation, capitalization, and paragraphing as part of the intervention program, or consult with the LD specialist about including them.

An additional method of writing assessment includes the *holistic* rating (Espin et al., 2004). Here we rate the overall quality and effectiveness of the writing, taking into account its content, organization and macrostructure, cohesion, the transition from thought to thought, and the degree to which the writing accomplishes the intended purpose and provides for the audience's informational needs. Espin et al. (2005) and Jencks (2003) discussed the ways in which holistic assessment can be accomplished. Table 13-10 presents a holistic scoring system adapted from Dagenais and Beadle (1984), Espin et al. (2005), Malecki and Jewell (2003), and Wiig (1995) that can be used to guide the formation of this global judgment.

Westby and Clauser (2005) suggested, in addition, using rubrics, or sets of rules or benchmarks, to differentiate among levels of writing performance, and to provide direction for intervention. They provide example rubrics for evaluating various genres of written language, which appear in Appendices 13-7 through 13-10. Figure 13-7 provides a general writing assessment rubric adapted from Popp, Ryan, Thompson, and Behrens (2003). The clinician assigns a level from 0 to 6 to each element of writing identified, and writes a brief note in the corresponding cell of the form. For example, a clinician might score "ideas" with a 3, and write in the "3" row under ideas "shows some insight."

In addition to assessing writing skills at the beginning of an intervention program, we want to assess changes in writing through the course of the treatment, to decide when objectives have been achieved. Hewitt (2001) advocated using *portfolio assessment* for this purpose. Portfolio assessment involves systematically collecting samples of the student's writing throughout the course of the intervention program and using these samples to evaluate progress. Students are involved in the choice of material to be included in the portfolio and are encouraged to use self-evaluation as well as the teacher's or clinician's judgment to assess their progress. Mitchell, Abernathy, and Gowans (1998) emphasized the importance of clearly defining the focus of the portfolio, so that students know what is being assessed. If the focus is to show progress over a term, students should select materials from beginning, middle, and final periods of time. If it is to showcase the student's "best work," then the student should be clear on the guidelines to use in selection. Griffith, Dastoli, and Rogers-Adkinson (1994) argued that using student self-evaluation in the context of portfolio assessment helps students reflect on their strengths and weaknesses, set personal goals, appreciate their own progress, and take more ownership of their work. Figure 13-8 provides a form for summarizing the range of writing assessment we have been discussing. A form like this one can be used by both the clinician and student to evaluate each element in the portfolio. Students can compare their self-assessment with the clinician's and talk about how much progress their writing has shown and what still needs to be improved.

Figure 13-9 presents a writing sample of Crystal's, our client from the beginning of the chapter. You might like to try completing Figure 13-8 with an analysis of her writing. Our assessment appears in Appendix 13-11.

Assessing the "Metas"

We've talked a lot about the importance of metalinguistic and metacognitive skills for success in school, and in secondary school this need is even more pronounced. We've already looked at some ways to assess certain advanced language skills at a "meta" level, such as the ability to define words and to edit writing. Let's look at four additional areas we may want to assess in adolescents with LLD to get a picture of "meta" skills: metalinguistic skill, metapragmatic ability, comprehension monitoring, and metacognition.

Asking students to edit peers' writing samples provides an informal assessment of metalinguistic ability.

TABLE 13-10 A Sample of Holistic Evaluation Criteria for Assessing Students' Written Products

Score	Description
1. Below basic, inadequate	A below-average paper may present some content; contains errors such as the following: • Omits information or makes only cursory reference to required information, gives insufficient detail or provides irrelevant information; ambiguous or incomplete cohesive marking, meaning is unclear. • Lacks adequate organization. • Contains significant omissions, digressions; may be a disconnected list. • Uses inappropriate tone. • Shows poor control of conventions of standard English; lacks variety in language choice.
2. Basic, but minimal	A low-average paper. It shows most of the following: • Contains sparse number of ideas or propositions, omits important information; some cohesion errors. • Shows some organizational pattern, but has little elaboration. • Rambles; may contain irrelevant details. • Shows limited variety in word and sentence choice. • Shows limited use of conventions of standard English. • Inappropriate tone for purpose and audience.
3. Proficient	An average paper. It may exhibit some of the following: • May imply but not specify certain key information, may lack certain necessary details. • Shows some organization and use of appropriate cohesion, but may be disjointed in moving from one thought to another. Some segments may be out of sequence, omitted, or marked by digressions. • Shows some range of vocabulary and sentence types. • Shows a few errors of standard English usage. • May lack appropriate tone for purpose and audience.
4. Elaborated	A good paper, above average, but not top. • May be less rich in language and detail than a top paper and not so well organized or appropriate, but it is basically well written. • Shows reasoning, clear and useful examples, adequate sentence variety, and general facility with the conventions of standard English.
5. Advanced, superior	A top paper, but not necessarily perfect. It does most of the following: • Includes adequate number of ideas, or propositions; provides sufficient information with adequate details. • Has clear cohesion and organization and moves logically from one paragraph to the next; a clear structure is followed; reader gets a sense of "wholeness"; parts of the composition are related to overall theme or topic. • Shows insightful reasoning, clear and useful examples. • Shows good sentence variety, and general facility with the conventions of standard English. • Uses a consistent and objective tone appropriate to the purpose and audience.

Adapted from Espin, C., Weissenburger, J., & Benson, B. (2004). Assessing the writing performance of students in special education. *Exceptionality, 12,* 55-67; Malecki, C., & Jewell, J. (2003). Developmental, gender, and practical considerations in scoring curriculum-based measurement writing probes. *Psychology in the Schools, 40,* 379-391; Dagenais, D., & Beadle, K. (1984). Written language: When and where to begin. *Topics in Language Disorders, 4,* 59-85; Isaacson, S. (1988). Assessing the writing product: Qualitative and quantitative measures. *Exceptional Children, 54,* 528-534; and Wiig, E. (1995). Assessment of adolescent language. *Seminars in Speech and Language, 16,* 14-31.

Metalinguistics

Asking students to edit their own or others' writing samples is, of course, an excellent metalinguistic assessment task, one that can provide information on students' ability to focus on the form rather than the content of written language. If we find students having difficulty with editing, we may want to use dynamic assessment to explore further. For example, if we learn that students are unable to detect errors in writing without any scaffolding, we might provide them with a writing sample in which errors have been highlighted but not corrected. We can then see whether guiding the students' selective attention to the error allows them to make appropriate corrections. If so, we might consult with teachers and ask them to return the student's papers with errors highlighted but not corrected so the student can practice making the corrections. Eventually, focus can shift to error detection.

Paraphrasing is another important metalinguistic skill for secondary students. It is needed to write information gathered from library or internet research as they prepare papers and to summarize information from classroom texts. We can assess paraphrasing ability by asking students to read sentences at their reading level or listen to sentences and restate them. Material for paraphrasing can be drawn from classroom texts or literature materials. Complex sentences, such as "When the pioneers traveled west, they often encountered hardships," will probably be the best sources of paraphrasing activity. Ambiguous sentences, such as those used in proverbs and humor, also are excellent sources. Here the student can be asked to paraphrase a sentence such as "Visiting relatives can be boring." We can then ask, "Can it mean anything else?" If students are unable to detect ambiguity in sentences, some work with ambiguous sentences may be included in the intervention program.

Metapragmatics

We can probe metapragmatic skills by asking students to describe the rules of various interactive situations. Nelson (1998) suggested that, for example, we ask students to describe how the rules for taking a conversational turn politely differ from the rules for taking a turn in an argument. Walker, Schwarz, Nippold, Irvin, and Noell

	Ideas	Organization	Voice	Word choice	Sentence fluency	Conventions
0: Unscorable; inadequate						
1: Marginally acceptable; needs improvement						
2: Shows emerging skills						
3: Average for grade level, shows adequate performance						
4: Shows proficiency; basic skills mastered						
5: Above average for grade, well-constructed, shows some insight						
6: Superior, shows insight, logic, varied forms						

FIGURE 13-7 Example rubric. (Adapted from Popp, S., Ryan, J., Thompson, M., & Behrens, J. [2003]. Operationalizing the rubric: The effect of benchmark selection on the assessed quality of writing. ERIC Document # 481661.)

(1994) suggested using video technology to assess pragmatic skills. Students can be shown a videorecorded scenario (such as a student attempting to enter a conversation with other teens; or a student responding to teasing or provocation), then asked to select an appropriate ending from several displayed on the screen or simply to predict an appropriate ending. Since classroom pragmatics are so important for school success, we may wish to focus on student's awareness of the rules for interaction in the classroom. Creaghead (1992) posed a set of specific questions that we can ask students to assess their awareness of the rules of the classrooms of individual teachers. These appear in Box 13-11. In addition, we may want to interview certain teachers to ask them whether the student is aware of classroom rules. We might rephrase each of the questions in Box 13-11. We might ask for example, "Does (client) know when to be quiet?"

Comprehension Monitoring

We talked in Chapter 11 about assessing comprehension monitoring in the L4L period. Barrier games can be used to assess comprehension monitoring in the advanced language stage as they were in the elementary grades. Lloyd (1994) reported that students in secondary grades should be able not only to detect missing information in these games, but to be able to identify what is missing and ask an appropriate, specific question to resolve the problem. Secondary students who are unable to use such strategies in barrier games would benefit from training and practice in monitoring their comprehension and resolving problematic messages in this context. The difference here would be that the material we ask students to process would be more complex. Instead of asking them to "Find the (mumble)," as we did with younger children, we might ask students to "Draw a circular (mumble)," or "Choose the rhomboid shape."

Student _____ Grade _____
Written assignment _____

	Sample 1	Sample 2	Sample 3
Date of sample:			
Teacher/clinician grade*:			
Student self-assessment grade:			
Number of samples:			
Handwriting:			
Spelling:			
Punctuation:			
Capitalization:			
Paragraphing:			
Grammar:			
Use of literate vocabulary:			
Length of sample (total words):			
Number of different words (NDW):			
Average T-unit length:			
Subordination index:			
Use of low-frequency syntactic forms:			
Number or percent correctly spelled words:			
Number or percent CWS:			
Organization:			
Provides sufficient information:			
Use of appropriate detail:			
Cohesion:			
Tone:			
Holistic evaluation score (1-6) (Table 13-10):			
Rubric scores (1-6) (Fig. 13-7):			

*A = Grade level work; B = below grade level, but no intervention required; C = deficits warrant remediation.

FIGURE 13-8 Worksheet for summarizing information from written language evaluations. (Adapted from Dagenais, D., & Beadle, K. [1984]. Written language: When and where to begin. *Topics in Language Disorders, 4,* 59-85)

Because so much information is presented in the form of class lectures during this period, it will be very important to assess whether the student can monitor comprehension during classroom presentations. Here curriculum-based assessment, using recorded lectures, is useful. This kind of assessment can be integrated with the assessment of basic comprehension that we discussed earlier. After determining whether the student is able to grasp the information presented in the lecture, we might have the student listen again, this time fast-forwarding the recording during a critical piece of information, then continuing the play without comment. We can observe what, if anything, the student does to indicate that some information was missed. If the student fails to indicate a need for further information, we might use a dynamic assessment technique. We can stop the recording, tell the student to be sure to ask if he or she missed anything or needs to hear something again, then repeat the fast-forward procedure. If such cueing helps, we can use a learning-strategies approach to teach the student to provide self-cues to monitor comprehension (see Chapter 14). If the cueing provided in dynamic assessment does not make a significant

FIGURE 13-9   Crystal's written language sample (seventh grade).

My weeken was ok. I work this weeken
Sat I work 10-6 Sun the same. My
Grandma is at my dad bothers house for
a week She ~~~~ Sat. left ~~hours~~. She lives
in Kalfath Oregon. The ~~Books~~ I read where
ALL long, teachers pet. I got lots of new
Closeds. I also talked on the phone of
2 hrs. To My Uclen. I am mad At my
boyfreind because he domp me. We had
freinds from Washington stay Fri Sat then
we had froends from bend Oregon stay
Sat, Sun, Mon, tues. the friend from wash.
~~~~ Droughtus some Vegeteble and fruit B from
his ~~garden~~ garden and his friute threes
in his yard. I also babysat Sat tell 1:00Am.

---

change in the student's performance, a more direct approach, like Dollaghan's (1987) method, described in Chapter 12, may be tried.

In addition to monitoring comprehension of spoken language, our students with LLD need to learn to monitor their reading comprehension. Yu-Fen (2006) suggests that comprehension monitoring skill is particularly important in the development of critical reading, the kind necessary for many secondary school tasks. Again, as we did for comprehension of spoken language, we want to assess basic informational comprehension of written material before looking at comprehension monitoring. We can use the standard reading comprehension tests discussed earlier to do this basic-level assessment. If students' basic reading comprehension is above a fourth-grade level, we can examine monitoring of reading comprehension. Here we might present photocopies of text material at the student's reading level, or instructions from a board game, a how-to pamphlet, or written instructions for a craft project or homework assignment, with critical words blurred so they are illegible, or substituted by words that make little sense in the context. If the student does not protest or ask for further information, some deficit in monitoring comprehension in reading can be inferred.

Metacognition

Metacognition, or *executive function* (EF), includes a range of cognitive control mechanisms that enable goal-oriented behavior, cognitive flexibility, inhibition of irrelevant information, and self-control, or *self-regulation* (Bashir, & Singer, 2007; Turkstra & Byom, 2011). Executive function is typically assessed by neuropsychologists using standard tests such as the *Wisconsin Card Sort* (Heaton, 1981), but these often fail to identify EF difficulties in real life and academic situations. McDonald's (2010) *Functional Assessment of Verbal Reasoning and Executive Strategies* was developed to evaluate EFs in communicative contexts, and can be of use to SLPs in evaluating this area. In addition, we can assess metacognitive skill by using "think-aloud protocols" similar to those we used to assess the planning process in writing. Here we would present students with a task, such as studying a text passage to be tested for recall later, generating an inferential set for a textbook chapter to be read, or planning what might be done to improve a grade in a course. We can ask students to think out loud as they attempt to solve the problem and listen to the strategies used in the thinking. Saldana (2004) suggested supplementing this form of assessment with some dynamic cueing. Here the clinician provides focused assistance, such as reminding the student what the task is, suggesting the use of a new strategy if the student is having difficulty, reminding the student to use the strategy discussed, and so on. Bannert & Mengelkamp (2008) suggested an alternative dynamic assessment: giving students a problem to solve or task to complete without cueing, having them think out loud, and then periodically prompting them to reflect on their thinking as they go through the task. With this method, the ability of the student to use metacognition when cued can be compared to performance when uncued. If students do better with either form of cueing, we may want to continue such modeling and practice in the intervention program. If not, a more structured approach to metacognition, such as the cognitive behavior therapy (CBT) program discussed in Chapter 12, may be a useful addition to the intervention program.

ASSESSING FUNCTIONAL COMMUNICATION IN THE ADVANCED LANGUAGE STAGE

In addition to assessing students' academic communication, we also want to look at their functional communicative skills. This is especially true for older adolescents, at 16 to 21 years of age, who will soon be making the transition from secondary school to higher education or vocational placement, and from family to independent living. As we said when we talked about older clients at the L4L stage, these students will probably already be identified as eligible for services so very little, if any, standardized testing will be needed. Most assessment methods will be observational or criterion referenced. When we do criterion-referenced or observational assessments for the older, moderate to severely impaired client, we want to use chronologically age-appropriate tasks and materials, of course. We also need to focus on community-referenced assessments.

For students with LLD who are between 16 and 21 years old, Individualized Transition Plans (ITPs), similar to IEPs, are required by the Individuals with Disabilities Education Act (IDEA) legislation. A sample from McNamara (2007) appears in Appendix 13-12. They may be developed for students from the age of 14, if appropriate. Generally, the ITP addresses progress toward high school graduation, outlines the post-secondary education or training the student needs, discusses the community-living support required, and makes preliminary plans to help the student succeed in employment and daily living settings. The communication assessment involved in developing the ITP is community referenced, as we discussed earlier. If a job or on-the-job-training placement has been decided on during the student's last years in school, the clinician may want to visit the site to do an ecological inventory of the kinds of listening, speaking, reading, and writing demands placed on the student. If college, community college, or vocational training is part of the plan, assessment of the communicative demands of these settings also will be necessary. Lunday (1996) developed a "Communication Checklist" for assessing the communicative demands of post-secondary and vocational settings. This appears in Figure 13-10. Singh et al. (2009) report evidence for the validity of the *Questions About Behavioral Function* (QABF; Singh et al., 2006) for this purpose. Communicative demands of post-school settings can form the basis of the functional communication program designed for the student while still in school.

In addition, we want to talk with the family about their plans for having the student make the transition to independent living. Their input on the student's needs is especially important, since they are most familiar with how the student communicates in everyday life. The family can tell us what they feel are the most important areas in which the student's social communication must improve for an independent-living situation to succeed. Using a checklist such as Bedrosian's (1985) in Figure 11-7 can help parents to focus on the interactive skills with which the student may need additional help to function autonomously. These skills should get high priority in the intervention program during the student's last years in school.

Special Considerations for High-Functioning Students with Autism Spectrum Disorder (ASD)

Although many adolescents with ASD will benefit from assessment of functional and community-referenced aspects of communication skills as students with other disabilities do, those with high

levels of language and cognition may be preparing to enter higher educational settings along with their peers. For these students, who may have strong academic skills, at least in some areas, social communication will often lag behind. Although they may need support for the development of daily living and self-care skills in a variety of areas, it is in the domain of developing conversational and social interactional skills that the SLP can be of most help. Assessment of these areas, as these students begin their transition from high school to secondary education and independent living, is the job of the SLP.

Norm-referenced rating scales can be used to get an initial picture of the student's areas of social communication difficulty. The *Children's Communication Checklist—2* (Bishop, 2006), which is normed to 16 years, is especially useful because it allows the identification of a discrepancy between semantic/syntactic forms and functional use of language. Two additional rating scales that can be helpful for assessing social communication are the *Social Responsiveness Scale* (Constantino, 2000), and the *Social Skills Rating System* (Gresham & Elliot, 1990), both of which can be completed by parents and teachers to provide multiple perspectives on the student's interactive skills and are normed to age 18. Gilliam and Miller's (2006) *Pragmatic Language Skills Inventory*, though normed only to 13 years, may also be helpful. Examining the items endorsed as deficits by parents and teachers on these measures can help to pinpoint areas for intervention.

Many of the observational measures of conversational pragmatics that we examined earlier in this chapter will be relevant for speakers with ASD. It is also important to remember, though, that many speakers with ASD may do better with adults, who are more supportive and tolerant, than they do with peers. For this reason, observation of a peer interaction, using formats like the Nippold et al.'s (2007) Peer Conflict Resolution Task or Favorite Game/Sport task directed to a peer, can be more informative. Unlike in the Nippold study, however, here the goal is to examine not syntax but the pragmatics of explanation and negotiation. Paul et al. (2009) reported that the areas of conversational skill most likely to be affected in ASD are the management of topics and information and the ability to keep a smooth back-and-forth flow to the conversation. A form such as the one in Figure 13-5 can be used to record these observations. These are areas that can serve as the focus of observation in peer interactions. In addition, speakers with ASD often show difficulty with the understanding and use of prosody (Paul et al., 2005). Prosody is an additional focus when doing observational analysis. Table 13-11 provides an example form for rating prosodic production. Deficits identified in peer conversations can serve as the basis for the development of intervention, using methods described in the next chapter.

CONCLUSIONS

Assessment of advanced language has much in common with the assessment of students in the L4L stage. Both must focus not only on form and content, but also on the way language is used in the unique environment of the classroom. Both must look at how oral language skills support that acquisition of new information from spoken and written material alike. Both must investigate how a student's communicative abilities match the demands of the curriculum and the school environment, and both look beyond the processing of language itself to the ability to focus on metalinguistic and metacognitive activities.

Student: _____   Teacher: _____
Observer: _____   Class: _____
Date: _____   Hour: _____

	Teacher's Expectation			Student's Success		
	yes	no	n/a	pos	+/−	neg

I. Vocabulary

Does the student need to:

	yes	no	n/a	pos	+/−	neg
understand technical terms/jargon?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
use technical terms/jargon?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
use terms in question form?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
comprehend abstract or figurative expressions?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
read terms in manuals or textbooks?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
read terms on diagrams, charts, and graphs?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
write terms in notes, reports, or tests?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
spell terms accurately?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
summarize project in written report?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
identify abbreviations/symbols?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

II. Use

Is the student required to:

	yes	no	n/a	pos	+/−	neg
converse with others in group settings?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
request tools, supplies, or parts from a stock depot?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
follow a step-by-step procedure?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
plan or design a schedule/procedure?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
explain a procedure to instructor/other student?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
ask for specific help?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
verbally detail equipment malfunction?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
identify and report safety hazards?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
orally report assignment/project completion?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
attend lecture presentations?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
maintain a topic focus?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

III. Function

Is the student required to verbally:

	yes	no	n/a	pos	+/−	neg
participate in classroom discussions?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
define technical terms?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
sequence step-by-step procedures?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
report progress?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
paraphrase information?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
formulate specific questions?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
respond to procedural questions?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
express/support ideas?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
provide suggestions?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
give detailed advice?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
acknowledge others?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

	yes	no	n/a	pos	+/−	neg
describe equipment breakdown?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
explain errors?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
retrieve previously learned information?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

IV. Organization

Does the student need to:

	yes	no	n/a	pos	+/−	neg
keep an organized notebook?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
follow prescribed schedule or routine?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
anticipate direction from the classroom routine?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
manage time based on a syllabus?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
use classroom materials independently?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

V. Form

Does the student need to:

	yes	no	n/a	pos	+/−	neg
comprehend multilevel directions in complex syntax?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
listen for organizational cues or signal words?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
decipher complex information?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
understand test directions independently?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
use writing mechanics correctly?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
relate worksheet information to test format?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

VI. Pragmatics

Is the student expected to:

	yes	no	n/a	pos	+/−	neg
differentiate speech/register when interacting (e.g., peers, teachers, authority figures, general public)?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
use language appropriate to various settings (e.g., classroom, private conversations, group project activities)?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
give and react to nonverbal cues?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
listen for content importance transmitted by prosody?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
modify communication based on feedback?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
initiate, take turns, and terminate interactions?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
display responsive and appropriate language behavior?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
handle concerns and complaints appropriately?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
provide and support an opinion?	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Other Comments:

FIGURE 13-10   Checklist of communication skills considered essential to classroom and occupational success.   (Reprinted with permission from Lunday, A. [1996]. A collaborative communication skills program for Job Corps centers. *Topics in Language Disorders, 16,* 23-26.)

TABLE 13-11 Recording Form for Judging Prosodic Production in Spontaneous Speech

Clinical Judgment Prosodic Parameter:	Appropriate	Inappropriate	No Opportunity to Observe
Rate			
Stress in words			
Stress in sentences			
Fluency; use of repetition, revision			
Phrasing; use of pauses			
Overall pitch level; relative to age/gender			
Intonation (melody patterns of speech)			
Voice quality			
Voice resonance (nasality)			

The major difference between the focus of assessment at the L4L stage and that of advanced language is that in assessing advanced language we are working almost exclusively at the literate end of the oral-literate continuum. We are trying to establish the degree to which a student can make sense and make use of the low-frequency, high-density, abstract, and decontextualized language that characterizes literate speech and writing. To do this, we often need to set up special contexts and look not for how often forms are used, but whether they are used at all. And we need to focus even more sharply on the "meta" in assessment, since these skills are essential to success in producing and understanding literate discourse.

Let's look at Mr. Janis's assessment plan for Crystal to see how he would use these principles to guide his selection of evaluation procedures.

Mr. Janis met with Crystal to tell her about her score on the CELF-4 screening test, to report to her about her teachers' comments, and to ask her what she thought about her performance in school. He said he would like to do some more testing and talk some more with her teachers to come up with some ideas for helping her improve her grades. He went through the self-assessment form (see Figure 13-1) with her to get some insight into what she considered her strengths and weaknesses. He asked whether it would be OK with her if he asked her teacher to record some of her classes so he could listen to them later. He said he would call her parents, too, and talk the idea over with them.

Crystal's parents told Mr. Janis on the phone that they knew Crystal was having trouble again, because her first-term grades had been poor and she was starting to say she hated school. They were willing to have Mr. Janis do some more assessment to see whether there were things that could be done to help.

Mr. Janis contacted the school LD specialist, Ms. Naninger, who also had been monitoring Crystal, and called the district reading specialist to plan a transdisciplinary assessment. The reading specialist agreed to assess reading comprehension, and Ms. Naninger arranged to interview Crystal's teachers about her performance. Mr. Janis asked Ms. Naninger to include in her interviews questions from Box 13-5 to get a sense of how her various teachers saw her communication needs and whether there was a consensus among them.

To establish eligibility for services, Mr. Janis gave Crystal the *Test of Adolescent and Adult Language—4* (TOAL-4;

Hammill, Brown, Larsen, & Wiederholt, 2007). Her ranks on all the subtests were below the tenth percentile, with listening a relative strength, and speaking, reading, and writing weaker. Mr. Janis's initial conversation with Crystal had convinced him that she was functioning at an advanced language level; he'd heard few grammatical errors, but did detect some word-finding problems. He found her to be a good conversationalist who was easily engaged in interaction, although she seemed to use an inordinate number of self-corrections and a run-on style in her speech.

He reviewed the information gathered in the teacher interviews by Ms. Naninger. The teachers' comments indicated a consensus that Crystal had trouble with using appropriate vocabulary, planning for and completing assignments, participating in class discussions, writing and note-taking, understanding material presented in texts and lectures, and solving problems with verbal reasoning. All the teachers agreed that Crystal's strengths were in peer interaction. She was popular with other students and had few obvious difficulties interacting with them, despite her somewhat run-on speech style. Crystal's self-assessment also identified writing papers, understanding written material, using a dictionary, organizing and finding main ideas, and participating in class discussion as areas that gave her trouble. The reading specialist's testing showed that Crystal's comprehension was at about a fifth-grade level in most areas.

Mr. Janis decided not to do an assessment of conversational pragmatics at this time, because Crystal's interactive skills were reported to be a strength. He did tell Crystal, though, that if she started to have trouble conversing with peers or understanding their slang, she should let him know and he would look into it. Similarly, he decided not to do a great deal of criterion-referenced assessment of her basic listening skills, since these, too, were a relative strength, according to the TOAL-4. He did want to look at classroom comprehension, though, because of the special demands of that listening situation. Mr. Janis designed the following plan to gather criterion-referenced information on her communication skills:

- Use the *Test of Adolescent/Adult Word Finding* to document word-retrieval problems. Conduct a curriculum-based assessment, using passages from her English text, which she said she liked, and her science text, which she said was the most difficult for her. Use the passages to look at her comprehension of advanced vocabulary and word relations,

her comprehension of advanced syntax, and reading comprehension-monitoring skill. Probe her ability to produce word definitions by asking her to define some of the more unfamiliar words in the passages. Use dynamic assessment to assess expository text comprehension in the science passage. Ask Crystal to read the description of one of the characters in a literature selection in the English text and make inferences about the character.

• Collect a spoken narrative and written narrative sample, each describing an episode of a favorite TV show, to examine T-unit length, subordination index, use of low-frequency forms, %CWS, expression of internal responses, and use of cohesive markers.

• Have Crystal bring a writing sample from an English and a science homework assignment she's completed. Assess her writing in terms of fluency, lexical maturity, sentential syntax, grammar and mechanics, and overall quality. Assess metalinguistic ability by asking her to edit one of the papers that contains errors.

• Ask Crystal to write a set of instructions on how to knit a sweater (her hobby). Assess planning and metacognitive processes in writing, using a "think-aloud" protocol. Use dynamic assessment to prompt reflective thinking and determine whether the prompts improve Crystal's performance on subsequent trials.

• Assess Crystal's classroom pragmatic skills by listening to an audio recording of her class performance and noting any problems in Crystal's participation or lack of it. Have Crystal listen to a portion of the lecture and provide a summary. Have her listen to another portion and take notes on it. Ask her to give the main idea of the lecture. Use dynamic assessment, providing a written outline of one portion of the lecture with blank lines for Crystal to fill in with notes. Have her summarize this portion and note differences from the unguided summary. Use the "fast-forward" procedure to assess comprehension monitoring skill.

   Although the evaluation process took some time, Mr. Janis was able to use dynamic assessment as a diagnostic teaching procedure, so that he was doing some intervention as he was gathering the data. When he'd collected all his information, he felt in a good position to develop a strong transdisciplinary intervention program that would improve Crystal's chances of successfully completing her schooling.

STUDY GUIDE

I. Language Development in Adolescence
   A. What is meant by advanced language development?
   B. What is formal operational thought?
   C. What literate language skills are learned during this period?
   D. How does the development of formal operations affect language use?
   E. What are some of the new demands of the secondary classroom?

II. Student-Centered Assessment
   A. How can students be involved in the assessment process?
   B. Why is student involvement important?

III. Screening, Case Finding, and Establishing Eligibility with Standardized Tests in the Advanced Language Period
   A. What is the purpose of screening in the advanced language period?
   B. For what populations does screening make most sense?
   C. What other sources of referral are available for adolescents? How can they be accessed?
   D. What is the role of standardized testing at the advanced language stage?

IV. Criterion-Referenced Assessment and Behavioral Observation in the Advanced Language Stage
   A. How can we establish that a student is functioning at the advanced language stage?
   B. Discuss methods for assessing the literate lexicon.
   C. How can word-retrieval difficulties be documented in adolescents?
   D. When and how should word definition skill be assessed?
   E. What aspects of word relations can we examine in adolescents? What methods can be used?
   F. How can understanding of figurative language be analyzed?
   G. Discuss procedures for examining semantic integration and verbal reasoning.
   H. How would you assess syntactic comprehension in a teenager?
   I. Discuss three methods of assessing syntactic production. What sampling context(s) would you use for the assessment?
   J. Discuss methods and contexts for evaluating conversational pragmatics in adolescents.
   K. How can we assess an adolescent student's classroom discourse performance?
   L. Discuss the difference between *informational* and *critical* listening. How can each be evaluated?
   M. Discuss narrative analysis at the advanced language level. What will we be looking for? How will we analyze it?
   N. Describe methods for assessing understanding of expository text structure.
   O. How would you evaluate a student's processing of persuasive texts?
   P. Describe methods for assessing the process and products of students' writing.
   Q. What are the "meta" skills we can examine in secondary students? How can each be evaluated?

V. Assessing Functional Needs in the Advanced Language Stage
   A. What are Individual Transition Plans? For whom are they done? What do they contain?
   B. What kind of transition planning can be done for a student going directly from high school to employment? To a higher educational setting?
   C. What kinds of assessments are necessary for transition planning?
   D. What are the area(s) most important to assess in high-functioning students with ASD?

13-1 A Sample of Language-Screening Instruments, Grades 6 through 12

Test	Age Level	Areas Assessed	Comments
Adolescent Language Screening Test Morgan, D.L. & Guilford, A.M. (1984). Austin, TX: Pro-Ed	11–17 yr	Pragmatics, receptive and expressive vocabulary, concepts; sentence formation; morphology; phonology	Outlines dimensions needing further testing. Administration time: 15 min.
CELF-4 Screening Test Semel, E., Wiig, E.H., & Secord, W. (2004). San Antonio, TX: Harcourt Assessment	5–21 yr	Receptive, expressive, grammatical, and semantic skills	Correlates with CELF-4. Yields a criterion score. Administration time: 15 min.
Speech and Language Evaluation Scale Fressola, D.R., & Hoerchler, S.C. (1989). Columbia, MO: Hawthorne Educational Services	4:6–18 + yr	Articulation and voice, fluency, pragmatics, form, content	Has teacher rating scale plus speech and language scale. Normed on 4501 students. Administration time: 20 min.

A Sample of Language Assessment Tools, Grades 6 through 12

Test Name, Author(s), Date, Publisher	Age Range	Areas Assessed	Comments
*Adapted Sequenced Inventory of Communication Development for Adolescents and Adults with Severe Handicaps (*McClennen, S.E. [1989]. Melbourne, Australia: Psych Press)	Adolescent–adult	Speaking, listening	For use with people with hearing loss, legal blindness, epilepsy, spastic quadriplegia, nonambulation. Similar to Sequenced Inventory of Communication Development. Yields age-equivalent scores. Administration time: 30–60 min.
Assessment of Classroom Communication and Study Skills (ACCSS) (Simon, C.S. [2000]. Tempe, AZ: Communi-Cog Publications)	9–16 yr	Oral and written directions, inferences, math word problems	Group or individual administration. Administration time: 25–45 min.
Bader Reading and Language Inventory—6th Edition (Bader, L. & Pearce, D. [2009]. Upper Saddle River, NJ: Prentice Hall)	K–12 and adult	Inventory of tests to assess reading and language abilities	Graded reading passages for all ages and skill levels. Preliteracy tests, including cloze tests to assess the knowledge of semantics and syntactic grammatical processing and phonics and structural analysis. Interest and attitude tests for a more accurate diagnosis.
Bilingual Syntax Measure II (Burt, M.K., & Dulay, H.C. [1980]; San Antonio, TX: The Psychological Corporation)	Grades 3–12	Syntax mastery (expressive); tests in English and Spanish	Yields criterion-referenced "levels of proficiency." Administration time: 10–15 min.
Clinical Evaluation of Language Fundamentals—Fourth Edition (Semel, E., Wiig, E.H., & Secord, W. [2003]. San Antonio, TX: Harcourt Assessment)	5–21 yr	Semantics, syntax, memory, receptive and expressive composite	Software scoring package available (CELF-4 Clinical Assistant). Screening also available for ages 5–21. 11 subtests. Yields standard, percentile, age-equivalent scores. Normed on 2400 students. Administration time: 30–60 min.
Comprehensive Assessment of Spoken Language (Carrow-Woolfolk, E. [1999]. Circle Pines, MN: AGS Publications)	3–21 yr	Lexical, semantic, syntactic, pragmatic awareness of appropriate forms, complex comprehension	Software package for scoring available. Yields percentiles, stanines, standard scores, and age equivalents. Administration time: 30-45 min. for core battery.
Expressive One-Word Picture Vocabulary Test—2000 Edition (Brownell, R. [Ed.]. [2000]. Novato, CA: Academic Therapy Publications)	2–18 yr	Naming	Spanish version available. Yields standard, percentile, age-equivalent scores. Co-normed with the *Receptive One-Word Picture Vocabulary Test.* Administration time: 15–20 min.
Evaluating Communicative Competence (Simon, C.S. [1994]. Eau Claire, WI: Thinking Publications)	10–18 yr	Language processing, metalinguistic skills, functional uses of language	Yields criterion-referenced information. Administration time: 45 min.

Continued

Test Name, Author(s), Date, Publisher	Age Range	Areas Assessed	Comments
Fullerton Language Test for Adolescents—Second Edition (Thorum, A.R. [1986]. Austin, TX: Pro-Ed)	11 yr–adult	Auditory synthesis, morphology, oral commands, convergent and divergent production, syllabification, grammar competency, idioms	Yields standard scores. Standardized on 762 adolescents. Administration time: 1 hr.
Functional Communication Profile—Revised (Kleiman, L.I. [2003]. East Moline, IL: LinguiSystems)	3 yr–adult	Functional communication profile in 11 areas: sensory, attentiveness, receptive language, expressive language, pragmatic/social, speech, voice, oral, fluency, non-oral communication	Targets practical skills that people encounter daily. Especially useful for clients diagnosed with autism or severe disorders. Administration time: 45–90 min.
Language Assessment Scales-Reading and Writing (LAS R/W) (Duncan, S., & DeAvila, E. [1994]. Monterey, CA: CTB-McGraw-Hill)	Grades 2–12	Language proficiency	Administration time: 60–90 min. Measures English language reading and writing proficiency of students whose first language is not English.
Oral and Written Language Scales (OWLS) (Carrow-Woolfolk, E. [1996]. Austin, TX: Pro-Ed.)	5–21 yr	Measures Written Expression, Oral Expression, and Listening Comprehension	Normed on 1700 individuals. Administration time: 15–25 min.
Peabody Picture Vocabulary Test—IV (Dunn, L.M., & Dunn, L.M. [2007]. Circle Pines, MN: American Guidance Service)	2:6 yr–adult	Receptive vocabulary	Spanish version available. Yields standard, percentile, age-equivalent scores, stanine. Provides standard error of measurement. Standardized on 4012 subjects 2–18 yr old. Administration time: 10–15 min.
Receptive One-Word Picture Vocabulary Test—2000 Edition (Brownell, R. (Ed.). [2000]. Novato, CA: Academic Therapy Publications)	2–18 yr	Receptive vocabulary	Spanish version available. Yields standard, percentile, age-equivalent score. Similar to norming population for Expressive One-Word Picture Vocabulary Test. Administration time: 20 min.
Rhode Island Test of Language Structure (Engen, E., & Engen, T. [1983]. Austin, TX: Pro-Ed)	3–20 yr	Receptive syntax	Designed for hearing impaired, but can be used for ESL populations or for students with LLD or developmental disorders. Yields criterion-referenced information. Standardized on 513 children with hearing impairments and 283 normal-hearing children.
Test of Adolescent and Adult Language—4 (Hammill, D.D., Brown, V.L., Larsen, S.C., & Wiederholt, J.L. [2007]. Austin, TX: Pro-Ed)	12–24:11 yr	Receptive and expressive vocabulary and grammar, reading and writing, auditory comprehension	Administration time: 1–3 hr. Has software scoring program. Yields standard scores, means, and standard deviations for age. Normed on 1671 students in 35 states.
Test of Adolescent/Adult Word Finding (German, D.J. [1990]. Austin, TX: Pro-Ed)	12–80 yr	Naming, nouns, verbs, sentence completion, description, categories	Administration time: 20–30 min. Has 40-item brief test. Measures accuracy, speed, and secondary characteristics such as extra verbalization, gesturing, substitutions. Provides standard, percentile scores. Nationally standardized on 1753 students. Has grade norms for grades 7–12; age norms for 12–80 yr.

Test Name, Author(s), Date, Publisher	Age Range	Areas Assessed	Comments
Test of Language Competence—Expanded Edition (Wiig, E.H., & Secord, W. [1989]. San Antonio, TX: Harcourt Assessment)	Level 2: 10–18:11 yr	Metalinguistics, multiple meanings, multiple inferences, figurative usage, conversational sentence production	Administration time: 20–30 min. Has companion intervention program, *Steps to Language Competence-Developing Metalinguistic Strategies* (Wiig, 1989); which uses cognitive-linguistic approach. Yields standard, percentile, age-equivalent score. Receptive and expressive composite scores. Administration time: 1 hr.
Test of Language Development—Intermediate (Hammill, D., & Newcomer, P. [2008]. Austin, TX: Pro-Ed)	8–17:11 yr	Sentence combining, word ordering, grammatical comprehension, and picture vocabulary	Administration time: 30–60 min.
Test of Problem Solving 2—Adolescent (Bowers, L., Barrett, M., Huisingh, M., Orman, J.L., & LoGuidice, C. [2007]. East Moline, IL: LinguiSystems)	12–17:11 yr	Fair-mindedness, oversimplification, analyzing, thinking independently, evaluating and clarifying, generating solutions	Yields standard, percentile, age-equivalent scores. Standardized on 1051 students. Administration time: 40 min.
Test of Word Knowledge (Wiig, E.H., & Secord, W. [1992]. San Antonio, TX: Harcourt Assessment)	Level 2: 8–17 yr	Expressive and receptive semantics, definitions, antonyms, synonyms, multiple meanings	Yields standard, percentile, age-equivalent scores. Provides confidence interval, receptive and expressive composite. Administration time: 1 hr.
Test of Written Expression (McGhee, R., Bryant, B., Larson, S., & Rivera, D. [1995]. Austin, TX: Pro-Ed)	6:6–14:11 yr	Provides a comprehensive assessment of writing achievement	Individual or group administration provides raw scores, percentile ranks, standard scores. Provides evidence of reliability and validity.
Test of Written English (TWE) (Anderson, V., & Thompson, S. [1988]. Novato, CA: Academic Therapy Publications)	6–11+ yr	Screens mastery of capitalization, punctuation, written expression, and paragraph writing	Administration time: less than 30 min.
Test of Written Language—4 (TOWL-4) (Hammill, D.D., & Larsen, S.C. [2009]. Austin, TX: Pro-Ed)	9–17:11 yr	Cognitive and linguistic components of language	Can be given to individual or group. Yields standard score, written language quotient. Standardized on more than 2505 students in 18 states. Administration time: 20–60 min.
Woodcock Language Proficiency Battery—Revised (Woodcock, R.W. [1991]. Chicago, IL: Riverside Publishing)	2–95 yr	Oral language, vocabulary, antonyms and synonyms, reading and writing	Has Compuscore software. Yields standard, age- and grade-equivalent scores. Nationally standardized on 6300 students. Administration time: 30 min.
The Word Test—2—Adolescent (Bowers, L., Huisingh, R., Orman, J., & LoGiudice, C. [1989]. East Moline, IL: LinguiSystems)	12–17:11 yr	Brand names, word associations, synonyms, antonyms, signs of the times, definitions	Yields standard, percentile, age-equivalent scores. Standardized on more than 1500 students.
Writing Process Test (Warden, M., & Hutchinson, T. (1992). Austin, TX: Pro-Ed)	Grades 2–12	Writing, critical thinking	Provides normative data. Can be administered in groups or individually.
Written Language Assessment (Grill, J., & Kirwin, K. [1990]. Novato, CA: Academic Therapy Publications)	8–18 yr	Assesses language with three types of writing samples: expressive, instructive, and creative	Can be administered to groups or individuals. Uses writing prompts. Administration time: 15–20 min.

"High Level" Words in Ward-Lonergan (2010) Passage in Box 13-3 (Each Word Identified only on First Appearance):

"Although **numerous** studies have **examined** the **ability** of children and **adolescents** with language **impairments** . . . to read and write **expository discourse**, very few have examined listening **comprehension** and **verbal production** of expository discourse. As **previously** noted, this is a **critical** area of **investigation** in light of the fact that . . . adolescents are **required** to **comprehend** and produce expository discourse on a daily **basis** in order to **achieve academic** success in . . . school . . . "

Analysis of T-Unit Length, Low-Frequency Structures, and Subordination Index in Charlie's Oral Narrative Sample in Box 13-3

T-unit Segmentation, Length in Words, Number of Clauses per T-unit

T-Unit	Length	No. of Clauses
T1: There was a boy who was about 21 who stole a plane with a woman and champagne in the cockpit,	20	3
T2: (and) then he got court-martialed for that	6	1
T3: (and) then they sent him to a research study.	8	1
T4: It was for monkeys and chimpanzees.	6	1
T5: They taught them how to fly,	6	2
T6: (and) then what they would do is to have three classes.	10	3
T7: White would be a freshman, blue a junior, and red a senior	12	1
T8: (and) they would teach them how to fly.	7	2
T9: Then after they graduated, they took them into this plane.	10	2
T10: There's this one area, called the radiation area	8	2
T11: (and) they put them in a simulator and exposed them to radiation treatment	12	2
T12: (and) they wanted to see how long they would fly until they would die	13	4
T13: (and) so they could see how long humans could fly if they could pilot their missions if the Russians had an attack on us	23	4
T14: (and) then what the boy did is he had a friend, a chimpanzee that knew sign language	16	4
T15: (and) he talked to him	4	1
T16: (and) he taught the other apes	5	1
T17: (and) they were going to kill his friend with the radiation thing.	11	1
T18: There were these people from the Air Force Patrol	9	1
T19: (and) they were watching the studies	5	1
T20: (and) he didn't want them to kill his monkey	8	2
T21: (and so) what he did was he called the lady who taught him sign language	13	4
T22: (and) she came	2	1
T23: (and) they stole a plane with the monkeys in it	9	1
T24: (and) they finally escaped	3	1

Average T-unit length = 226/24 = 9.42.
Subordination index = 46/24 = 1.92.

Use of Low-Frequency Structures

Structure	Found in T-Unit
Morphology	T2, T10, T11, T17
Noun phrase postmodification	
With past participles	T10
With present participles	
With infinitives	
With appositives	T14
With relative clauses	T1, T2, T4, T5, T8
With prepositional phrases	T1, T18
Complex verb phrases	
Perfect aspect	
Multiple auxiliaries	
Passive sentence	T2 (less advanced truncated passive form)
Adverbial markers and conjunctions (e.g., *otherwise, instead, after all, only, still, though, anyway, in all, finally, when, because, etc.*)	T9, T12, T13, T24
Complex sentence types	
More than one clause type	T6, T12, T13, T14, T21
Clefting	T6, T14, T21
Left branching	T9

Evaluation: Adequate complexity in speech.

Analysis of T-Unit Length, Low-Frequency Structures, and Subordination Index in Charlie's Written Sample in Figure 13-3

T-unit Segmentation, Length in Words, Number of Clauses per T-unit

T-Unit	Length	No. of Clauses
T1: My best personal quality is that I am very friendly with people and to anyone that needs a friend.	19	3
T2: Where I go to school there are some people that are not nice.	13	3
T3: I don't know that many kids at my school could be nice.	12	2 (Conjunction error)
T4: The people that go to my school could be nice.	10	2
T5: But there are people that are nice to [other] people like me.	12	2
T6: I am very outgoing.	4	1
T7: For example, I like to work on school plays and help the new students around school.	16	3
T8: I am very hardworking at [every thing] that I do.	9	2
T9: For example, I do my homework, [thing] on the computer and [puzzles].	12	1

Average T-unit length = 107/9 = 11.89.
Subordination index = 19/9 = 2.1.

Use of Low-Frequency Structures

Structure	Found in T-Unit
Morphology	
Noun phrase postmodification	
With past participles	
With present participles	
With infinitives	
With appositives	
With relative clauses	T1, T2, T4, T5, T8
With prepositional phrases	
Complex verb phrases	
Perfect aspect	
Multiple auxiliaries	
Passive sentence	
Adverbial markers and conjunctions	T7, T9 (not used appropriately; overused)
(e.g., *otherwise, instead, after all, only, still, though, anyway, in all, finally, when, because, etc.*)	
Complex sentence types	
More than one clause type	T2
Clefting	T2
Left branching	T4

Evaluation: Adequate T-unit length, subordination, and use of relative clauses. Probe use of adverbials and conjunctions.

Cohesion and Literary-Language Analysis of Charlie's Written Sample in Figure 13-3

T-Unit	Cohesive Device	Adequate?
T1: My best personal quality is that *I* am very friendly with people and to *anyone* that needs a friend.	Pronoun	Yes
	Substitution	Yes
T2: Where *I* go to school there are some people that are not nice.	Pronoun	Yes
T3: I don't know that many *kids* at my school could be nice.	Substitution	Yes
T4: The people that go to my school could be nice.		
T5: *But* there are people that are nice to [other] people like me.	Conjunction	Yes
T6: *I* am very outgoing.	Pronoun	Yes
T7: *For example,* I like to work on school plays and help the new students around school.	Conjunction	Yes
T8: *I* am very hardworking at [every thing] that *I* do.	Pronoun	Yes
T9: *For example,* I do my homework, [thing] on the computer and [puzzles].	Conjunction	No

Literate Lexicon
Metalinguistic and metacognitive verbs: *know*.
Adverbs, conjunctions, and connectives: *for example* (overused and used inappropriately), *but*.
Evaluation: Possible difficulty with cohesion; probe in longer sample. Again, probe use of adverbials and connectives.

Score	Setting and Mood	Character Development	Plot and Narrative Structure	Voice and Tone
1	The place or time in which the story takes place is unclear or altogether absent	All characters are one-dimensional and stereotypical; little or no background is given on them; little or no relationship between characters or characters who have no relation to the plot; characters do not think or feel	Events are unconnected or contain no conflict; no climax or resolution	Little attention to word choice; emotional atmosphere is not developed; no variety in sentence structure
2	Vague idea of the place and time in which the story is set ("Long ago in a faraway land . . . ")	Physical description of characters is given; actions are displayed by characters	Events are told in sequence, but trivial events are mixed in with important ones; conflict is present but unrelated to characters or significance of conflict is not clearly communicated	Inappropriate word choice at times; very little variety to sentence structure; style is limited to presenting information in a factual manner
3	Enough vivid details are included for the reader to identify or imagine the location, but the setting merely functions as a backdrop to the story or is an unrealistic setting for the story; the details of the setting are told rather than shown	Main characters are identifiable and are given more detail, but lack background information; characters react in stereotypical ways to the plot in which they are placed; characters' thoughts are recorded	Conflict is clear; characters struggle with problems; emotional reactions and outcomes become part of the story; has a familiar plotline in which the reader can guess what will happen next; may not have a resolution	Sentence length and structure is more varied; minimal dialogue; mood is in beginning stages of development
4	Setting is identifiable/ imaginable and realistic; some elements of the setting are revealed through the story rather than told by the narrator; sensory information is included	Beginning development of motivations for actions; letting the character speak and interact with others	Conflict is clear and importance to characters told but not demonstrated; characters struggle with problems; relationships between events are demonstrated; there is a logical climax and resolution	Narrator is identifiable but may not have a clear voice; imagery begins to be used; sentence structure is varied; dialogue is predictable
5	Setting is identifiable/ imaginable and realistic; many elements of the setting are revealed through the narrative at appropriate junctures	Protagonists and antagonists emerge and interact with one another in believable ways	Conflict is clear and complex and its importance to the characters nearly convincing; characters struggle with problems; story has a logical climax and resolution, although perhaps forced; events of the story flow in chronological order; subplots are introduced although not resolved	Narrator has a clear voice; sentence structure is varied; figurative language and action verbs are used; dialogue becomes more interesting
6	The time and place are incorporated at appropriate turns in the story; the setting provides an overall mood that reflects that of the characters and/or unfolding drama; the world depicted is believable and internally consistent and enhances the narrative; techniques such as foreshadowing are used	Character development is complete; characters behave in ways that seem natural to their development; characters become dynamic and psychologically complex; characters are developed through appearance, action, thoughts, and speech	Conflict is clear and complex and its importance to the characters convincing; series of events are interesting and draw the reader in; characters struggle with problems in interesting and meaningful ways; story has a logical climax and satisfying resolution; techniques such as flashbacks and foreshadowing are used to vary the structure from a straightforward, chronological sequence of events; subplots are introduced and resolved	First person narrative is used; variety in sentence structure matches intentions of story; precise and varied word choices are used; lively language, including the use of similes, metaphors, and analogies, are used; imagery and symbolic language are used; dialogue is interesting and lively

Developmental Rubric—Expository Writing

Score	Organization (Text Structure)	Context/Theme (Coherence)	Written Language (Development of Syntax, Cohesion Strategies, Vocabulary)	Written Conventions (Mechanics)	Sense of Audience
1	May be extremely brief or confused	Tendency to write either partially or completely in the narrative mode; associated ideas; much content extraneous to the topic or indirectly related to topic	Use of simple sentences (NVO); sentences juxtaposed; if connectors between sentences are used, they are primarily "and," "then"; may use pronominal reference with numerous ambiguous pronouns (referent not retrievable from text); use of simple vocabulary	Beginning differentiation of drawing and printing; use of recursive letter-like shapes when printing; some phoneme-grapheme awareness for initial sounds; text not readable by others	No sense of audience; writes for self from own perspective; often references based on personal experiences that are not retrievable from text
2	May attempt structure, attempting to chain ideas, but it may be difficult to determine the structure; many ideas included in one paragraph or each idea written as a paragraph, or the response may be so brief that its organization cannot be evaluated	May have misleading introductions and/or conclusions; first-hand experiences; some content extraneous to the topic; ideas are quite disjointed	Compound subjects; compound predicates; within text pronominal reference; coordinating conjunctions-primarily "and," "then," "but," "because" (used for motivational, not logical reasons); use of adequate vocabulary	Printing/writing recognizable letters; use of invented spelling with most sounds represented; no spacing between words or inconsistent spacing, incomplete sentences; a variety of grammatical errors; errors likely to affect readers' comprehension	Writes with knowledge that others will read text; does not adjust writing for specific audiences
3	Structure is somewhat unclear; lack of clear opening; some of the support and elaborations are paragraphed correctly; most ideas relate to main topic or issue with no specific connections; may include major rambling from the main topic	Topic knowledge developing; some content extraneous to the topic may be present; may have misleading introductions and conclusions; moderately disjointed; misleading statements	Adverbial subordinate clauses, particularly with conjunctions "when," "while," "because" (now used for logical justification); relative clauses, primarily those that post-modify object nouns; use of appropriate vocabulary	May continue to have some difficulty with handwriting; invented spelling continues; use of capitals on words at beginning of sentences and persons' names, periods, question marks, exclamation points, apostrophes; pronominal reference may be unclear, errors may affect readers' comprehension	Usually writes for teacher; depends on teacher to set organization format

4	Structure of the paper is clear; some clusters of ideas are paragraphed appropriately; planned opening and closing to paper when appropriate; use of specific expository structures (e.g., definitions, comparison/contrast, cause/effect, sequences, problem/solution); ideas relate to the topic without specific connections; may include off-topic material	Development may be uneven with some clusters of ideas elaborated, others not; lacks depth of content	Use of low-frequency adverbials-"though," "although," "even if," "as," "unless," "provided that"; nominal clauses as subjects; use of some precise vocabulary	Handwriting automatized; spelling mostly conventional; developing use of a greater variety of punctuation (comma, colon, semicolon, quotation marks); few run-on sentences; subject/verb agreement and tenses consistent; paragraphing developing	Given an assignment, student begins to select independently the organizational format appropriate to task and audience; may not select the most appropriate format or may not be able to maintain the chosen format
5	Structure of paper is clear; most of the major clusters of ideas are paragraphed effectively; planned opening and closing to paper, if appropriate; coherence may be demonstrated by overall structure (topic sentences in paragraphs); cohesion developed by various methods (pronouns, parallel structure, some repetition); may include minor off-topic material	Main ideas developed with appropriate and varied details; some risks may be taken that are mostly successful; may have minor flaws; progresses logically	Use of concordant conjuncts "similarly," "moreover," "consequently," "therefore," "furthermore," "for example"; and discordant conjuncts "instead," "yet," "however," "nevertheless," "conversely"; use of vocabulary precise and carefully chosen	Spelling mostly automatized and conventional (student self-edits); more consistent use of correct punctuation; appropriate text formatting for different genres; consistently clear pronominal reference	Given an assignment, student begins to select independently the organizational format appropriate to task and audience; selects from several possible structures the one most appropriate for purpose and audience

Continued

Score	Organization (Text Structure)	Context/Theme (Coherence)	Written Language (Development of Syntax, Cohesion Strategies, Vocabulary)	Written Conventions (Mechanics)	Sense of Audience
6	Structure of paper is clear; all of the major points; opening and closing when appropriate; effectively paragraphed; transitional devices used to develop coherence and cohesion; all ideas are presented logically and are interrelated; no off-topic material; use of a wide variety of organizational structures	Main ideas developed with appropriate and varied details; writer may take compositional risks, resulting in effective, vivid response	Use of structures to achieve literary style, e.g., subject-verb split, absolute phrases; use of vocabulary precise and carefully chosen	Errors in spelling, punctuation, grammar, usage are rare	Response has a coherent sense of purpose and audience; careful consideration of organizational structure from a wide variety of organizational structures that best highlight information for a particular audience

Adapted with permission from Westby, C., & Clauser, D. (2005). The right stuff for writing. In H. Catts & A. Kahmi (Eds.). *Language and reading disabilities* (2nd ed., pp. 288-289). Boston, MA: Allyn & Bacon.

Developmental Rubric—Persuasive Writing

Score	Organization (Text Structure)	Argument	Content/ Theme (Coherence)	Written Language (Development of Syntax, Cohesion Strategies, Vocabulary)	Written Conventions (Mechanics)	Sense of Audience
1	May be extremely brief or confused	No claim is made, or claim is made but no reasons are given to support the claim, or reasons given are not relevant to the claim	Tendency to write either partially or completely in the narrative mode; some content extraneous to the claim present	Use of simple sentences (N + V + O); sentences juxtaposed; if connectors between sentences are used, they are primarily "and," and "then"; may use pronominal reference with numerous ambiguous pronouns (reference not retrievable from the text); use of simple vocabulary	Displays severe mechanical errors or may be so brief that knowledge of mechanics can not be determined (errors may interfere with readers' comprehension)	No sense of audience; writes for self from own perspective; often references based on personal experiences that are not retrievable from text
2	May attempt to structure, but structure is difficult to determine; many ideas included in one paragraph or each idea written as a paragraph, or the response may be so brief that its organization cannot be evaluated	Claim is made and reasons are given to support it, but the self-centered reasons are not developed or are rambling or disjointed	May have misleading introductions and/or conclusions; some content extraneous to the claim present	Compound subjects, compound predicates; within text pronominal reference; coordinating conjunctions primarily "and," "then," "but"; "because" used for motivational reasons; use of adequate vocabulary	Displays numerous severe errors in mechanics (errors may interfere to a degree with readers' comprehension)	Writes with knowledge that others will read text; does not adjust writing for specific audiences
3	Structure is somewhat unclear, some of the support and explanations are paragraphed correctly, most ideas related to claim or issue with no specific connections, may include major rambling from the main topic	Claim is made and supported by self-centered reasons to support the claim; some further explanations made but not elaborated; may mention briefly an opposite point of view	May have misleading introductions and/or conclusions; some content extraneous to the claim may be present	Adverbial subordinate clauses, particularly with the conjunctions "when," "while," "because" (now used for logical justification); relative clauses, primarily those that post-modify object nouns; use of age-appropriate vocabulary	Displays a pattern or errors in mechanics (errors may interfere with readability)	Increasing ability to assume another's perspective; begins to adjust writing for the audience and to identify problems in own writing that may be difficult for others to understand

Continued

Score	Organization (Text Structure)	Argument	Content/Theme (Coherence)	Written Language (Development of Syntax, Cohesion Strategies, Vocabulary)	Written Conventions (Mechanics)	Sense of Audience
4	Structure of the paper is clear; some clusters or arguments are paragraphed appropriately; planned opening and closing to paper; ideas related to the topic without specific connections; may include minor off-topic material	Claim is made and supported by a non–self-centered reason; at least one explanation included with formal development; may have a brief summary of the opposite point of view	Development may be uneven with some clusters of ideas elaborated, others not	Use of low-frequency adverbials: "though," "although," "even if," "as"; "unless," "provided that"; nominal clauses as subjects; use of some precise vocabulary	May display errors in mechanics but there is no consistent pattern	Can take a third-person perspective; recognizes what might be difficult for a reader to understand; makes appropriate changes
5	Structure of the paper is clear; most of the major clusters of ideas are paragraphed effectively; planned opening and closing to paper; coherence may be demonstrated by overall structure (topic sentences in paragraphs); cohesion developed by various methods (pronoun, parallel structure, some repetition); may include minor off-topic material	Claim is made that is supported by general reasons with explanations; includes an attempt to discuss or disprove the opposite point of view	Main ideas developed with appropriate and varied details; some risks may be taken that are mostly successful; may have minor flaws; progresses logically	Use of concordant conjuncts "similarly," "moreover," "consequently," "therefore," "furthermore," "for example"; and discordant conjuncts "instead," "yet," "however," "nevertheless," "conversely"; use of vocabulary precise and carefully chosen	Few errors in mechanics	Considers potential readers' perspective as text is written; presents persuasive information with beliefs and values of readers in mind
6	Structure of the paper is clear; all of the major points, opening and closing, are appropriately paragraphed; transitional devices used to develop coherence and cohesion, all ideas are presented logically and are interrelated; no off-topic material	Claim is made that is supported by general reasons with explanations, including a thorough discussion and/or refutation of the opposite point of view; summarizes this view and discusses why it is narrow or incorrect	Main ideas developed with appropriate and varied details; writer may take compositional risks resulting in an effective, vivid response	Use of structures to achieve literary style, e.g., subject-verb splint, absolute phrases; careful crafting in choice of vocabulary	Minor, if any, errors in mechanics	Able to consider the opposite point of view, presents it, and discusses the reason it is incorrect

6 + 1 Trait Writing: Scoring Continuum

The 6+1 Trait® Writing
Scoring Continuum

☼ **Wow!**

Exceeds expectations

◎ **Strong**

Shows control and skill in this trait; many strengths present

↓ **Effective**

On balance, the strengths outweigh the weaknesses; a small amount of revision is needed

→ **Developing**

Strengths and need for revision are about equal; about half-way home

↑ **Emerging**

Need for revision outweighs strengths; isolated moments hint at what the writer has in mind

← **Not Yet**

A bare beginning; writer not yet showing control

▦ Ideas
▦ Organization
▦ Voice
▦ Word Choice
▦ Sentence Fluency
▦ Conventions
▦ Presentation

6+1 Trait® Writing Rubric
Ideas

Ideas: The heart of the message, the content of the piece, the main theme, with details that enrich and develop that theme	
⑤	***This paper is clear and focused. It holds the reader's attention. Relevant anecdotes and details enrich the central theme.*** A. The topic is narrow and manageable B. Relevant, telling, quality details go beyond the obvious C. Reasonably accurate details D. Writing from knowledge or experience; ideas are fresh and original E. Reader's questions are anticipated and answered F. Insight
③	***The writer is beginning to define the topic, even though development is still basic or general.*** A. The topic is fairly broad B. Support is attempted C. Ideas are reasonably clear D. Writer has difficulty going from general observations to specifics E. The reader is left with questions F. The writer stays on topic
①	***The paper has no clear sense of purpose or central theme. The reader must make inferences based on sketchy or missing details.*** A. The writer is still in search of a topic B. Information is limited or unclear or the length is not adequate for development C. The idea is a simple statement or a simple answer to the question D. The writer has not begun to define the topic E. Everything seems as important as everything else F. The text may be repetitious, disconnected, and contains too many random thoughts

6+1 Trait® Writing Rubric
Organization

Organization: The internal structure, the thread of central meaning, the logical and sometimes intriguing pattern of ideas	
⑤	***The organizational structure of this paper enhances and showcases the central idea or theme of the paper; includes a satisfying introduction and conclusion.*** A. An inviting introduction draws the reader in; a satisfying conclusion leaves the reader with a sense of closure and resolution B. Thoughtful transitions C. Sequencing is logical and effective D. Pacing is well controlled E. The title, if desired, is original F. Flows so smoothly, the reader hardly thinks about it
③	***The organizational structure is strong enough to move the reader through the text without too much confusion.*** A. The paper has a recognizable introduction and conclusion B. Transitions often work well C. Sequencing shows some logic, yet structure takes attention away from content D. Pacing is fairly well controlled E. Organization sometimes supports the main point or storyline F. A title (if desired) is present
①	***The writing lacks a clear sense of direction.*** A. No real lead B. Connections between ideas are confusing C. Sequencing needs work D. Pacing feels awkward E. No title is present (if requested) F. Problems with organization make it hard for the reader to get a grip on the main point or storyline

6+1 Trait® Writing Rubric
Voice

Voice: The unique perspective of the writer coming through in the piece through honesty, conviction, integrity, and believability	
⑤	***The writer of this paper speaks directly to the reader in a manner that is individual, compelling, and respects the purpose and audience for the writing.*** A. Adds interest; appropriate of purpose and audience B. The reader feels a strong interaction with the writer C. The writer takes a risk D. Expository or persuasive reflects understanding and commitment to topic E. Narrative writing seems honest, personal, and engaging
③	***The writer seems sincere but not fully engaged or involved. The result is pleasant or even personable, but not compelling.*** A. Obvious generalities B. Earnest, pleasing, safe writing C. The voice fades in and out D. Expository or persuasive writing lacks consistent engagement E. Narrative writing is reasonably sincere
①	***The writer seems indifferent, uninvolved, or distanced from the topic and/or the audience.*** A. No concern with audience B. Monotone C. Hum-drum and risk-free D. Lifeless or mechanical E. No point of view is present

6+1 Trait® Writing Rubric
Word Choice

Word Choice: The use of rich, colorful, precise language that moves and enlightens the reader	
⑤	***Words convey the intended message in a precise, interesting, and natural way*** A. Words are specific and accurate B. Striking words and phrases C. Natural, effective, and appropriate language D. Lively verbs, specific nouns and modifiers E. Language enhances and clarifies meaning
③	***The language is functional, even if it lacks much energy*** A. Words are adequate and correct in a general sense B. Familiar words and phrases communicate C. Attempts at colorful language D. Passive verbs, everyday nouns, mundane modifiers E. Functional with one or two fine moments F. Occasionally, the words show refinement and precision
①	***The writer struggles with a limited vocabulary*** A. Words are nonspecific or distracting B. Many of the words don't work C. Language is used incorrectly D. Limited vocabulary, misuse of parts of speech E. Words and phrases are unimaginative and lifeless F. Jargon or clichés, persistent redundancy

6+1 Trait® Writing Rubric
Sentence Fluency

Sentence Fluency: The rhythm and flow of the language, the sound of word patterns, the way in which the writing plays to the ear—not just to the eye	
⑤	***The writing has an easy flow, rhythm and cadence. Sentences are well built.*** A. Sentences enhance the meaning B. Sentences vary in length as well as structure C. Purposeful and varied sentence beginnings D. Creative and appropriate connectives E. The writing has cadence
③	***The text hums along with a steady beat, but tends to be more pleasant or businesslike than musical.*** A. Sentences get the job done in a routine fashion B. Sentences are usually constructed correctly C. Sentence beginnings are not ALL alike; some variety is attempted D. The reader sometimes has to hunt for clues E. Parts of the text invite expressive oral reading; others may be stiff, awkward, choppy, or gangly
①	***The reader has to practice quite a bit in order to give this paper a fair interpretive reading.*** A. Sentences are choppy, incomplete, rambling, or awkward. Phrasing does not sound natural B. No "sentence sense" present C. Sentences begin the same way D. Endless connectives E. Does not invite expressive oral reading

6+1 Trait® Writing Rubric
Conventions

Conventions: The mechanical correctness of the piece; spelling, grammar, and usage, paragraphing, use of capitals, and punctuation*	
⑤	***The writer demonstrates a good grasp of standard writing conventions (e.g., spelling, punctuation, capitalization, grammar, usage, paragraphing).*** A. Spelling is generally correct B. Punctuation is accurate C. Capitalization skills are present D. Grammar and usage are correct E. Paragraphing tends to be sound F. The writer may manipulate conventions for stylistic effect; and it works!
③	***The writer shows reasonable control over a limited range of standard writing conventions.*** A. Spelling is usually correct or reasonably phonetic on common words B. End punctuation is usually correct C. Most words are capitalized correctly D. Problems with grammar and usage are not serious E. Paragraphing is attempted F. Moderate (a little of this, a little of that) editing
①	***Errors in spelling, punctuation, capitalization, usage and grammar, and/or paragraphing repeatedly distract the reader and make text difficult to read.*** A. Spelling errors are frequent B. Punctuation missing or incorrect C. Capitalization is random D. Errors in grammar or usage are very noticeable E. Paragraphing is missing F. The reader must read once to decode, then again for meaning
	* Grades 7 and Up Only: The writing is sufficiently complex to allow the writer to show skill in using a wide range of conventions.

Analysis of Crystal's Writing Sample in Figure 13-9

Student: _____ Crystal _____　　　Grade _____ 7 _____

Written assignment: Write about your weekend _____

	Sample 1	Sample 2	Sample 3
Date of sample:			
Teacher/clinician grade*:			
Student self-assessment grade:			
No. of samples			
Handwriting	B		
Spelling	C		
Punctuation	C		
Capitalization	C		
Paragraphing			
Grammar	B†		
Use of literate vocabulary	C		
Length of sample/total words	14 T-units (B)/117 words		
No. of different words (NDW)	80		
Average T-unit length	8.4 (B)		
Subordination index	1.2 (B)		
Use of low-frequency syntactic forms	2 (1 used incorrectly): C		
Number or % correctly spelled words	87 or 74% (C)		
Number or % CWS	28 or 47% (C)		
Organization	C		
Provides sufficient information	B		
Use of appropriate detail	C		
Cohesion	B		
Tone	B		
Holistic evaluation score (1–6) (Table 13-10)	2–3		
Expository Rubrics (1–6) (Appendix 13-8)	2, 3–4, 2, 3, 1–2		

*A = grade-level work.
B = below-grade level but no intervention required.
C = deficits warrant remediation.
†Some errors may be spelling rather than grammar; e.g., *work/worked*.

TRANSITION PLANNING SUMMARY

1. **Statement of Transition Service Needs for students age 14 and older:** (Must be completed at each annual review following a student's 13th birthday)
   Crystal will benefit from coordination of educational, prevocational and community participation supports to prepare her to function at her optimum capacity in a supported vocational or community experience programs.

2. **Student Preferences/Interests - document the following:** (Sections 2, 3, and 4 must be completed at each annual review following a student's 15th birthday)

   a. Was the student invited to attend her/his planning and placement team (PTT) meeting?   **X** Yes   ❏ No

   b. Did the student attend?   **X** Yes   ❏ No

   c. How were the student's preferences/interests, as they relate to planning for transition services, determined?   X Personal interviews ❏ Informal/formal testing

      X Vocational assesment   ❏ Comments at meeting   **X** Other: (specify) *Interview of student's family*

   d. Summarize student preferences/interests as they relate to planning for transition services: *Crystal has demonstrated an interest in prevocational activities and community experiences that involve consistent routines, physical activity, and opportunities to socialize with others. Activities that Crystal has experienced and responded favorably to include volunteer activities ("Meals on Wheels"). landscape work and gardening, and building maintenance. She demonstrated a distinct dislike of sedentary assembly work, unpredictable schedules, and work routines with long periods of inactivity, as evidenced by her verbal and behavioral responses to such experiences.*

3. **Agency participation:**

   a. Were any outside agencies invited to attend the PPT meeting?   **X** Yes   ❏ No (If no, specify reason) _____

   b. If yes, did the agency's representative attend?   **X** Yes   ❏ No

   c. Has any participating agency agreed to provide or pay for services/linkages? ❏ No   **X Yes (specify)** *4 hours/week prevocational training and community experience*

4. **Justification statements for transition services not being addressed:**

   a. If an annual goal and related objectives were not developed for independent living or community participation, provide a justification statement.

      NA (goals developed)

   b. If activities/training are <u>not</u> provided in both the <u>community</u> and the <u>classroom,</u> provide a justification statement:

      NA - Activities/training are provided in <u>both</u> locations

5. At least one year prior to reaching age 18, the student must be informed of her/his rights under IDEA, if any, which will transfer to her/him at age 18.

   NA (student will not be 17 within 1 year)

Courtesy of the Connecticut State Department of Education © 2000.

Intervention for Advanced Language

CHAPTER OBJECTIVES

Readers of this chapter will be able to do the following:

1. State a rationale for providing treatment for communication disorders in secondary school students.
2. List the appropriate products of intervention at the secondary school stage.
3. Describe a range of intervention methods for working with students at the advanced language stage.
4. Describe connections among oral language, learning, and literacy at the secondary level.
5. Discuss the appropriate contexts for intervention at the secondary school level.
6. Discuss the process of transition planning for students over the age of 14.
7. List appropriate goals and procedures for secondary age students with severe communication disorders.
8. List methods of improving social communication skills for speakers with autism spectrum disorder (ASD).

Michael had been diagnosed with autism when he was 3. At that time, he was not talking at all, was withdrawn and preoccupied with spinning things. He received intervention throughout his preschool years, and by the time he was 6, he was speaking in full sentences. IQ testing at that time showed that his nonverbal IQ was in the superior range. He was able to draw complex, scaled drawings of buildings and memorize train and airplane timetables. He was placed in mainstream classrooms and received supportive services throughout elementary school. Consultative services were provided to his teachers in middle school, to help them adapt their programs to his communicative abilities. He always did well in math and science. His vocabulary was enormous, as one of his hobbies was reading the dictionary. But he had trouble with subjects such as English, history, and geography that required any kind of social understanding. He was perplexed by the feelings described in the literature he read for English class and had a great deal of difficulty understanding the plots of stories. He had a hard time getting along with others, too. Although he no longer spent hours spinning objects, he continued to be preoccupied with his obsessive interests of drawing, map reading, timetables, and dictionary reading. All of his attempts at conversation with peers, teachers, or family centered on these subjects, and he seemed both mystified by and uninterested in conversations about anything else. Despite his obvious talents in architectural drawing and his superior memory, Michael was unable to use his abilities in a functional way, always falling back into his preoccupations. As he entered high school, his family's

concern about his future increased, and they requested an assessment of his current educational needs, so that some intervention to improve his functional skills could go on during his last years in school.

Michael needs help with several areas of communication to be ready to make the transition from school to higher education or employment. Students like Michael, who have communication abilities at the advanced language level, require help with a variety of skills at the literate end of the oral-literate continuum, as well as with using the skills they have in the most functional manner possible. Let's look at some of the issues we will need to address in designing language intervention programs for adolescents before we get into our discussion of the intervention itself.

ISSUES IN INTERVENTION AT THE ADVANCED LANGUAGE STAGE

Rationale for Services to Adolescents

It is fair to ask what benefit can be provided to an adolescent like Michael who has received services throughout his school career and will never be "cured" of his disability. Wouldn't he do just as well if left alone to do his best to get through high school without lavishing additional expensive services on him that will probably not make a great deal of difference in his final status at the end of his school years? Although the question is legitimate, there are good reasons for continuing to provide services to adolescents in advanced language stages. Larson and McKinley (2003a) and Nippold (2010) summarized them:

1. The ante is continually "upped" as the student proceeds through the secondary grades. Even if intervention allowed students to function in mainstream settings in elementary school, the more intense demands of the secondary curriculum can often cause students who could "make it" in earlier grades to sink beneath their weight, creating the "porpoise kid" phenomenon (Launer, 1993). The transition from one educational setting to another and from school to work or higher education also places stressful requirements on the shaky communication skills of adolescents with language learning disorders (LLD). Students may need special services in secondary school to allow them to maintain the same level of performance in these new high-demand settings that they were able to achieve in earlier grades.
2. A transition from concrete to formal operational thinking that typically takes place during adolescence is necessary to succeed in the secondary school curriculum. The level of abstract thinking and language use required at this level may not be accessible without support for students with disabilities.

The speech-language pathologist (SLP) can provide important linguistic scaffolding to this new level of thinking.

3. Administrators often ask whether the communication needs of students with LLD cannot be managed in the context of the mainstream language arts curriculum, again questioning the need for special services. Here it is important to remember that only academic communication needs are stressed in these settings. Communication skills needed for interaction and functional communication for vocational and independent-living environments are only addressed through services delivered by an SLP, and instruction in these areas is mandated by the 1997 Individuals with Disabilities Education Act (IDEA).

4. Communication programs targeted for adolescents pay off in terms of reduced dropout rates (Larson & McKinley, 2003a). Kaufman, Kwan, Kline, and Chapman (2000) and Rukeyser (1988) have documented that every potential dropout who stays in school saves taxpayers money—in terms of the costs of adult literacy programs, welfare, basic job training, and incarceration—that would have to be spent later if the student dropped out of school. Language services can make the difference for students at risk for leaving school without graduating.

The Role of the SLP in the Secondary Curriculum

Just as SLPs at elementary levels are being included increasingly in literacy instruction and responsiveness to intervention (RTI) models, SLPs in secondary schools are also more frequently being expected to contribute to the development of literacy for struggling readers and writers. The reason is simple: there is a literacy crisis in our secondary schools. Twenty-seven percent of eighth graders perform below the basic level in reading comprehension (Roberts et al., 2007). Jacobs (2008) cites statistics showing that 13% of U.S. 17-year-olds are functionally illiterate, and this percentage rises to 40 among minority groups. No wonder SLPs, with our deep understanding of the roots of literacy disabilities and our expertise in the remediation of these disabilities in oral language, are being recruited to address this crisis. But just as we said when we talked about our role in elementary schools, these facts do *not* mean we should become reading tutors. So what is our role?

Just as SLPs in elementary schools provide direct instruction, consultation, and collaboration around oral language bases of literacy acquisition in an RTI framework, SLPs in secondary schools with or without RTI programs provide the same range of services. By that I mean that we can support students, through all these service delivery models, in elaborating their vocabulary; increasing their understanding and use of figurative language, verbal reasoning, and complex syntax; using oral and written formats to increase comprehension and production of the genres relevant at this stage of development, including conversation, classroom discourse, narrative, expository, and persuasive texts; and the use of metacognitive strategies. All these activities, the proper province of the SLP, will result in better literacy skills for struggling students. What is not within the scope of practice for SLPs at this level is tutoring in basic decoding skills, teaching specific spelling lists, or assisting with homework or class assignments outside a comprehensive program of oral language support for literacy. These latter activities are more appropriate for reading, learning disability, or special education professionals. While we can certainly support these educators in their work with struggling readers through consultation

and collaboration, we cannot do it for them. As Ehren (2009) advised, SLPs should use the curriculum as the context for their intervention, but should not teach the curriculum itself. Let's see how we negotiate this delicate balance.

Student-Centered Intervention

We've talked before about the importance of engaging the client and fostering a feeling of collaboration between the teen and the clinician to maximize our chances for success. Just as we asked the student to do some self-assessment, we also can involve the student in planning the intervention program. We can review the assessment results with the student, point out what our testing revealed were strong and weak areas, and ask whether the findings jibe with the student's perception of his or her own problem areas. We can then invite the student to set priorities among the needs identified and choose the skills in which he or she would most like to improve. Adolescent students should be present at the Individualized Educational Plan (IEP) meeting, should discuss service-delivery options with parents and professionals, and should feel a part of the process of determining the intervention program. Adolescent students also should sign the IEP or Individualized Transition Plan (ITP) themselves, along with their parents, to indicate their participation. Myer and Eisenman (2005), in fact, suggest that secondary students should lead the development of their own IEPs, using the planning session as a context for discussion of the students goals, strengths, and needs, allowing the student to choose sections of the IEP that he or she will lead the discussion on in the meeting, and developing a script and role-play activities to prepare the student to present his section of the IEP to the team. What's more, Branding, Bates, & Miner (2009) showed that special education personnel who viewed students participating in their own IEP planning rated the students higher in self-determination capability than they did when they observed the same student in a passive role. This finding suggests that allowing students with disabilities to participate in IEP and ITP development leads to higher expectations and greater attributions of autonomy on the part of their teachers.

Larson and McKinley (2003a) suggested drawing up a *communication contract* with the adolescent. The contract can state the goals listed in the IEP or ITP and can ask the student to take responsibility for achieving them. By placing responsibility for

Communication contracts involve students in their intervention planning.

achieving goals firmly on the student's shoulders, motivation and cooperation are likely to increase. Again, though, it is important to remember that, if we expect adolescents to take responsibility for their own goals, we must involve them in the goal-setting process first. Figure 14-1 contains an example of a student communication contract that might be drawn up in collaboration with Michael.

I _____ hereby agree to complete this contract
   (name)

starting on _____ and ending on _____. I understand
      (date)   (date)

that my overall contract grade for the term will be decided by averaging the letter grades for each behavioral objective in the contract.* Grading will be done by the adult who signs the contract.

   If I do not complete this contract by the date stated, earning an overall grade of at least a C, I will undergo following consequences:

Have my drawing materials confiscated for 1 week. Give up trips to the dictionary in the school library for 2 weeks.

_____

_____
   Student signature   Professional's signature

Annual goal: improving conversational interaction

Behavioral Objective	Student's grade				
	A	B	C	D	F
Have three conversations with peers about school sports events.	—	—	—	—	—
Make a list of slang terms I hear other students use. Discuss them with (clinician).	—	—	—	—	—
When talking is allowed, ask another student to explain something I don't understand about a story I read in English, at least three different times during the term.	—	—	—	—	—
Make a plan with (clinician) to convince my parents to give me a new privilege. Have a conversation with parents and try to convince them. Discuss conversation with (clinician) to see how it went. Get suggestions for improvement.	—	—	—	—	—
	—	—	—	—	—

*Make an agreement with the student that full achievement of the objective will earn an A for that objective, nearly full achievement a B, and so on.

FIGURE 14-1 A sample communication contract for Michael. (Adapted from Larson, V., & McKinley, N. [2003a]. *Communication Solutions for Older Students*. Eau Claire, WI: Thinking Publications.)

Apel and Swank (1999) and Novak (2002) talked about the importance of developing self-esteem and increasing motivation in our adolescent students. They point out that years of difficulty in school may have led these students to feelings of inadequacy, reduced motivation, and a reluctance to devote effort to additional intervention activities. For this reason, students in the advanced language stage may need counseling, as well as language intervention. Larson and McKinley (2003a) defined counseling in this context as talking with adolescents about their communication problems, giving them information, and providing them with support in facing their feelings about their disability. Adolescence is a turbulent time of life for everyone, and students who are having trouble communicating with others, establishing peer relations, and succeeding in school are likely to be even more frustrated and confused than typical teens. Even if we are offering no direct intervention to an adolescent with LLD and are primarily consulting with teachers and designing curricular adaptations, we can arrange to have a few "chats" with each student. We can talk about how communication is going and where most help is needed, and lend an ear to whatever each student feels a need to tell us. Although it is important to confine our counseling role to issues of communication, we may be able to help direct students to other adults who can help, such as the guidance counselor, school nurse, or another special educator, if additional problems arise. Naturally, we are not psychotherapists, and if a student is having serious emotional problems, referral may be necessary. But very often some understanding remarks from a respected adult and the opportunity to "talk things out" a bit with an accepting listener can be helpful, at least in the short term. In having these "chats," we want to emphasize to students that confidentiality is strictly maintained about any personal information, but if the student tells us about something illegal or dangerous (such as suicidal thoughts), we have to report it.

PRODUCTS OF INTERVENTION IN THE ADVANCED LANGUAGE STAGE

New Intervention Purposes at the Advanced Language Level

We talked earlier about several different purposes intervention might have. Intervention can attempt to eliminate or "cure" a disorder, change or ameliorate the disorder, or change the way the client responds to the disorder by providing compensatory strategies. In our discussions of intervention up to this point, we have usually identified the purpose of intervention as the second of these choices: changing the disorder. We have had as our purpose the provision of basic communication skills that lessen the client's disability. With adolescents, particularly those in the advanced language stage, however, the third of these purposes also comes into play. That is, for some clients at advanced language stages, who have had years of intervention aimed at changing their disorder, the time has come to help them find ways of compensating for it instead.

Larson and McKinley (1995) suggested that, to succeed at a learning-strategies approach in intervention, students need to function within the average range of intelligence and have reading and oral language skills at least at a fourth-grade level. In other words, students need to be in the advanced language stage as we have defined it here. Students functioning at earlier levels of communicative ability would not be good candidates for this approach because of its reliance on reading and writing skills and its demands for metacognitive capacity. Adolescents who are functioning at

Learning-strategy approaches to intervention are used with students at the advanced language stage.

language-for-learning (L4L), developing, or emerging language levels should continue to be served with methods appropriate for those levels.

The advantages of a learning strategies approach, for students for whom it is developmentally appropriate, are that it helps them move toward more independent functioning by teaching them not a basic skill, but a more "meta"-level ability (Englert et al., 2009). A learning-strategies approach, as defined by its originators, Alley and Deschler (1979), includes "techniques, principles, or rules that will facilitate the acquisition, manipulation, integration, storage, and retrieval of information across situations and settings." As such, it gives students the tools to improve their own learning abilities, both during the intervention program and after it's over. Ehren (2002) helps to define *strategies* by distinguishing them from *knowledge* and *skills* in the following way:

• Knowledge is information we have; for example, vocabulary *knowledge* is having the information to link a referent to a word.
• A skill is something we can do; for example, syntactic *skills* allow us to formulate sentences.
• A strategies is a deliberate attempt to use the knowledge and skills we have effectively; for example, deciding to summarize a passage we read in order to remember its content is a reading comprehension *strategy.*

Providing students with learning strategies and giving them the opportunity to practice them on curriculum-related material becomes an important role the SLP can play in intervention for students at the advanced language stage.

The Functional versus the Academic Curriculum

A good number of adolescents with LLD will go on to higher education or vocational training after high school. Aune and Friehe (1996) reported that one-third of youth with learning disabilities enrolled in postsecondary school within 5 years of high school graduation, although only 13% enrolled within 2 years of high school graduation (National Center for Education Statistics, 2000). Horn and Neville (2006) found that 11% of college students report having a disability. For these students, academic

skills continue to be important. We need to address aspects of students' communication problems that impede their success in the mainstream curriculum.

But, as the statistics show, not all students with LLD go on to higher education. And even those who do may have problems with "survival communication," the language skills that allow people to function successfully and autonomously in their homes, jobs, and communities (Novak, 2002). For these reasons, not only academic language, but functional communication skills, too, need to be part of the intervention program for adolescents with LLD. Functional language skills include the ability to ask questions, follow verbal and written instructions, initiate and maintain conversations, use language to initiate and maintain social interactions and relationships, negotiate and solve interpersonal conflicts, gain basic information from writing, use written language to provide basic information on forms, questionnaires, letters, and so on (Novak, 2002). For students with advanced language who need functional communication skill development, a remedial approach focused on changing the disorder will probably be necessary. For work directed at improving academic communication, a learning-strategies approach should be at least one aspect of the intervention program.

PROCESSES OF INTERVENTION IN THE ADVANCED LANGUAGE STAGE

Let's talk now about specific processes of intervention for students with LLD in the advanced language stage. As we do, you'll notice that the organizational scheme of the discussion is somewhat different from the one we've been using up to now. Since the purpose of most of our intervention up to this stage has been to provide remediation to change the disorder by alleviating deficits in basic communication skills, we described the process of intervention using the three approaches to this type of remediation that were advanced by Fey (1986): clinician-directed, child-centered, and hybrid. However, in the advanced language stage, we want to look also at intervention aimed not only at remediating deficits but at teaching compensatory strategies. The National Joint Committee on Learning Disabilities (2008) has recommended that intervention programs for adolescents with LLD address both basic skill acquisition and strategy development. For this reason, we'll organize our discussion of intervention at the advanced language stage along somewhat different lines: we'll talk first about intervention directed at remediating basic deficits in language used for academic and functional contexts, then about intervention using a learning strategies approach. This latter approach is aimed at giving clients the tools for compensating for their difficulties.

Basic Skills Approaches to Intervention in the Advanced Language Stage

A variety of commercial materials are available for providing basic skill instruction at this level, as are numerous computer software programs. Many suggestions for these materials appeared in Larson and McKinley (2003a). When we use basic skills approaches with adolescents, they can be aimed at both academic and functional skills. Let's look at some of the areas of academic performance for which basic skill intervention is still appropriate. Then we'll talk about some basic skills procedures for improving functional communication in our secondary school students.

Academic Communication
Semantics

Work on semantic skills in the academic context focuses on words and usages at the literate end of the oral-literate continuum. Snow (2010) pointed out that sophisticated and abstract vocabulary and precise word choice are among the central features of academic language, which requires presenting complicated ideas in efficient ways. Jitendra, Edwards, Sacks, and Jacobson (2004) emphasized the close connection between vocabulary knowledge and reading comprehension. They report that students with LLD typically have nonspecific knowledge of word meanings and do not spontaneously use strategies for learning new words from context. They argue that direct instruction in vocabulary is necessary for these individuals. In fact, Biemiller (2003) advocates teaching 300 to 400 new words by direct instruction each year.

The Literate Lexicon

Flanigan et al. (2011) point out that the average student knows about 13,000 words in third grade and about 40,000 by high school graduation. This rate of growth means that the average child is learning 7 new words every day, and as we've seen, after fourth grade, most of these new words are learned from reading, not conversation. Flanigan et al. point out that these facts result in a *huge* vocabulary gap for children who are poor readers throughout these years. In fact, Bryan, Freer, and Furlong (2007) showed that vocabulary was one of the greatest weaknesses found in a sample of juvenile offenders, suggesting that students with poor vocabularies are at high risk for getting into various kinds of trouble. The moral of this story is that, because word knowledge is essential to understanding what we hear and read, vocabulary development is a critical area for students with LLD.

Classroom texts, lectures, and themes can be the source of much of the literate vocabulary secondary students need to learn to help bridge this gap. Flanigan and Greenwood (2007) suggest working with classroom teachers to identify words critical to students' understanding *before* they read a curricular assignment and to pre-teach these essential words. They then recommend identifying the words students should have learned *from* reading the material and providing additional instruction and practice to be sure students with disabilities acquire the material's critical new vocabulary. In our consulting capacity, SLPs can work with classroom teachers to encourage them to provide direct instruction on the *before* and *after* vocabulary of their subject, using the approach advocated by Flanigan and Greenwood. Once such *before* and *after* words are identified in curricular material, clinicians can devise activities to address them in pre-teaching and review activities, whether in a team-taught mainstream classroom or an intervention setting. Roberts et al. (2008) suggest that difficult words that appear frequently across contexts, such as adverbial conjuncts, subordinating conjunctions, and quasicoordinators listed in Box 13-8, are also primary targets for vocabulary work. SLPs are the ideal professionals to work on these complex but commonly used words, either in pull-out sessions, small groups in team-taught language arts classes, or communication groups.

Once appropriate vocabulary for instruction has been identified, direct instruction can be provided. Direct instruction in vocabulary has been found to be highly effective in increasing word knowledge and reading comprehension (Jitendra et al., 2004). Direct instruction involves traditional activities such as giving students lists of words to look up in the dictionary, define orally, use in sentences, find synonyms for, and select correct meanings and uses in multiple choice formats. It is important to remember, though, that if students are required to use a dictionary, they need to be taught how to do so. Explicit explanation of dictionary features, such as alphabetical organization, use of guide words on each page, pronunciation keys, and selection from among several meanings will be necessary. If this instruction has been given in the classroom, the SLP will need to provide reinforcement and practice in the therapeutic setting.

Direct vocabulary instruction can also involve more activity-based methods, such as matching words and meanings in a Concentration game, or "hunting" for words with certain characteristics (roots of *graph, tele,* or prefixes such as *inter-* and *un-,* for example) in assigned texts. Beck, McKeown, and Omanson (1987) suggested designating students as "Word Wizards" who can earn points by reporting on their own or others' use of new words outside the intervention setting. Moats (2004) suggests using the book *Language! Roots* (Bebko, Alexander, & Ducet, 2001) as a source for sequenced activities involving root words and affixes. When using direct instructional methods, it is important to remember that practice is necessary to achieve solid knowledge. Hearing, defining, or using a new word only once will not make it a permanent part of the student's lexicon. Clinicians need to provide multiple opportunities for students to interact with their new words. And Bryant, Goodwin, Bryant, and Higgins (2003) reported that students who received some activity-based methods or elaborated exposure along with traditional instruction did better in learning new vocabulary than students who received dictionary instruction alone.

Another way to increase vocabulary knowledge is to expand understanding of words already in students' vocabulary (but maybe just barely!). Elshout-Mohr and van Daalen-Kapteijns (1987) suggested ways to help students consolidate what they know about words and to extend their current meanings. They advocated using Knowledge Rating checklists like the one in Table 12-1 to summarize students' existing knowledge of word meanings drawn from curricular topics. They also suggested having students draw tree diagrams to illustrate how word meanings are connected. Students can choose some related words from a curricular topic, such as a health unit on drug abuse, and work together to construct a tree diagram like the one in Figure 14-2. Fleming and Forester (1997) suggested using materials such as *The Word Kit—Adolescent* (Lanza & Wilson, 1991), *All-Star Vocabulary* (LoGiudice & LoGiudice, 2004), *LanguageBurst* (Whiskeyman, 2000), and *Vocabopoly* (Linguisystems, 2002).

Bryant, Goodwin, Bryant, and Higgins (2003) advocate using semantic feature analysis to expand vocabulary knowledge. Here we would present students with a grid, like the one in Table 14-1, with related curriculum words on one axis and a set of attributes relevant to the words on the other. We would first show students a completed grid, like the one in Table 14-1, and discuss the words and attributes. Then students could be given a blank grid and asked to fill it out. New words and attributes can be added to the grid, and new grids developed to work with additional sets of words.

Gerber (1993) supplied ways to capitalize on the relatedness of words. She advised giving students sets of words that relate in meaning, each on a different card. Students can then be asked to place the cards under related base words. For example,

look	exit
glance	desert
peek	vacate
observe	abandon
glower	depart

FIGURE 14-2   Tree diagram for relating word meanings associated with a high school unit on drug abuse.   (Adapted from Elshout-Mohr, M., & vanDaalen-Kapteijns, M. [1987]. Cognitive processes in learning word meanings. In M. McKeown & E. Curtis [Eds.], *The nature of vocabulary acquisition*. Hillsdale, NJ: Erlbaum.)

TABLE 14-1   A Vocabulary Grid for a Curricular Unit on Prehistoric Biology with Semantic Feature Information

	Feature				
Word	**Marine**	**Extinct**	**Carnivorous**	**Winged**	**Bipedal**
Tyrannosaurus	−	+	+	−	+
Stegosaurus	−	+	−	−	−
Crocodile	+	−	+	−	−
Plesiosaur	+	+	+	−	−
Archaeopteryx	−	+	?	+	+
Pterodactyl	−	+	+	+	+

Adapted from Crais, E. (1990). World knowledge to word knowledge. *Topics in Language Disorders, 10,* 45-62.

The similarities as well as the differences in meaning in these words can be discussed, and students can be encouraged to talk about contexts in which each of the words would be the most appropriate choice. Other techniques for encouraging students to understand the relations among words include visual mapping techniques, like that shown in Figure 14-3. Bryant et al. (2003) showed that visual and graphic organizers were effective in helping students with LLD to acquire new vocabulary. Work on words related by root forms (*clinic, clinician*), using the methods we discussed in Chapter 12, also can be useful for adolescents with LLD, so long as we remember to draw vocabulary items from relevant curriculum topics.

We talked in Chapter 12, too, about Word Study, using the systematic relationships among word roots, prefixes and suffixes to enhance vocabulary and spelling. Scammacca et al. (2007) reported moderate to large effects of word study intervention on both word reading and comprehension performance of students with LLD. Word study, then, is one of the more effective methods for improving reading comprehension, and it falls well within the expertise of the SLP. Nippold and Sun (2008) advocate word study as a particularly important aspect of vocabulary development for adolescents with LLD. Flanigan et al. (2011) provide a broad range of ideas and activities for using words study at the secondary level. As just one example, they suggest "Root Word Jeopardy," which appears in Box 14-1.

Another way to expand vocabulary knowledge is to work on words with multiple meanings, or *polysemous* words. Vespoor and

Lowie (2003) suggested that helping students establish a "core" meaning for each of these words, then elaborating the core with alternate meanings is helpful for improving comprehension and retention. Paul (1992b) suggested one procedure. Students are given, or generate for themselves, a list of words that have multiple meanings and discuss all the meanings they know for each. A dictionary can be used to get additional meanings for the words. Then students write sentences, each containing one of the words used twice, with a different meaning each time. They read their sentences, with "BEEPs" inserted for the target multiple-meaning words. Other students guess what word could be substituted for the BEEP, for example:

I BEEP open this BEEP of beans. (can)

Interactive computer games—such as *Vocabulary Development 2* (Optimum Resource, Inc., 2003), *Accelerated Vocabulary* (Renaissance Learning of Canada, 2002), *WordSmart Software* (Kaplan Writing and Vocabulary Essential Review, Kaplan, 2011), *WORDS* (Torgesen & Torgesen, 1985), and *Vocabulary Super Stretch, Set 1 and 2* (Merit Software, 2007)—can also be a source of vocabulary development. However, Jitentra et al. (2004) in their review of vocabulary instruction found that results of computer assisted instruction were more mixed than those of direct instruction, so perhaps these methods should be reserved for practice rather than initial introduction of new words.

FIGURE 14-3 Graphic organizer for vocabulary development.

BOX 14-1 Root Word Jeopardy

THE ANSWERS:

VIS (SEE)	*THERM* (HEAT)	*AUD* (HEAR)	*TELE* (DISTANT)	*JECT* (THROW)
100 Something that can be seen	100 A device used to measure temperature	100 A group of people who listen to a concert or lecture	100 A device for watching broadcast programs	100 To refuse to accept
200 The ability to see	200 Clothing designed to be worn in the cold	200 Something that can be heard	200 A device used to speak to people at a distance	200 To send a substance into a space, as with a needle used to give medicine
300 Unable to be seen	300 A device used to regulate temperature in a room or building	300 A place people come to listen to a speaker or event	300 A device used to view distant objects	300 To protest
400 To oversee the work of another	400 A reaction that releases heat	400 A try-out; as for a part in a play	400 A type of lens that allows photographers to take pictures of distant objects	400 To send out of
500 To change or edit in order to improve, as in writing	500 The study of energy conversion between heat and mechanical work	500 A person whose hobby is high-quality recordings and their play-back devices	500 The ability to read the minds of others	500 To insert between other things

THE QUESTIONS: WHAT IS . . . ?

	VIS (SEE)	*THERM* (HEAT)	*AUD* (HEAR)	*TELE* (DISTANT)	*JECT* (THROW)
100	Visible	Thermometer	Audience	Television	Reject
200	Vision	Thermal	Audible	Telephone	Inject
300	Invisible	Thermostat	Auditorium	Telescope	Object
400	Supervise	Exothermic	Audition	Telephoto	Eject
500	Revise	Thermodynamics	Audiophile	Telepathy	Interject

Based on Flanigan, K., Hayes, L, Templeton, S., Bear, D., Invernizzi, M., & Johnston, F. (2011). *Words their way with struggling readers.* Boston: Pearson.

Finally, an important avenue to learning new words is to encourage students to *ask* about words they do not know. Biemiller (2003) reported that older students benefit from being encouraged to identify and ask for help with unfamiliar words, in an atmosphere that validates and approves their asking.

When working on vocabulary, an important adjunct for older students is attention not only to word meaning and use but also to spelling. Masterson and Crede (1999) pointed out that children with learning disabilities make more frequent spelling errors than age-mates. Scott and Brown (2001) emphasize the importance of ongoing attention to spelling as part of the SLP's role in literacy development. When we work on vocabulary with advanced language students, it is important to remember our principle of integrating oral and written formats. As we call attention to the meaning properties of new words, we also can call attention to their visual (spelled) forms and encourage students to think of words that have related spelling patterns or are derivationally related (e.g., *photograph* is related to *photography;* the short *a* heard in the last syllable of *photograph* can help them remember that *photography* has an *a* in its second-to-last syllable because it is related to this root word. Also, *graph* is a root meaning "writing," seen in other words such as tele*graph,* mono*graph,* and *graph*ic. This root is always spelled with the vowel *a*. Flanigan et al. (2011) provide a range of activities to address this area.

Word Retrieval

Brackenbury and Pye (2005) have argued that a primary semantic difficulty that students with disabilities show is reduced familiarity, and so reduced automaticity of access to words in memory, and reduced number of connections between words. To put it another way, children with LLD have trouble retrieving words because they know less about the words to begin with, so paths to them are less traveled and less strongly linked to other words and ideas. The implication of this finding is that one way to reduce word retrieval problems is to increase knowledge and connections among the words the student knows. Many of the techniques we discussed in Chapter 12 for addressing word-retrieval problems, including providing elaborated, multiple exposure to deepen word knowledge and build semantic network connections, also are appropriate for adolescents who continue to have word-finding difficulties. Bryant, Goodwin, Bryant, and Higgins (2003) reviewed literature showing that using these kinds of "concept enhancement" approaches to vocabulary acquisition are more effective than instruction through definitions alone.

German (1992) provided additional suggestions for improving word retrieval. She advocated having students stabilize the phonological form of words by practicing saying, then writing the target words several times alone, and then saying and writing each word in five different sentences. While practicing saying the target word, students are told to tap once for each syllable. While writing the word, they are told to draw a line between syllables. Semantic information about target words also can be stabilized. This task can be done by having students discuss a group of words within the same semantic category and list the semantic attributes that differentiate them. German emphasized the importance of carrying this work out in groups, rather than in one-to-one settings exclusively, and of providing the intervention in a variety of settings to generalize the program's effects. We also can address these problems through a learning-strategies approach, by teaching students to consciously invoke both semantic and phonological cues to help recall words. German (2009), in fact, advocated combining vocabulary instruction with work on retrieval

strategies. We'll discuss these approaches in the section on learning strategies.

Figurative Language

Norbury (2004) pointed out that the most important aspect of an intervention program on figurative language is repeated exposure. Because of their deficits in reading, students with LLD may not have encountered figurative language as often as their peers; the latter absorb more secondary-level reading material, where figurative language appears more frequently than it does in conversation. It is important for students with LLD to hear figurative language in poetry and literature read to them by teachers and clinicians. Several books for teens include many examples of these forms. *Not Quite Human: Batteries Not Included* (McEvoy, 1985), *The Phantom Tollbooth* (Juster, 1961), *Ace Hits the Big Time* (Murphy & Wolkoff, 1981), *The Realm of Possibility* (Levithan, 2004), *Bucking the Sarge* (Curtis, 2004), and *Airborn* (Oppel, 2004) are some good examples. Poetry is an especially rich source of figurative language and may be easier for students with LLD, since it is typically short. Collections that might interest adolescents include *Once upon a Poem* (Crossley-Holland, 2004), *Things I Have to Tell You: Poems and Writing by Teenage Girls* (Franco, 2001a), and *You Hear Me? Poems and Writing by Teenage Boys* (Franco, 2001b). In addition, Palmer and Brooks (2004) provide a list of resources for work on figurative language. These appear in Box 14-2.

Exposure alone, of course, is not enough. Some supportive scaffolding is necessary to help students assimilate the figurative language they hear. Literature selections from English class can be read to students, who can be encouraged to be "detectives" looking for similes and metaphors. Students can be asked to raise a hand whenever they hear one of these figures, so the teacher can write it down for discussion at the end of the selected reading. Advertisements from newspapers or magazines also are good sources of figurative language.

Gerber (1993) suggested giving students pairs of words that lend themselves to figurative usage (*eyes* and *stars, snake* and *river*) and asking students to use them to construct similes and metaphors, in the context of advertisements for fictitious products or descriptions of people the student knows. Wallach and Miller (1988) suggested further that students be asked to generate their own lists of word pairs, exchange them with other students, and

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BOX 14-2   Resources for Teaching Figurative Language

Cox, J. (1980). *Put your foot in your mouth and other silly sayings*. New York: Random House.

Davis, J., and Davis, L. (2001). Double meanings. *School Library Media Activities Monthly, 18(3),* 42-22.

Feare, R. (1996). *Everyday idioms: For reference and practice*. New York: Addison-Wesley.

Gravois, M. (2002). *Hands-on activities for learning idioms*. New York: Scholastic.

Terban, M. (1983). *In a pickle and other funny idioms*. New York: Houghton-Mifflin.

Terban, M. (1993). *It figures: Fun figures of speech*. New York: Scholastic.

Terban, M. (1998). *Scholastic dictionary of idioms, phrases, sayings, and expressions*. New York: Scholastic.

Adapted from Palmer, B., & Brooks, M. (2004). Reading until the cows come home: Figurative language and reading comprehension. *Journal of Adolescent and Adult Literacy, 47,* 370-379.

come up with figurative forms suggested by their peers' sets of words.

Other forms of figurative language, such as idioms and slang, which are common in everyday speech, can be addressed in a similar way. Here students can be asked to keep a notebook, in which they write down every slang or idiomatic expression they hear people using over the course of a week and to role-play appropriate contexts for using each expression. Gerber (1993) provided additional suggestions for work on figurative language, and commercial materials, such as Spector's (1997) *Saying One Thing, Meaning Another, Figures of Speech, Multiple Meanings for the Young Adult* (McCarr, 1995), *Slangman Guides* (Burke, 2003), *The Idiom Game* (Wisniewski, 2003), *Idioms* (Paris & Paris, 2005), and *Figurative Language* (Gorman-Gard, 1992) also are helpful.

Humor is another common figurative language vehicle, and students with LLD often have trouble understanding the humor used by peers. Again, students can be asked to collect jokes they hear in a notebook and discuss them with the clinician or communication class. Students also can be guided to produce their own jokes in an effort to help them learn the flexible language use and awareness of ambiguity that humor involves. Hamersky's (1995) *Cartoon Cut-Ups* is another useful commercial program for this purpose.

Verbal Reasoning

Masterson and Perry (1999) developed a program that included direct instruction and activities from the school curriculum to train verbal reasoning skills. They reported that students involved in the program showed significant improvement in verbal reasoning relative to peers with LLD who did not receive the training. Their training procedure is outlined in Box 14-3.

Wegerif (2002) demonstrated that using a verbal reasoning program in which students were taught in a group to "talk through" nonverbal problems, such as science or math assignments, resulted in significantly better verbal reasoning test scores for trained than untrained students. This finding suggests that using groups or communication classroom opportunities to help students develop verbal reasoning skills in peer interactive settings can be helpful in addressing this area.

Simon (1991b) also described a program designed to improve verbal reasoning in students with LLD. Activities include, first, helping students differentiate emotional from logical arguments. Students look for "hidden persuaders" in advertising and identify logical, as opposed to emotional, appeals. A second activity involves reading letters to the editor in local or online newspapers and identifying the premise and conclusion in the letter. The clinician then helps the student to state the letter's argument as a syllogism ("New taxes are needed if and only if there is no waste in government. There is waste in government; therefore, new taxes are not needed."). Students can then be asked to argue against the letter writer by stating a different syllogism and translating it into a letter to the editor. (Some may even be sent to the local paper or posted as comments online, if students use especially cogent reasoning!)

Commercial programs, such as *Analogies for Thinking and Talking* (Nelson & Gillespie, 1992) and *501 Word Analogies Questions & Answers* (LearningExpress, 2002), have been designed to assist

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BOX 14-3   Masterson and Perry's (1999) Program for Training Verbal Reasoning Skills

PHASE I: MEDIATED LEARNING (SESSIONS 1-5)
Step 1: Define terms and model solution of verbal reasoning problems.
Encoding: Picture each term of the problem and think of a list of attributes for it.
Example: **(A)**horse:[is to] **(B)**foal::[as] **(C)**cow:[is to] **(D)**_____.
I'll picture horse, foal, and cow in my mind, and make a list of features for each, such as:

Horse	Foal	Cow
Animal	Animal	Animal
Adult	Baby	Adult
Eats grass	Eats grass	Eats grass

Inferring: Find the relationship between terms A and B in the problem.
Example: How are horse and foal related? A foal is a baby horse.
Mapping: Use the relationship found for A to B, and find a similar relationship for C and D.
Example: If a foal is a baby horse, then I need to find a baby for the cow.
Applying: Choose an answer that has the same relationship to C as B had to A in the problem.
Example: A foal is a baby horse, and a calf is a baby cow; so calf is the correct answer.
Step 2: Picture analogies. Present problems in the form of pictures. Use group practice, then individual practice on worksheets.
Example: Picture of horse, picture of colt, picture of cow, picture of calf
Step 3: Present analogies in sentence form. Have students read and complete them.
Example: A baseball player makes a home run, just like a soccer player makes a _____.
Step 4: Present paragraphs that contain similes and have students explain the relationship.
Example: Astronauts are like Christopher Columbus because _____.
Then have students construct analogous paragraphs as a group.
Individually complete a worksheet with verbal analogies.
Step 5: After reviewing previous lessons, read a story such as *The Lorax* (Seuss, 1971). Have the students think of real-life situations that are similar to the story. Then have each student generate an analogy from the story and solve each other's analogies.

PHASE II: BRIDGING (SESSIONS 6–16)
A series of activities is presented that help students use the processes of analogical thinking in everyday activities.
Example: Students are given a recipe that feeds two people and must figure out how to use it to feed 12.

students in developing deductive or analogical reasoning skills. Standardized tests students take for college admission have traditionally involved analogical problems, and the books designed to prepare students for these tests frequently contain examples of analogies that students can practice and discuss. Some computer-assisted analogical reasoning programs also are available. *Analogies Tutorial* (Hartley Software, 1992) is one example.

Simon (1991b) also suggested using visual aids to help understand logical relations. For example, students can be given the syllogism, "Ray runs faster than Tim, and Zack runs slower than Tim. Who runs the slowest?" They can then be encouraged to write the initial of each person to represent his position in order to help process the problem:

R   T   Z

Eventually, the clinician can help the students translate these logical problems to symbolic equations by providing examples such as:

If J = H Jessica is as tall as Hank, and M = J Marie is as tall as Jessica, Then Marie is as tall as Hank. M = H

Newton, Roberts, and Donlan (2010) demonstrated that visual supports such as these provide significant improvement in verbal reasoning performance for students with LLD.

Other logical relationships can be depicted using Venn diagrams, to show how categories are related (Figure 14-4). Simon also suggested a program on practical logic by Lipman and Sharp (1974), entitled *Harry Stottlemeier's Discovery,* as useful for addressing this area.

Syntax

The goal of syntactic intervention in the advanced language stage is to increase flexibility and help students process and produce language at the literate end of the oral-literate continuum. Nippold, Ward-Lonergan, and Fanning (2005) showed that by age 11, typical students are near adult levels in most aspects of syntax in writing, so that increasing syntactic complexity needs to be part of an intervention program for writers with generally simple sentence structures during the secondary school years. Strong (1986) suggested sentence-combining activities as an effective way to achieve

FIGURE 14-4   Venn diagram.

these goals. Students are given sets of simple sentences, drawn from curricular themes or literature selections, and asked to find a variety of ways of combining them into one complex sentence. Gerber (1993) advocated providing sets of sentences that can be combined with a particular syntactic device, such as a relative clause:

Sound waves strike the eardrum. The eardrum sends vibrations
    to the middle ear.
(Sound waves strike the eardrum, which sends vibrations to
    the middle ear.)
The refugees moved away. The community rejected the
    refugees.
(The refugees that the community rejected moved away.)

Later another device, such as the temporal clause, can be introduced:

The European settlers in North America had friendly relations with Native Americans. Disputes over land and treaties caused conflict.   (At first, European settlers in North America had friendly relations with Native Americans, but later disputes over land and treaties caused conflict.)

Killgallon and Killgallon (2000) and Westby (2007) suggest a sequenced program to develop sentence-combining skills, which is outlined in Table 14-2.

Gerber also suggested working with sentence manipulation as another avenue to increasing syntactic flexibility. Here, she advocated writing phrases or clauses on cards and having students physically manipulate the cards to arrive at different combinations. For example, the following phrases and clauses could be written, each on a separate card:

at night at our house we aren't allowed to watch television until we have finished our homework

Students can then be encouraged to see how many different sentences they can make by coming up with different orderings of the phrases and clauses.

Teaching students to combine sentences will move toward increasing two of the indices of syntax that we assessed: T-unit length and the subordination index. To improve students' use of the low-frequency forms listed in Table 13-5 we need to provide exposure to literary language in which the forms appear. If students' reading skills make comprehension of grade-level textbook and literature material difficult, we can encourage parents to read this material to students as part of the students' homework. In addition, we can encourage parents to read other grade-level appropriate literature to the student. If students balk at being read to, parents might try reading the material onto an audio file and having the student listen to the file on a personal listening system. Also, many excellent books are available in audio form at libraries, and students who refuse to be read to can be assigned to listen to these books in audio format as part of their communication-class homework (Wolfson, 2008). The school

TABLE 14-2 Sequenced Steps for Teaching Syntactic Patterns

Syntactic Form	Step	Example from Holes (Sachar, 1998)
Prepositional phrases	Define: Direct instruction in target form	A prepositional phrase starts with a preposition (give list of examples) and is followed by a noun and modifiers (give examples). It is used to describe and elaborate the meaning of the word it modifies. "If you take a bad boy and make him dig a hole every day in the hot sun it will turn him into a good boy."
	Identify: Students find and underline target forms in classroom text.	If you take a bad boy and make him dig a hole every day _in the hot sun_ it will turn him _into a good boy_.
	Combine: Students combine given sentences from classroom text by putting the underlined part of the second sentence at the (^) symbol in the first, using the target form, then write the new sentence.	If you take a bad boy and make him dig a hole every day ^ he will turn^; _in the hot sun, into a good boy_.
	Unscramble: Students are given a list of sentence parts from classroom text to unscramble, then write out, underlining the target form in each.	it will turn him and make him dig a hole every day in the hot sun if you take a bad boy into a good boy If you take a bad boy and make him dig a hole every day _in the hot sun_ it will turn him _into a good boy_.
	Expand: Students are given a sentence and told to complete it with a target form where the ^ symbol appears.	If you take a bad boy and make him dig a hole every day ^, it will turn him ^.
	Combine to imitate: Students are given a model sentence from a classroom text, then several related sentences to combine, following the model.	If you take a bad boy and make him dig a hole every day in the hot sun it will turn him into a good boy. There was once a lake there. It was a large lake. That was over a hundred years ago.
	Write your own: Students are given a writing prompt related to the literature selection, and are asked to write a paragraph using a least three examples of the target form.	Everyone feels "cursed" sometimes. Write about a time you did. Use three prepositional phrases.
Participial phrases	Define Identify Combine Unscramble Expand Combine to imitate Write your own	
Compound verbs	Define Identify Combine Unscramble Expand Combine to imitate Write your own	
Adjective clauses	Define Identify Combine Unscramble Expand Combine to imitate Write your own	
Adverbial clauses	Define Identify Combine Unscramble Expand Combine to imitate Write your own	

Adapted from Kilgallon, D., & Kilgallon, J. (2000). _Sentence composing for elementary school: A worktext to build better sentences_. Portsmouth, NH: Heinemann.

librarian can help the clinician identify grade-appropriate audiobooks.

Exposure to literary language is, of course, necessary but not sufficient. Scott (2005) reported that students with LLD show less diversity of sentence types in their writing than typical students do. This suggests that an important intervention activity will be to help students learn to say what they mean in a variety of ways, using a range of sentence forms. Paraphrasing activities are one way to accomplish this. Paraphrasing can be used to encourage students to try out low-frequency forms in their own communication. Here students can choose sentences from textbooks and provide several alternate forms for each one. To increase use of low-frequency forms in this activity, students can be given a list of "dandy language" forms, like the list in Table 13-5. The clinician can discuss the forms with students and work together to identify examples of these forms in the text selection. After some discussion, students can be encouraged, with the clinician's model, to use the forms in some of their paraphrases. Paraphrasing is an important skill to learn, in and of itself, since it helps students in summarizing and in using information from other sources for inclusion in their own writing. Additional suggestions for working on advanced syntax can be found in Haussamen's (2003) *Grammar Alive! A Guide for Teachers.*

Nippold (2007) reminds us of the importance of context in language complexity. Nippold et al. (2005) demonstrated the use of significantly more complex syntax in persuasive than in other forms of discourse. This suggests that clinicians should use contexts such as persuasive talks and essays when working on complex syntax. As we do so, we can help students incorporate more complex forms into these discourse situations by reminding them to use introducers such as *in my opinion;* verbal organizers such as *first, next,* and *finally;* conjuncts such as *consequently* and *as a result;* and markers such as *in summary.* Owens (2009) suggests giving students prompt cards like the one in Figure 14-5 and requiring them to use these forms appropriately within their persuasive talk or essay can help students increase the complexity of their syntax in a pragmatically appropriate way. Another important source of complex syntax is, of course, curricular materials. These make excellent sources of complex language for paraphrasing and analysis.

Pragmatics
Classroom Discourse

Creaghead (1992) suggested a series of activities that can be used to improve students' ability to function in the secondary classroom. Box 14-4 summarizes an adaptation of Creaghead's program for students at the advanced language stage. Using this approach, students would first learn to recognize scripts, like those we looked at in Table 12-4 that describe the routines of the classroom with which the student is having trouble. Students can identify these routines by reviewing information derived from self-assessments or teacher interviews like the one in Box 13-5, in consultation with the clinician.

Norris and Hoffman (1993) suggested using graphic organizers to help students with LLD manage the rules of the classroom. Secondary students can, for example, develop diagrams to summarize classroom rules, and contrast the rules they have to follow in different classes. They can first be asked to list rules for each class, using a script analysis procedure like the one in Box 14-4. They can examine the scripts for each class, noting the similarities and differences. The clinician can then help them to develop

Instructions: Include the following sections and use at least one suggested form in each section in your persuasive piece:	
Sections	**Suggested forms**
Introduction	In my opinion…
	I believe…
	From my point of view,…
	I think…
Body:	
Connecting words, such as	
	… if…
	… although…
	… even though…
	… although…
	… as a result…
	… consequently…
Counter-opinions, such as	Although…
	However…
	On the other hand…
	To/on the contrary…
	Even though…
Logical organizers, such as	First, next, last…
	For example…
	Most importantly…
	In addition…
Mental words, such as	Think…
	Consider…
	Remember…
	Believe…
	Know…
Conclusion	To summarize…
	In summary…
	In conclusion…
	After considering…

FIGURE 14-5 Example prompt card to increase complex syntax in persuasive discourse. (Adapted from Owens, R. [2009]. *Language disorders: A functional approach to assessment and intervention*, (5th ed.). Boston, MA: Allyn & Bacon, p. 406.)

BOX 14-4 A Program for Using Script Analysis to Improve Classroom Discourse Skills in Adolescents with LLD

STEP 1: OUTLINE THE SCRIPT
Have the students tell everything they know about the script, including participants, sequence of events, objects needed, and so on. ("Let's list everything that happens when you have to write a composition in English class.")

STEP 2: BRAINSTORM VARIATIONS
Suggest some variations, and ask students how they would react to each. ("What would you do if the principal came in while the class was writing?")

STEP 3: SPECIFY THE CUES FOR ACTIVATING THE SCRIPT
Many students with LLD miss crucial verbal and nonverbal cues given by the teacher during class routines. Encourage students to identify the cues they need to identify. ("What does the teacher do when it's time to stop writing?")

STEP 4: ROLE-PLAY THE SCRIPT
Have students take turns acting out student and teacher roles in this routine. Playing the teacher may help to make students more aware of subtle cues teachers give.

STEP 5: PROVIDE STRATEGIES FOR COPING WITH WEAKNESSES
Identify areas in which the student continues to have trouble, and provide reminding systems. Consult with teachers to encourage them to offer similar reminders in the classroom. A teacher might be encouraged to say to the student, for example, "Remember, it's our rule that if you finish your composition before time is up, you should edit your work. Check the editing guide on the board to help you remember where to begin."

Adapted from Creaghead, N. (1992). Mutual empowerment through collaboration: A new script for an old problem. In W.A. Second (Ed.). *Best practices in school speech language pathology* (vol. II, pp. 109-116). Austin, TX: Psychological Corporation: Harcourt Brace Jovanovich.

FIGURE 14-6   Flow chart for comparing classroom rules.   (Adapted from Norris, J., & Hoffman, P. [1993]. *Whole language intervention for school-age children*. San Diego, CA: Singular Publishing.)

a diagram like the one in Figure 14-6 to describe the rules for various classes.

Gallagher (1991) also suggested using peers in informal modeling contexts to improve the classroom communication skills of students with LLD. Many secondary classrooms use some form of cooperative learning, in which students complete assignments by working in groups. These settings provide ideal opportunities for students with LLD to experience peer modeling of cooperative

communication. The SLP can offer to run the first few cooperative learning group sessions, in which students practice social skills as well as the "rules of the game" for cooperative interaction. Activities that teach social skills and promote bonding within the group benefit students with LLD and ASD in providing peer models of appropriate interaction.

Finally, Westby (2007) reminds us that teachers can change the conditions of the classroom to meet students with disabilities

Cooperative learning groups provide opportunities for inclusion of students with LLD.

"half-way." With consultation from the SLP, teachers can provide graduated task sequences for students with LLD, beginning with short assignments with explicit instructions and rubrics to guide production, and moving gradually to longer, more open-ended assignments with fewer cues. We can also advocate providing multi-modality instruction, including visual, digital, and experiential input (Westby, 2010), not to replace, but to augment written language input and response modes. We'll come back to this option when we talk about consultation models of practice.

Narrative

Comprehension.   Basic-skills approaches to narrative comprehension involve, again, exposure to the complex, multiepisode narratives that characterize adolescent and adult literature. Reading and listening to good stories are key here. Again, students whose reading levels preclude independent reading of books like these might listen to parents read them, as homework, or listen to audiobook versions. *A Northern Light* (Donnelly, 2003), *Gabriel's Story* (Durham, 2002), *Perfect Chemistry* (Elkeles, 2008), *Stone Fox* (Gardiner, 1980), *Phoenix Rising, or How to Survive Your Life* (Grant, 1989), *Jumping off Swings* (Knowles, 2009), *Sarah, Plain and Tall* (MacLachlan, 1985), *Dope Sick* (Myers, 2009), *Saving Lenny* (Willey, 1991), and *Emako Blue* (Woods, 2004) are some examples of books with these structures that will appeal to teens. The "Reluctant Reader List," published with yearly updates by the American Library Association, provides additional suggestions and is available from school librarians, through public libraries, and on the Web site www.ala.org/ala/mgrps/divs/yalsa/booklistsawards/quickpicks/qphome.cfm.

We talked in Chapter 12 about the importance of fluency for younger readers' comprehension development, and about the use of repeated readings to support its development. For students in the advanced language stage, who may read at close to a fourth-grade level, although they are in middle or high school, fluency is likely to be an area that will need work. Since SLPs are not reading teachers, we may not work directly on fluency in secondary settings, but there are ways we can combine other oral language work with fluency practice, especially since Roberts et al. (2008) found in a meta-analysis that repeated readings, the main method of fluency development for younger children, had little effect on improving fluency for older students. Roberts et al. suggest instead that repeated reading be used only in conjunction with work on vocabulary or word study, to improve

students' familiarity with words encountered in reading. So rather than using a Readers' Theater approach, as we did for elementary students, we might use repeated readings to provide elaborated exposure to new words and then engage in varying types of word study. Box 14-5 provides some suggestions along these lines. An important point to note here is that this approach provides a way for SLPs to use their expertise in semantic intervention to contribute toward the development not only of vocabulary, but of an important component of skilled reading, fluency.

Staskowski and Creaghead (2001) and Gillam and Ukrainetz (2006) suggest a sequence of activities that can help students comprehend stories that they hear or read. These include the following:

- *Establish a purpose:* Help students decide why reading or hearing this story is important. Reasons might include learning classroom content, answering questions provided by the teacher or clinician, or finding new information of interest to the student.
- *Activate prior knowledge:* Help students remember what they already know. For example, in preparing to read Shirley Jackson's *The Lottery,* students can be encouraged to tell what they know about lotteries, share experiences with buying lottery tickets, skim through the story and put "sticky notes" at points where they recognize similarities or differences to the lotteries with which they have had experience.
- *Make predictions:* Have students preview the text, pictures, chapter headings, etc., to make guesses about what the story will contain; read one section then have the students predict what may happen next.
- *Ask questions:* Have students generate a list of questions, based on their predictions, to be asked during and after reading. Make a chart to record answers.
- *Visualize:* Encourage students to "draw a picture in their minds" of objects and events in the story. Have them describe their image of what characters and scenes from the story look like, or draw pictures to illustrate the story.

BOX 14-5   Using Repeated Reading Combined with Vocabulary Activities to Build Reading Fluency

Reading 1: Student writes down all unknown words in a passage.
Activity 1: Student constructs "Knowledge Rating Checklist" chart for listed words (see Table 12-1), discusses w/SLP and/or group.
Reading 2: Student reads passage again, stopping at each word on the list, and provides a definition with scaffolding from SLP and/or group.
Activity 2: Student writes a definition for each word, checks against the dictionary.
Reading 3: Student reads the passage again, substituting a synonym for each word on the list.
Activity 3: Student draws a semantic web (see Figure 12-6) for each word on the list, connecting word to others with similar meaning, root, affixes, etc.
Reading 4: Student reads the passage, then summarizes it, using words from the list.

From Roberts, G., Torgesen, J.K., Boardman, A., and Scammacca, N. (2008). Evidence-based strategies for reading instruction of older students with learning disabilities. *Learning Disabilities Research & Practice (Blackwell Publishing Limited), 23*: 63-69.

• *Focused skill activities:* Provide follow-up activities to target vocabulary and complex syntax encountered in the story, and the production of a "parallel story" to enhance understanding.

Page and Stewart (1985) suggested working on narrative comprehension by having students use inferencing and prediction skills to sequence paragraphs contained in a story or episode. The clinician can photocopy a chapter from a literature selection, cut it into one- to two-paragraph segments, scramble them, and have students put them in correct sequence.

Stanfa and O'Shea (1998) and Stanford (2006) suggested several ways to use drama to enhance students' narrative comprehension. Some examples include the following:

• *Use oral reading to create characters.* Have students skim a scene in a story to identify characters. Assign the student a character and have the student read what the character says and does, using voice, pauses, and stress to show what kind of person the character is or how he or she feels in the scene.

• *Use improvisational scenes* to activate a preparatory set before reading. For example, if students are going to read *Romeo and Juliet,* they might talk first about an experience they had of meeting a new boy or girl at a party, and wanting to talk more with the stranger. Students can discuss what they did, what they wish they had done, etc. They can then act out the situation. These improvisations can be recalled during the reading of the literature selection.

• *Use improvisations* to explore and enhance understanding of characters in the story. For example, if students are reading a biography of Ben Franklin, they might talk about what kind of person Franklin was, and how he might react to situations such as arriving in a new country or meeting a new person. Students can then act out their impressions and discuss why they had the character act as they did.

• *Involve students in writing and acting* in plays to enrich their understanding of stories they read or hear. Students can convert stories or novels they read to plays or adapt literature selections to their own experiences or to contemporary themes and write a new play based on the adaptation. For example, if students read *The War of the Worlds,* they might write a play about what an alien invasion would be like if it happened today. If video equipment is available, the students may record their play to show to family members.

Activities in which students write or act out fictional interviews, using a book such as *Interview with a Vampire* (Rice, 1976) as a

Acting out narratives can deepen students' understanding of this genre.

model, can help work on inferencing and character motivation. The clinician might provide students with a list of questions to "ask" their favorite character, and the students must infer or predict what their character would say in response. The clinician can help students refine their answers with probes such as the following:

• Why would (character) answer that way?
• Does that answer go along with everything else you know about (character)?
• What happens in your book that makes you think (character) would answer that way?

Work on summarizing is another way to develop narrative comprehension. If students need to write book reports for English class, the clinician can use these as an opportunity to develop summarizing skills with the student. A communication class might also develop its own "Book Review" magazine. With guidance and feedback from the clinician, students would write "reviews" that include a summary of the book's plot and the student's assessment of the book's literary quality and potential appeal for other students. Students also can give "book talks" for younger classes or in the communication class, in which they give similar information orally.

Swanson and De La Paz (1998) suggest teaching story summarizing skills by having students locate story elements in the text and list them on paper, or use a graphic organizer. The list or map can then be transferred to paragraph form. Ae-Hwa, Vaughn, Wanzek, and Shangjin (2004) have shown that using graphic organizers improves reading comprehension for students with LLD.

Westby and Clauser (2005) emphasize the importance, as part of work on narrative comprehension, of helping students understand the "landscape of consciousness;" that is, the way characters plans, emotions, and intentions govern actions, as well as the way in which point of view determines how events are perceived. Understanding these internal states is crucial to full comprehension of many stories. To address this issue, they suggest using stories such as "The Blind Men and the Elephant," *Voices in the Park* (Browne, 2001), *Passage to Freedom: The Sugihara Story* (Mochizuki, 1997), and *John Brown, Rose, and the Midnight Cat* (Wagner, 1980), all of which tell the same story from several characters' perspectives. Students can then create visual organizers, like the one in Table 14-3, to discuss and describe the various perspectives in the story.

Narrative Production.   Narrative writing is also an appropriate target of basic instruction at this level. Wetherell, Botting, and Conti-Ramsden (2007) showed that adolescents with LLD were poorer than typically speaking peers at relating even relatively simple narratives, suggesting that basic skills in this area will frequently be an area of need for these students. Larson and McKinley (2003a) reiterate the importance of explicit, direct instruction that helps students understand the sequence and cause-effect relationships in stories. They also emphasize the importance of using oral storytelling as a context for addressing some of the oral language difficulties so often seen in students with LLD, such as speech disruptions, syntactic errors, and word-finding problems.

Scaffolding Narrative Composition.   Montgomery and Kahn (2003) provide suggestions for teaching students with language-learning disabilities using a scaffolded composition process. This process can include the following:

• *Introduce concept of author:* Explain that the author has control of an entire fictional universe with power to make all the decisions about it. Tell students, "You are going to be an author!"

TABLE 14-3   Character Perspective Map for *Passage to Freedom: The Sugihara Story* (Mochizuki, 1997)

Story Event	Mr. Sugihara's Perspective	Perspective of Jewish Families
Outbreak of WWII	Doing his job; obeying orders	Worried, unsure of what will happen
Jewish families arrive from Poland	Torn between duty to superiors and desperate needs of families seeking visas	Desperate to escape deportation
Lithuania is conquered by Russia	Determined to carry his humanitarian efforts as far as possible	Frantic for last chance at escape

Adapted from Westby, C., & Clauser, P. (2005). The right stuff for writing: Assessing and facilitating written language. In H. Catts & A. Kahmi (Eds.). *Language and reading disabilities* (2nd ed.). (pp. 274-340). Boston: Allyn & Bacon.

- *Refer to the aspects of the story,* using a poster or graphic organizer:
  - Setting
  - Characters
  - Problem
  - Attempt
  - Consequence
  - Resolution

Assist the student to make a decision about each element in planning the story (e.g., "Who will your characters be?" "I don't know" "They could be teenagers, adults, children, animals, aliens, anybody. You decide." If the student cannot make a decision, suggest teenagers. Continue with a similar process until each element has been addressed).

- Have the student draw a sequence story: Divide a sheet of paper into six or eight sections, and have the student draw a simple stick figure drawing to outline the story.
- Have the student describe the main characters: Encourage the students to give detailed descriptions of who the characters are, what they look like, what they like and do.
- Use the poster or graphic organizer: Encourage the student to write or tell each aspect of the story, following their picture sequence and incorporating the information they produced about their characters. Use questions to scaffold the student's production, giving suggestions only when the student refuses or is unable to make a choice.
- Support the student in writing or dictating the story: Help select words, sentence forms, and spelling. Encourage students to try various forms orally to see how they sound before writing them.
- Revise: Use the opportunity for incidental teaching about spelling, punctuation, capitalization, and so on, whether the student writes the story himself or dictates it. Encourage the student also to think about word choice and consider alternative wordings, using a dictionary or thesaurus.

When working on producing narratives, we want to talk frequently with students about characters' motivations and internal responses. Using some of the "trickster tales" we discussed in Chapter 12 can be a starting point for younger adolescents. Discussions of all the stories we work on should center on plans, motivations, and internal responses. When students write stories or plays, for example, the clinician can help them focus on making internal response elements explicit by asking questions such as:

> Why does (character) do that?
> What is (character)'s plan?
> How does (character) feel about what happened?

Narrative Cohesion. Basic skill instruction in narrative production can also include use of cohesive elements: pronouns, connectives, and other advanced markers of cohesion, such as those in Box 13-7. Many of the activities we outlined for working on use of pronouns and conjunctions as cohesive markers in Chapter 12 can be adapted to include these more advanced cohesive forms using grade-appropriate materials for secondary students. Work on conjuncts and other advanced forms of cohesion can begin, again, with exposure. We can explain to students about the use of one or more types of these cohesive markers and give them texts containing marked examples. Students can be asked to explain how the two elements are linked. If students are reading *A Wrinkle in Time* (L'Engle, 1962) in class, for example, we might give them the following pairs of sentences adapted from the story and ask them to identify the cohesive element present in each:

> Now they were in the clouds. They could see nothing but drifting whiteness. (lexical cohesion)
> In front . . . Charles Wallace sat quietly. Once he turned . . . (pronoun cohesion)
> Below them were still rocks . . . but now . . . Meg could see where the mountain at last came to an end. (substitution)
> As they moved through the greyness, Meg caught a glimpse of slaglike rocks. Still, there were no traces of trees or bushes. (conjunct)

After talking about the cohesive devices they encounter in their reading, students can be asked to produce several different pairs of sentences, each containing one of the devices discussed. When they have practiced producing series of sentences with different devices, they can write a group story in which each member has the responsibility for including one of the devices studied. Eventually, students can be asked to write individual stories with some of these cohesive elements in them. Nelson (2010) suggests further that cooperative learning groups be given passages with poor cohesion (perhaps drawn from the pre-intervention narrative productions of students who are no longer in school) and asked to work together to identify and correct cohesive errors. Jago (2002) presents additional ideas for enhancing cohesion in student writing.

One particularly useful technique for improving cohesive writing is sentence combining (Keen, 2004). Keen showed that encouraging students to combine sentences during rewriting, modeling and prompting the use of grammatical forms, such as the subordinate clauses, results in improvements in the coherence of students' writing. This finding is just another example of the ways in which SLPs, in their legitimate role of helping students expand their grammatical development, can achieve improvements in students'

ability to elaborate their meaning and establish cohesion in both speech and writing.

Other Discourse Genres

In addition to work on narrative, basic skills instruction in other written language genres will often be necessary for students at the advanced language stage.

Writing Mechanics

Dockrell, Lindsay, and Connelly (2009), in examining the writing skills of students with LLD at age 16, found that these students not only experienced problems with written composition—including short texts, poor sentence structure and vocabulary, and difficulties with ideas and organization—but spelling and handwriting problems were also significant contributors to their low performance. These findings suggest that basic-level writing instruction will undoubtedly include mechanics: spelling, punctuation, capitalization, and handwriting. Although these skills have often been taught in the mainstream language arts program and students in secondary school "should" have mastered these basics, many of our clients with LLD probably did not "get it" the first time around. Intelligible writing requires these fundamentals, and students who have trouble with written communication need help with these building blocks, just as a preschooler with unintelligible speech needs help in producing fundamental speech sounds. Delpit (1988) pointed out that many secondary teachers refuse to teach these basics, because they consider it the elementary teacher's job. They tend to concentrate instead on the process and content aspects of writing. That's why it is sometimes necessary for us as language specialists to step into the breach and provide some basic-level instruction in writing mechanics for our older students with LLD. Remembering our unique role in the curriculum, however, it is important for us to embed this instruction in a language-based context, so that we are not teaching spelling lists or punctuation rules or tutoring students on particular classroom assignments, but rather are having students generate language to be written down and working with the language they generate to address the conventions of writing that improve its communicative function.

The revision process is a prime incidental teaching opportunity for addressing these mechanics in a communicative context (Kervin, 2002). Moore (1989) presented a concise set of rules for capitalization and punctuation that can be made into posters, "rule books," or "crib sheets." Posters with sets of such rules for individual students can be used in the communication class. Students can bring writing samples from other classes to the communication class. Work on editing them can proceed through several passes over the document: one for appropriate spelling, one for capitalization, and one for each type of punctuation in turn (period, comma, question mark, apostrophe, quotation mark, etc.). At the beginning of each pass, students can be referred to the rules governing use of the element being examined. In the context of a communication class, a unit on editing might include exercises in which students are given writing samples of the teacher's in which they are to identify errors. As we discussed earlier, these could at first contain cues such as highlighting on sentences that have a mistake for the student to find. Gradually, the cues can be faded.

Handwriting problems can often be addressed by allowing students to use word-processing equipment for written work. This is not always the easy solution it sounds, since students with fine motor problems that impair handwriting have fine motor problems on a keyboard, too (Berninger & Wolf, 2009). And in some contexts keyboarding may not be an option; for example, the SAT writing test requires handwritten responses. Still, this form of compensatory programming can make it possible for the student's work to be read, even if it remains laborious for the student to produce. Most secondary schools have keyboarding courses, and students using word processors for written work should be encouraged to take these as electives. Using a keyboard for class note-taking, examinations, and assignments is a legitimate accommodation for students with LLD, and can be included on their IEPs.

MacArthur, Haynes, and DeLa Paz (1996) suggested using speech synthesis and word prediction software to help students with poor legibility and spelling. This software is often used to enable students with severe speech disorders to express themselves by "writing out loud." While the intention is to speed up message transmission for students with severe speech disorders, this software also can help students with poor spelling abilities to produce correct versions of intended words more quickly, recognize them, and increase their chances of retaining them for later use.

Spelling can also be addressed using the procedures we've already discussed for identifying root words and relations among words that are preserved in spelling (our *clinic-clinician* example, again). In addition, students can be encouraged to create personal dictionaries in which they record frequently used spellings, spellings of new words they learn in the curriculum, and words they come across in their reading that they think might be useful in their own writing. Again, technology can be helpful here. If students use word processors for their writing, they can be taught to use the spelling checker. While this is not a substitute for learning to spell, it does reinforce the idea that it is important to check spelling as one aspect of the editing process. Electronic, hand-held spelling aids and programs or "apps" on smart phones and other devices also are available.

Beyond these mechanics, we will want to assist students to become more effective writers for a variety of purposes. We will discuss a range of learning strategies that can assist students in this development a bit later. But in a review of writing intervention programs for students with LLD, Gersten and Baker (2001) found that there were three critical elements that should be part of any instructional program for these students. These elements include the following:

- Explicit teaching of the steps in the writing process (planning, composing, revising)
- Discussion of purposes and audiences for writing
- Scaffolding and feedback on the quality of the writing product, not only from adults but also from peers

Incorporating these components in the intervention we provide for struggling writers will help us maximize the effectiveness of our writing intervention.

Expository and Argumentative Texts

New discourse genres that come to the fore at the secondary level are *expository* texts that explain or relate factual material, and *argumentative* or persuasive texts that attempt to convince or discuss opinions. These discourse genres will form the bulk of school-sponsored writing during adolescence, and some direct instruction will be presented in the course of classroom English and language arts classes. In fact, many state-required writing assessments, as well as the SAT writing section, require the production of persuasive essays. These often form a large part of the writing curriculum in secondary grades. And there is ample evidence (summarized by Ward-Lonegan, 2010) that students with LLD perform significantly below their typically-achieving peers on these important tasks. As such, these are ideal collaborative intervention opportunities for the SLP, who can work with the teacher to outline, pre-teach, guest

teach, and do follow-up instruction in these areas for students with IEPs.

Students are generally expected to use the "five-paragraph essay," as the basic structure for much of the expository and persuasive discourse they are required to produce in school. The first paragraph introduces the thesis of the essay and foreshadows the main supporting subtopics. The second through fourth paragraphs are all similar in format. They individually restate the subtopics, and are developed by giving supporting information. The fifth paragraph restates the main thesis idea and reminds the reader of the three main supporting ideas that were developed. Each paragraph begins with a topic sentence that states the paragraph's main idea, and ends with a "clincher" sentence that sums up the paragraph. Basic skills approaches to helping students develop this form in expository and persuasive writing are outlined by Westby and Clauser (2005). These employ three phases of instruction:

- *Modeling*: The genre is introduced in the context of curriculum-related material. The communicative function and the structure of the genre are discussed, examples from classroom texts are displayed, and features are pointed out and highlighted.
- *Joint construction*: Teachers and students work together to transform information students have collected (from library and Internet research, interviews, videos, field trips, etc.) into an essay. Students do research on a curriculum-related topic in cooperative learning groups. The teacher guides them in summarizing the information, displaying their organization of it into headings and subheadings on the blackboard. Once it is organized, the teacher has students orally dictate individual sentences. These are discussed and critiqued by the group as the teacher records them.
- *Independent construction*: Students are given a curriculum-related "writing prompt." For example, after reading *Passage to Freedom* (Mochizuki, 1998), they might be told, "Mr. Sugihara was extremely courageous. Write about someone you admire for courage. Explain why this person deserves to be called courageous." Students write a draft of their essay, referring to the purposes and structures discussed in the earlier lessons. They then consult with a teacher about the draft and receive guiding feedback.

All genres of writing are difficult for students with LLD. However, the persuasive essay is both most difficult (Nippold, 2005) and the one required in the majority of "high stakes" situations, such as school-wide achievement tests and SATs. As such, special attention should be paid to its structure and function when working with struggling writers. Westby and Clauser (2005) outline the three parts that need to be present in making an effective argument:

- *Claim*: the basic assertion being made; e.g., students should be allowed to choose their own clothing for school.
- *Warrant*: the principles that connect data to the claim; e.g., uniforms don't make students behave better in school.
- *Data*: factual information that supports that warrant; e.g., research shows no improvements in behavior or achievement in schools that require uniforms (Brunsma, 1998).

The basic structure of the persuasive essay includes the following:

1. Clear opening statement that expresses the argument, opinion, or position of the writer.
2. Development of the argument by supplying three or more reasons, with data and warrants.
3. Attempt to influence the audience's opinion by providing a statement of personal belief based on the arguments made, a prediction based on these arguments, or a summary of the major ideas presented.

Westby and Clauser (2005) point out that one reason for the difficulty with persuasive texts is that students tend to have less exposure to them than to narratives or exposition. This suggests that one way to improve persuasive writing is to precede writing instruction with work on reading persuasive texts, such as editorials in newspapers and magazines, opinion blogs, or political advertisements. Having students critique these, by looking for identifying their claims and examining how well they are supported by warrants and data, can be helpful in getting students more familiar with this discourse genre.

Nelson and Van Meter (2002) discuss one additional issue that is crucial in improving students' writing. This concerns the need for students to perceive writing as an authentic activity; one that has relevance for the real world and is not important solely for "getting through" school. Fortunately, young people's facility and fascination with the Internet provides an important forum for authentic writing. Many teenagers have discovered the joys of "blogging," in which they chronicle their lives and discuss issues of interest to them, as well as read the blogs of others. Many sites, including Googleblogspot.com, Blurty.com, Blogger.com, and Blogtext.org, offer free blogging facilities. Clinicians can help students establish blogs, review others' blogs for ideas to respond to, and write and post their own responses to issues being discussed on-line by their peers. Although blogging is more tolerant of misspelling and grammatical errors than more formal writing settings, it provides one opportunity—which clinicians and teachers will augment with other more standard, formal opportunities—to express thoughts in writing for an audience of peers. As such, it can motivate students to try writing as a means of expression that has a part in the big picture of their lives, not just in the small corner of the classroom. We'll talk more about ways to improve student writing in the section on learning strategies.

Functional Communication

Conversation

A variety of published programs for helping adolescents improve social and conversational skills are available (Frank & Smith-Rex, 1997; Hanken & Kennedy, 1998; Hazel, Schumaker, Sherman, & Sheldon-Wildgen, 1981; Hoskins, 1999; Jackson, Jackson, & Bennett, 1998; Kelly, 2001; La Greca & Mesibov, 1981; LoGiudice & McConnell, 1998; Marquis & Addy-Trout, 1992; Mayo & Waldo, 1994; Minskoff, 1982; Reese & Challenner, 2001; Schrieber & McKinley, 1995; Walker, Todis, Holmes, & Horton, 1988; Wanat, 1983; Wiig, 1982b). Larson and McKinley (2003a) outline seven crucial elements for social skills instruction:

1. *Introduction:* Tell the students about the skill, what they will learn and why it is important to them. Have students share experiences related to the skill.
2. *Guided instruction:* Lay out the steps to be taught. Define the skill and list the steps involved in accomplishing it.
3. *Modeling:* Demonstrate with role-playing or audio or video recordings the skill to be learned. Model self-talk about thinking through how/when to apply the skill.
4. *Rehearsal:* Students describe verbally the sequence of actions involved in the skill and then role-play with a group of peers.
5. *Feedback:* Provide encouragement for the use of appropriate behaviors and ask students to describe the successful behavior they used; when giving corrective feedback use a positive, nonthreatening tone and have students describe the appropriate behavior.

6. *Planning:* Have students discuss how/when/with whom they can use the new skill. Encourage them to use the following formula to help plan future interactions:

 STOP: think before talking, use self-control strategies if necessary

 PLOT: plan ahead and brainstorm options before deciding what to say/do

 GO: choose the best option from brainstorming and implement it

 SO: evaluate. Encourage students to ask themselves how it went, what they did well, what they might *change next time*

7. *Generalization:* Encourage students to try their new skill at home with family or in class with friends. Have them report back to the clinician to discuss the outcome. If more help is needed, the clinician can discreetly "sit in" on an interaction in which the student uses the skill with a peer, and give feedback.

Bryan (1986) reported that structured situations in which peers provide models of a target behavior, such as a talk-show format in which the "host" must ask open-ended questions to elicit conversation from the guest, are very effective in eliciting functional communication targets from adolescents with LLD. In general, peer modeling is a tool with demonstrated effectiveness for helping adolescents develop conversational styles that lead to greater acceptance (Paul, 2003b). Peers involved in direct instruction can be trained to model positive conversational behaviors. Such behaviors might include appropriate topic initiation and continuation, using open-ended and follow-up questions to keep the conversation moving, and providing affirmative comments on the contributions of the student with LLD. Instruction to peers can be relatively informal or more highly structured. Several programs have provided very structured training, using behavioral technology, to organize the interactions between students with LLD and peer tutors. Gaylord-Ross, Haring, Breen, and Pitts-Conway (1984), for example, used highly structured interactions between students with autism and peers to teach basic communicative skills, such as requesting, offering objects, greeting, and elaborating greetings.

Kilman and Negri-Schoultz (1987) described a social-skills program designed for high-functioning autistic students like Michael that can be adapted for use with advanced language students with a variety of disabilities. Their program involved a social "club" for students with disabilities in which the students work with clinicians to create a satisfying interactive experience. Clinicians plan discussion groups with preset topics, such as the problems of meeting people, the loneliness of being different, and school stress. Students discuss their experiences on these topics with models provided by the clinician. Other meetings include interactive games, such as charades or "Pictionary," that involve communication and take advantage of nonverbal strengths of the participants. Still others involve planning and preparing refreshments for special events put on by the "club." These might include shows displaying participants' artwork or dances to which members may invite friends. Throughout these activities, careful modeling of appropriate behavior is provided by professionals, and discussion about the effectiveness of the clients' communication, within and outside the "club," goes on. Although this program was designed as "extracurricular," it could be incorporated as a social skills unit within a communication class for secondary students with LLD. Strulovitch and Tagalakis (2003) also provided guidelines for running groups for students with social disabilities. Other approaches

Discussing emotions can be part of social skills training.

derived from the literature on autism include *Pivotal Response Training* (Bregman & Gerdtz, 1997), *The New Social Story Book,* and *Comic Strip Conversations* (Gray, 1994, 2000b), which can be adapted for use with students with other disabilities who need help with functional communication.

Another approach is the *Model, Analyze, Practice* (MAP) program (Hess & Fairchild, 1988). Here students view pairs of peer interactions on video, one in which the interaction is successful and one in which it is less so. Students analyze the pairs of interactions for features identified by the clinician to understand why one is more successful. These features include topic initiation, use of questions, appropriate turn-taking, and similar concerns. After analyzing the videos, students practice using the techniques they identified as effective and video-record themselves doing so. They then critique the videos of their own performance. As we saw, video modeling programs like these have demonstrated efficacy with younger children (Prelock et al., 2011), so they are a reasonable method to try with adolescents who need to develop conversational skills. Such a program could be incorporated as one unit of a communication class.

Walker, Schwartz, Nippold, Irvin, and Noell (1994) discussed the importance of following up activities like these with scaffolded opportunities to apply newly learned skills in natural settings. They recommended having the clinician structure interactions between clients and normally developing peers. In these interactions, the clinician can act as a "coach," providing cues and prompts first during and later before the interactions. Special student helpers can be designated to provide this coaching at a later point in the program. Clinicians should establish incentive systems, such as earning days off from homework for successful conversations with peers. Debriefing, or having students relate and analyze their experiences in these scaffolded conversations, is also important to support the students' extension of newly learned skills into their behavioral repertoire. Paul (2003b) and Strulovitch and Tagalakis (2003) discussed a variety of social skills training programs aimed primarily at adolescents with autism that can also be adapted for students with other disabilities.

Paul and Sutherland (2003) identified several skills to be taught in these kinds of programs. One is the use of communicative rituals. Rituals are scripted conversational patterns such as greetings ("Hi, how are you?" "Fine, thanks, and you?"). A variety of rituals such as partings, introductions, asking for help, entering conversations, and asking for clarification can be written out in script form,

practiced, and memorized. Although these ritualistic interactions are not completely natural, they are often improvements over the unusual behaviors students like Michael may use. Krantz and McClannahan (1998) showed that fading these scripts, by gradually cutting off increasingly larger segments of the written form, and requiring students to rely on their memory rather than the written script, increased generalization of these procedures to settings outside the therapy context.

A second area conversational programs might address is topic management. Here students can be taught to listen first and talk later, taking time to identify the topic under discussion before entering the conversation. They also can be instructed to check the appropriateness of their topic ("Do you want to talk about a movie I saw?") or to confirm the topic they identify ("Are you talking about last night's game?"). Students with a tendency to "get stuck" on a favorite topic can also be encouraged to say, for example, just three things about their topic, and then offer to switch to a topic of their interlocutor's interest. Conversational maps, like the one in Figure 14-7, can be used to help students think ahead to choose appropriate topics for different partners, based on what they know about each one. Brinton, Robinson, and Fujiki (2004) developed a game called "The Conversation Can" to address these issues. They emphasize that the program took a long period of time before generalized change was achieved, however, so clinicians should not expect changes in these behaviors over night. The program's basic sequence is as follows:

- Brainstorm a list of topics classmates might want to discuss.
- Write each on a slip of paper.
- Put slips in can.
- Take turns pulling out a topic.
- Start conversation:
  - Think first: What should I say?
  - Say two things about the topic.
  - Ask interlocutor a question about the topic.
  - Listen while interlocutor answers.

FIGURE 14-7 Conversational map. (Adapted from Hallenbeck, M. [1996]. The cognitive strategy in writing: Welcome relief for adolescents with learning disabilities. *Learning Disabilities Research and Practice, 11,* 107-119.)

Again, these strategies are somewhat artificial but can help to build skills that will eventually allow more fluid and natural participation in conversations. And again, visual cues and organizers can be helpful.

A final element of conversation that improves chances for success, according to Brinton and Fujiki (2007), is the use of *validating comments,* those that are responsive to others in a positive way. They point out that popular students tend to use lots of these, and using them will help students with disabilities gain greater acceptance in peer conversations. Communication classroom work in this area can include practicing consistent responsiveness to questions, comments and interactive bids of other students, as well as helping student learn to give validating feedback, including compliments on actions ("Nice job!"), encouragement ("You can do it!"), consolation ("That bites! But it happens to me all the time, too!"), offers of help ("Let me get that for you."), and ritualized social acknowledgements ("Thanks!" "Sorry.")

Mentis (1994) emphasized the importance of access to flexible syntactic forms in the conversational skills of students with LLD. In taking a remedial approach to conversational development, it is important to integrate work on improving conversational ability with the use of linguistic markers that can elaborate discourse. Mentis pointed to adverbial conjuncts, question forms, relative clauses, ellipsis, and other cohesive devices as being especially important in this regard. As we work on basic conversational skills with students at the advanced language level, we want to adhere to the same principle we've talked about for working on pragmatics with younger clients. That is, we want to use conversational contexts as a means to practice semantic and syntactic forms. By integrating these forms into pragmatic contexts, such as conversation, we have the greatest chance to effect an overall improvement in the student's communication.

It is also important to bear in mind the findings reported by Turkstra (2007), who argued that teaching "social skills" may not be sufficient to improve performance in students with pragmatic disorders; it is also necessary to increase their competence in understanding the thought processes involved in social understanding, which include theory of mind, executive functions, and memory. These capacities fall under the umbrella of *social cognition.* Helping students develop these kinds of understanding involve thinking about others, planning, and self-regulation. As such, they bring us, again, to the development of compensatory strategies, rather than basic skills, and we'll talk about some strategic approaches to social skills training a later bit on.

Survival Skills

In addition to improving social communication, adolescents with LLD may need help in developing the daily interaction skills they need to make the transition to adulthood. Work, Cline, Ehren, Keiser, and Wujek (1993) described several secondary school programs that contain functional communication strands. These programs address skills needed by students to function in home, work, and community contexts.

Vocational skill development can focus on exploring realistic career options. Work et al. described one vocational exploration program in which each student in a communication class is required to research and orally report on two careers in which he or she has a realistic interest. Each student compiles a portfolio on the two careers. The portfolio includes a resume of the student's qualifications for the position, a completed job application form, and information on the training needed for the position. In addition, each student participates in a practice interview for the position,

which is video-recorded and critiqued by the clinician and class-mates. The student can then redo the interview, using suggestions from the critique. Montague and Lund (1991) and Sigler and Fitz-patrick (2000) also provided commercial programs for working on vocationally related communication skills.

Survival skills needed for family or independent living also can be addressed. Here students would be given assignments to research nutrition and meal planning, consumer skills such as label reading and unit pricing, housing searches using ads for rental units, and similar topics. Students would present the results of their research orally to the class. Role-playing activities, similar to the practice job interview, could be used to rehearse such tasks as applying for an apartment, asking a store manager about sale prices, and planning and shopping for a week's worth of balanced meals. Drug abuse, family planning, and hygiene information might also be part of this unit, with collaboration from the school health teacher. A curriculum such as *Smooth Sailing in the Next Generation* (Plumridge & Hylton, 1987), which discusses pre-vention of birth defects, also may be an appropriate addition to the functional curriculum. Other commercial programs, such as Mannix's *Life Skills Activities for Secondary Students with Special Needs—2nd Edition* (2009a), *Social Skills Activities For Second-ary Students with Special Needs—2nd Edition* (Mannix, 2009b), *Life Skills: 225 Ready-to-Use Health Activities for Success and Well-being* (McTavish, 2003), and *That's LIFE! Life Skills* (Smith, 1998), also are available.

Larson and McKinley (2003a) and Novak (2002) emphasize another important survival skill for adolescents with LLD: emo-tional expression. All teenagers experience a wide range of strong emotions; they feel angry at adults who set limits on them, frus-trated at their own limitations, anxious about what others think of them, and so on. For students with LLD, their poor communication skills often make it difficult to acknowledge, share, and manage these feelings. The role of the SLP in this area is to provide the words and opportunities to practice talking about these feelings, first in a therapeutic atmosphere, and later in supported naturalistic settings. Gajewski, Hirn, and Mayo (1998) and *Room 28* (LoGiudice & McConnell, 2004) provide materials for practicing communica-tion skills in a variety of social settings and include activities for emotional expression.

Finally, Westby (2010) suggests that another "survival" skill is the ability to manage not only written language, but also other forms of information that are so prevalent in our digital society. She argues that students need assistance in making sense of visual infor-mation, as well as information that comes at all of us from multime-dia sources such as television and the internet. She advocates pro-viding students with LLD with scaffolded experiences in becoming critical consumers of such information, and suggests using books that have accompanying Web sites as one way to begin this kind of work. Two examples of this kind of material include *The Invention of Hugo Cabret* (Selznick, 2007) and its accompanying Web site www.theinventionofhugocabret.com and *The 39 Clues* (Scholastic Books; www.the39clues.com).

Learning-Strategies Approaches to Intervention in the Advanced Language Stage

Learning strategies methods of intervention are essentially "meta" approaches. As such, they conform to one of the basic principles of intervention for school-age clients that we outlined earlier. In addition, they provide the other advantages we discussed for students in the advanced language stage, those with normal intel-lectual ability and reading skills at a fourth-grade level or higher. That is, they help these students move toward more independent functioning and give them the tools to improve their own learning abilities. Santangelo, Harris, and Graham (2008) and Swanson and De La Paz (1998) outlined seven steps that comprise a learning-strategy, or what they call a "self-regulated strategy development" (SRSD) approach. These are given in Box 14-6. In their review of instructional approaches for students with LLD, Vaughn, Gersten, and Chard (2000) found that, along with small group instruction and controlling the difficulty of the task, the use of learning strate-gies was one of the three key elements that produced the stron-gest impact on students' learning. Faggella-Luby, Schumaker, and Deshler (2007) showed that learning strategies approaches were effective in improving reading comprehension for students with and without LLD. Still, Englert et al. (2009) showed that learning strategies are difficult for all students to learn, and even more so for students with LLD. They suggested beginning with learning strategies approach early, in middle school, to provide time for students to practice and assimilate them on a range of curricular material. And as Ehren (2009) emphasized, best practice dictates that we take materials and topics related to the curriculum and use them to teach students how to improve their own mastery of the content, rather than tutoring students in the material itself. Although we may need to use materials that are below the students' grade level for initial strategy instruction, these materials should still be selected to enhance the students' curricular knowledge. As students become more adept at using the strategies we teach, materials closer to grade level can be added. Let's look again at some of the areas that we assessed in adolescents with LLD and see how we might use these compensatory-strategy approaches to improve academic functioning and increase autonomy in our secondary school students.

Semantics

Learning New Words

Several "meta" approaches for increasing lexical skills were pre-sented by Crais (1990). The *root word* strategy is one. Here the clinician introduces a root word and helps students identify possi-ble additions of inflectional endings (*-ing, -ed, -s*) and derivational suffixes (*-less, -ly, -tion*) and prefixes (*un-, in-, dis-*). The clinician can discuss how each affix changes the meaning or part of speech of the root word. Students can then be encouraged to hunt for affixed roots in textbooks and literature selections and to talk about how identifying root words can help to elucidate word meaning. The clinician also might introduce some roots from Greek (e.g., *tele* [distance], *phon* [sound]) and Latin (e.g., *amor* [love], *terra* [earth]) that are relevant to curricular topics. Students can hunt for words containing these roots in their textbooks and talk about how the roots can be used to help identify word meaning. Students can be asked to keep a root-word dictionary, recording new roots as they learn them, listing all the words they know that contain the roots, and adding new entries as they are encountered. The strategy to be taught here is to look for relations among words and to con-sult prior knowledge when confronted with a new word.

Sternberg and Powell (1983) provided a set of strategies for helping students to use *context* to decipher the meaning of new words. Their approach involves encouraging students to focus on specific cues available in the context to make their guesses. They direct students to use a range of cues including temporal, spatial,

BOX 14-6 Seven Steps to Teaching Self-Regulated Learning Strategies

STEP 1
Describe the strategy. The teacher explains the strategy (e.g., summarizing) and students and teacher review the student's current performance (e.g., on a pretest).

STEP 2
Activate and develop background knowledge. Review information students have already learned that is important for learning this strategy (e.g., taking notes; students will use summarizing to help with more efficient note-taking). Guide students on ways to acquire the information they need but don't currently have to complete the assignment.

STEP 3
Discuss current performance level. Have students examine and discuss their current skill level and identify at least one aspect of their their skill in this area they would like to improve. Provide feedback to students about their current functioning in this area, and explain benefits of using the strategy to improve performance (e.g., summarizing will make it easier to take notes, remember information for tests, write book reports).

STEP 4
Model the strategy and self-instructions. The teacher shows how to use the strategy, using a "think-aloud" procedure to demonstrate each step (e.g., "This paragraph seems to be talking about trade routes to India. Let's see, it says the major routes were [a], [b], and [c] . . .) and provide "why" and "how" for each step. Self-statements such as "What should I do first?" or "Am I using the strategy?" demonstrate to students how to manage their performance. Also model using positive self-statements ("This

is tough, but I know I can do it"). Have each student set an individual goal for improving in this skill area.

STEP 5
Collaborative practice. The teacher and students, as a group, model and rehearse the strategy. The teacher provides multiple opportunities for practicing the strategies and self-cues as a class, in small groups, and in pairs. The teacher provides practice with the strategy so that students gradually assume more independence in using it. The teacher monitors students' progress and provides prompts or re-instruction, when necessary, and provides frequent feedback and positive reinforcement.

STEP 6
Independent practice and mastery. Students apply the strategy to materials at a low level of difficulty for them. The teacher provides prompts and corrective feedback, when necessary. Practice sessions are repeated with materials of increasing difficulty. Students and teacher collect data and evaluate their own performance on the materials used. Encourage students to recognize how the strategy improves their use of the skill.

STEP 7
Generalization. Practice using the strategy on curricular material. The students apply the strategy to textbooks and a variety of regular classroom content. The teacher discusses with students times/situations when the use of the newly learned strategy will be helpful, and provides additional feedback. Strategy use is then tested. Additional instruction and models are provided, if necessary.

Adapted from Santangelo, T., Harris, K. R., & Graham, S. (2008). Using self-regulated strategy development to support students who have "trubol giting thangs into werds." *Remedial & Special Education, 29(2),* 78-89; Seidenberg, P. (1988). Cognitive and academic instructional intervention for learning-disabled adolescents. *Topics in Language Disorders, 8,* 56-71; and Swanson, P., & De La Paz, S. (1998). Teaching effective comprehension strategies to students with learning and reading disabilities. *Intervention in School and Clinic, 33,* 209-218.

descriptive state or function, causal, class membership, grammatical category, and equivalence information. The clinician can start by using sentences containing nonsense words and encouraging students to recognize clues to the word's meaning in the other words in the sentence. For example, we might write on the board:

At dusk, the *cleebs* began to appear and twinkled behind the moon in the darkening sky. Their sparkle was reflected in her starry eyes.

The clinician can model using the following cues to detect the word's meaning from the context:

temporal = dusk
spatial = behind moon
descriptive (state or function) = twinkle
class membership = same as moon; something we see in
    the sky
grammatical = -s ending, comes after the; therefore, is
    probably a noun
causal = began to appear; therefore, not visible all the time
equivalence = starry

Students can then be encouraged to find an unfamiliar word in a textbook selection and use as many of the cues as are available to make a stab at its meaning. We might provide the student with a list of the category of cues to complete. For example:

temporal =
spatial =
descriptive (state or function) =
class membership =
grammatical =
causal =
equivalence =

Students can then check their guesses by looking up the word in the dictionary. Additional practice can be provided and the importance of using contextual strategies to disambiguate unknown words can be emphasized as we teach the strategy.

Ebbers & Denton (2008) suggested guiding students to combine word study and contextual cueing when they come across an unknown word. For example, if students don't know the meaning of the word *belfry* as they read *Paul Revere's Ride* (Longfellow, 1863), they can be asked to first examine the context clues, such as the fact that *belfry* appears in the same line as *church tower;* then

to look for a familiar word part in *belfry*, reminding the students that spellings of word parts can be different from the spelling in a whole word. Once the students discover *bel* (a form of bell) in the word, they can be encouraged to associate "bell" with the concept of "church tower," and make an educated guess about the meaning of *belfry*. Repeated practice with the use of such combined strategies will help students increase their access to and independent use of such compensatory mechanisms.

Levin et al. (1984) proposed a strategy for helping students retain the meanings of new words or roots, the *keyword method.* Here students are taught to link a new word (for example, *truculent:* fierce and aggressive) or root (*terra* for earth) with a familiar keyword that shares some sound or visual feature; for example, *tear* could be a keyword for *terra; truck* could be a keyword for *truculent.* To learn the new word, the students are told to do the following:

* Draw a picture that links the meaning of the keyword and the new word. Write the connection underneath ("*Terra* means 'earth'; let's not tear it apart;" "The truck driver was *truculent*" beneath a picture of a truck with a fierce-looking driver.)
* To learn the new word, the student is told to do the following:
  * Say the new word (*truculent*) and think of its keyword (*truck*).
  * Think of the picture with the keyword in it.
  * Remember the connection that symbolized the picture (The [fierce] truck driver was *truculent*).
  * Retrieve the meaning of the new word (*truculent:* fierce and aggressive).

The keyword then becomes a retrieval cue for the new word or root. Terrill, Scruggs, and Mastropieri (2004) showed that using a keyword strategy was more effective than traditional instruction in terms of the number of new words maintained by high school students with LLD.

Word Retrieval

Since many students with LLD have word-finding difficulties (Messer & Dockrell, 2006), this is another area in which compensatory strategies are especially helpful. We can encourage students to activate consciously all the semantic and phonological information they can about a word they want to retrieve. A variation of the "Password" game is a good first step toward developing these strategies. One student (or the clinician) thinks of a word and gives either a semantic or phonological clue to the partner, whose job it is to guess the password. If the first clue is insufficient for the partner to guess, another is given, until the word is guessed. The game also can be played in teams of two students. The teams alternate turns, with one team member providing clues and the other trying to guess the password from the accumulated clues given by both teams. The first team whose "guesser" gets the password wins. Semantic and phonological clues can be alternated, or the game can be restricted to one type of clue.

After practice with this game, students can be encouraged to give themselves similar clues when they are having trouble finding a word. They might start out by writing down each clue they can give themselves and recording how many they need to find the word. They can keep track of their self-cueing and try to reduce the number of clues they need to give themselves before they retrieve the word. Again, a compensatory-strategy approach is intended to help students learn to cue themselves, rather than depending on the clinician to help them when they get stuck. Teaching students to activate their keyword strategies can also help with word retrieval.

German (1992; 2009) provided additional compensatory strategies. She suggested teaching students *reflective pausing,* or the constructive use of pause time to use retrieval strategies and reduce inaccurate competitive responses. Students can be encouraged to "wait and think" when they have trouble finding a word, rather than saying the first competing response that enters their head. Once the ability to use reflective pausing has been established, students can be encouraged to use a variety of self-cueing strategies to try to retrieve the target word. In addition to the phonemic and semantic cues we've already discussed, German suggested teaching students to use graphemic cueing (trying to remember what the word looks like in writing), imagery cueing (revisualizing the referent as a cue to the target word), gesture cueing (motor schemes or actions associated with the target word, such as twisting the lid to retrieve *jar*), and associative cueing (using an intermediate word to cue the target, such as *story* for *book*). German also recommended focusing on phonological properties of new words students are learning, having them rehearse saying the words both alone and embedded in common phrases and dividing them into syllables. German (2009) also suggests placing icons on a student's computer desktop, notepad or smart phone that are hyperlinked to Internet sites that define and pronounce words, such as www.dictionary.com.

Figurative Language

Norbury (2004) showed that children with a variety of communication disorders were less likely than typical peers to use the available context to help them understand *figurative language.* So in this aspect of semantics, too, one of our roles is to help students learn and use a strategic approach when they encounter something they don't understand. Palmer and Brooks (2004) recommend a three-step strategy for improving figurative comprehension:

1. Have the students identify figurative language in passages they read or hear. For each possible non-literal expression, they can be trained to ask themselves, "Does the writer mean exactly what the words say, or is something else being conveyed?" The clinician can model a think-aloud procedure for deciding this by saying, for example, "Does this make sense here, considering the usual meaning of these words?"
2. For each expression they decide is not literal, students are encouraged to decide what the author is really trying to say. They can use the cues we talked about earlier (temporal, spatial, causal, etc.) to decide what the expression might mean.
3. Finally, students are encouraged to activate everything they know about the words in the figurative expression to attempt to make a connection between the intended meaning and the surface form.

Students can be asked to keep logs of new figurative expressions they decipher using this strategy, for discussion with the clinician and for future reference.

It is also important to provide students with LLD with strategies to use when they encounter new figurative language forms. Cain & Towse (2008) found that poor inference from context was the major source of idiom understanding difficulties in children with poor reading comprehension. They suggest it is important to provide students with poor comprehension with support and guided practice in the use of context to understand unfamiliar figurative language.

Syntax

Learning strategies approaches to syntax, like those we discussed for semantics, also involve teaching students self-cueing. Much of this self-cueing can go on in the context of editing written work for syntactic accuracy and maturity. Students can be encouraged to make several passes through their writing in the editing process,

with one pass dedicated to looking for errors in syntax and how syntax can be improved by using connectives, cohesive devices, and other "dandy language" forms listed in Table 13-5. Students can be encouraged to ask themselves as they edit each paragraph of their writing, "Have I said it clearly? Have I connected the ideas? Have I used a formal style?" If students are writing on word processors, the grammar-checking program in the word processor may help identify sentences that could use rewriting. Alternatively, the clinician can underline sections that could benefit from rewriting. These might be coded with a "C" for providing connectives between ideas, a "CH" for using cohesive devices, and a "D" for writing with "dandy language" forms. Eventually, students can be encouraged to use these codes in editing their own syntax. Scott (2005) showed that students do better at first editing *others'* writing, rather than their own. An initial phase in this instruction then, could be to have students go through each of the steps outlined above on a peer's writing sample. The next phase would involve repeating these steps on their own written product.

Scott (2009) cites several studies that advocate helping students become aware of the structure of complex sentences as a strategy for increasing their comprehension. This research suggests having students first find complex sentences within classroom literature selections, then underline each clause within the sentence, circle the conjunctions, and finally paraphrase the sentences. This kind of attention, first to structure, then to meaning, appears to improve both oral and written language in children with LLD.

Pragmatics

Classroom Discourse

Silliman and Wilkinson (1991) advocated facilitating classroom discourse skills by using what they call "dialogic mentoring." This is a form of supportive prompting that offers verbal cues or choices as external support to students for accessing a solution to a problem or an answer to a question. The goal of this support is to give students a model for doing this scaffolding for themselves. To use dialogic mentoring, it is important that problems posed to students with LLD be within their zone of proximal development; not so easy as to require little cognitive processing, but not so hard as to be beyond their current cognitive grasp.

An approach to dialogic modeling was presented by Brown and Campione (1990), which they referred to as *reciprocal teaching*. Reciprocal teaching (RT) is a learning-strategy approach that employs guided, cooperative learning and includes expert scaffolding by the teacher, direct instruction, modeling, and practice and multiple strategy instruction (Pilonieta & Medina, 2009). Brown and Palinscar (1987) outlined four steps in the reciprocal teaching process: Predict, Question, Summarize, and Clarify. The "facilitator" (teacher or clinician) first models each step on a segment of curricular material, such as a lecture, reading selection, or mathematics or science problem. The facilitator then assigns one of the students to use the same series of steps on a related passage or problem. Each student is given a turn to act as facilitator for the group. The student with LLD can serve as facilitator last, to take advantage of the additional modeling provided by the other students. Figure 14-8 provides a graphic organizer, in the form of a bookmark, to remind students of the four basic steps to follow as they participate in RT.

Hoskins (1990) and Sharpe (2008) provided additional techniques that can be used in conjunction with RT or in other collaborative intervention settings to provide scaffolding for students' learning strategies. Hoskins suggested using *postscript modeling* as an additional approach for increasing students' learning strategies in

Predicting
Predict:
- Scan headings and **bold** type.
- Think about what you know about what you scanned.
- Guess what will happen next.
- What clues helped you to think about what will happen next?
- Is your prediction logical?

Questioning
Question and Connect:
- Ask questions a teacher would ask
- Is there anything that you did not understand?
- Is there anything that did not make sense?
- Has anything like this ever happened to you?
- Have you ever known anyone like this character?
- What are you curious about?

Summary
Read and Summarize:
- What are the most important things you read?
- What does the author want you to remember or learn from this?
- What is the most important information in this passage?
- What was this passage mostly about?
- In your own words....

Clarifying
Clarify:
- Was there a word or idea you weren't sure about?
- What is it? What page is it on?
- What can we predict it means?
- How can we check it; What strategies can we use to figure this out?

FIGURE 14-8 Bookmark to support students' participation in reciprocal teaching. (Adapted from Brown, A., and Palinscar, A. [1987]. Reciprocal teaching of comprehension strategies. In J. Day and J. Borkowski [Eds.]. *Intelligence and exceptionality: New directions for theory, assessment, and instructional practice* [pp. 81-132]. Norwood, NJ: Ablex; Gerber, A. [1993]. *Language-related learning disabilities: Their nature and treatment.* Baltimore, MD: Paul H. Brookes; Meyers, K. [2010]. Diving into reading: Revisiting reciprocal teaching in the middle years. *Literacy Learning, 18,* 41-52; and www.readingrockets.org.)

classroom discourse situations. Here the facilitator provides scaffolding comments about students' remarks in the discussion of the class material. The clinician can provide an accepting but corrected version of a student comment, encourage brainstorming to solve comprehension problems, identify areas of misunderstanding or inadequate skill development (need for instruction in punctuation or capitalization, for example), and provide appropriate instruction as needed. Postscript modeling can also scaffold by taking a student comment to a higher

cognitive level. Suppose, for example, that Michael answers a question about how a story character feels with, "She feels sad, she feels sorry her dad is not home." A postscript model would take Michael's answer to a deeper level of character motivation by replying, "Yes, Meg feels sad because her father had been away for some time, and no one knows where he is. Not knowing probably makes her feel worse. How do you think you might feel if someone in your family were gone and you didn't know where he was?"

Sharpe (2008) reported on several other dialogic techniques that were found to enhance student learning. These include repeating student remarks with recasting (Michael: "It would make me feel bad," SLP: "Yes, it would make you feel bad, and probably somewhat angry, confused, and anxious."), recontextualizing language (Michael: "It would make me feel bad," SLP: "Yes, whenever we are uncertain, or feel we can't understand a situation, we are likely to feel upset or anxious."), cued elicitation (SLP: "Michael, the book says Meg didn't know where her father was; not knowing often makes people feel anxious or confused. How do you think Meg felt?"), and modifying questioning to extend or reformulate student's reasoning (SLP: "Yes, you're right, she probably did feel upset; can you talk more about all the different things that might be running through her head?").

Vaughn et al.'s (2010) and Sharpe's (2008) reviews suggest that the use of RT techniques, and other activities that involve interactive dialogue between teacher and student as well as among students, are some of the most effective ways of improving both reading and writing skills in students with LLD. All these forms of dialogic mentoring are ideally suited to collaborative intervention settings, in which the teacher presents some curricular material and the clinician follows up the teacher's lecture with a small group reciprocal teaching session on the same material or provides scaffolding questions to increase students' control of their learning. In our role as SLPs, we can encourage teachers to make use of these highly effective practices, modeling them in collaborative teaching sessions. These techniques also can be used in a communication class setting. We can also use RT approaches in therapeutic oral language activities with students, as a bridge toward helping them acquire skills and strategies they can apply to written language formats. Alternatively, these methodologies can be presented in consultative or in-service training sessions as particularly appropriate techniques to use in classrooms in which students with LLD are placed. We can emphasize that these techniques have been shown to benefit all the students in the classroom (Sharpe, 2008; Vaughn et al., 2010).

Conversational Discourse
Most of our intervention for conversational pragmatics is done in the functional strand of our curriculum. We also can, when assessment indicates the need, work on self-cueing approaches to encourage students to use advanced discourse intentions such as persuasion, negotiation, and to use presuppositional devices and flexible speech styles. Here role-playing; barrier games; and, when possible, video modeling procedures like those used in the MAP program can be used. After initial practice in persuading, negotiating, presenting adequate information, or using an appropriate speech register in activities like those outlined in Chapter 12, work can "go meta."

Let's take persuasion as an example. Students can talk about what is needed to be persuasive, such as taking the other person's needs and point of view into account. They can read some political speeches or advertising copy and identify elements in the text that are intended to persuade, then write their own advertisement or speech. In doing so, they can be required to list first what they will try to persuade the reader to do, what reader needs they will try to

Video modeling helps students learn self-monitoring skills in conversation.

address, and what arguments they will use to address those needs. Hallenbeck (1996) suggested using a "think-sheet" like the one in Figure 14-9 to help students plan these arguments. They can then be assigned to create the ad or speech. Next a role-playing situation might be used in which the student must plan an "attack," for example, on parents to persuade them to lift their curfew for a special school event. Again, before role-playing the argument, the students should plan their strategy, stating explicitly the parent needs they will address (such as the need to believe the students are safe and chaperoned), what arguments they will use, and how the arguments will be phrased. Only then will they role-play the situation. After the role-play, they can evaluate their performance and list ways it could be improved. Similar "meta" approaches can be used for other aspects of conversational discourse. Again, the goal of a learning-strategies approach is to encourage conscious planning, self-cueing, and self-monitoring to give students tools for improving their own performance. Many of the approaches we will discuss later that are designed for high functioning students with autism will also be useful for other teens who need help with conversational pragmatics.

Other Discourse Genres
Narrative Texts
Most of the narrative texts that students encounter in secondary school will be in literature classes, and perhaps in some work on biography in other subjects. This suggests that English teachers will be ideal collaborative partners for helping students to master these important discourse structures.

Comprehension. Students with LLD typically show poor reading comprehension (Moats, 2004; Roberts et al., 2008), but several studies (Edmonds et al., 2009; Scammacca et al., 2007; Vaughn et al., 2010) have shown that reading comprehension can be significantly improved for struggling readers at the secondary level with targeted interventions.

Vaughn et al. (2010) pointed out that two of the most important interventions for students with LLD are (1) control of the difficulty of the material they must process, so that (2) they persist longer in working on the task. If our students are immature in their narrative abilities, the narratives presented in the typical classroom may be so far "above their heads" that they simply give up. One role the SLP can play is to provide guided practice and feedback in work on narratives with more controlled levels of difficulty, to encourage students to persist so that eventually they can move up toward grade-appropriate material. Another way SLPs can

What do I want to argue for?

Whom do I need to convince?

Where and when will I make my argument?

What are the points I will make?

First:

Next:

Third:

Then:

Finally:

How will I sum up?

FIGURE 14-9   Graphic "think-sheet" for organizing a persuasive piece. (From Hallenbeck, M. [1996]. The cognitive strategy in writing: Welcome relief for adolescents with learning disabilities. *Learning Disabilities Research and Practice, 11,* 107-119.)

participate in improving narrative comprehension is by providing opportunities for fluency development. That is, Wexler, Vaughn, Edmonds, & Reutebuch (2008) reported that one of the more effective ways of improving fluency for secondary students, in addition to combining it with vocabulary work as we discussed earlier, is to have students read a passage themselves after hearing a skilled reader read it. This suggests that SLPs can use communication sessions to revisit passages covered in class, reading the passages to students, then asking them to reread the passage aloud after hearing it, and following up the reading/rereading with an activity that targets a specific strategy, like the ones we will describe below. This is a great way to support the development of fluency in the context of our efforts to increase comprehension, as well.

Ehren (2007a) summarized findings on intervention for reading comprehension by saying that explicit teaching of comprehension strategies with frequent guided practice is what works. Both Ehren and Roberts et al. (2008) outlined the major strategies that have been shown to be effective for improving reading comprehension in secondary students with LLD. These appear in Box 14-7. Some of the strategies we talked about in Chapter 12, including *directed reading-thinking* (Ambe, 2007)*, QART,* and story grammar mapping (Onachukwu, Boon, Fore Iii, & Bender, 2007) may be appropriate for some students at the secondary level, as well. A variety of strategies that make use of the components listed in Box 14-7 have been developed specifically for adolescents with LLD. We'll review of sample of them here.

BOX 14-7   Evidence-Based Strategies for Improving Reading Comprehension in Secondary Students with LLD

The following strategies should be used before, during, and after reading:
- Activating prior knowledge
- Predicting
- Paraphrasing
- Summarizing
- Self-questioning
- Visualizing
- Using graphic organizers
- Comprehension monitoring
- "Think-aloud" strategy modeling by skilled readers

Adapted from Ehren, B. (2009). Looking through an adolescent literacy lens at the narrow view of reading. *Language, Speech, and Hearing Services in Schools, 40,* 192-195; Roberts, G., Torgesen, J.K., Boardman, A., and Scammacca, N. (2008). Evidence-based strategies for reading instruction of older students with learning disabilities. *Learning Disabilities Research & Practice (Blackwell Publishing Limited), 23(2),* 63-69.

Scheffel, Shroyer, and Strongin (2003) reviewed literature suggesting that the use of visual maps and organizers improved students' comprehension of narrative material. Other activities they found to be related to improved narrative comprehension included the use of RT techniques applied to narrative texts and the use

of preparatory sets such as predicting and foregrounding prior knowledge before reading or listening. Finally, they found the "What I Know," or K-W-H-L, strategy to be effective in improving understanding of stories. This strategy consists of teaching students to use a chart to outline knowledge before and after reading:

- **K** stands for what you already KNOW about the subject.
- **W** stands for what you WANT to learn.
- **H** stands for figuring out HOW you can learn more about the topic.
- **L** stands for what you LEARN as you read.

A graphic organizer for this strategy that might be used for the first chapter of Homer's *Odyssey* is depicted in Table 14-4.

Graves and Montague (1991) suggested a story grammar checklist for this purpose. The students read a story and record events from the story that fill in each aspect of the story grammar. They then check off each aspect as they record it, to indicate that they have identified that element of the story. An example story grammar checklist appears in Table 14-5.

Production. Vallecorsa and deBettencourt (1997) emphasized, though, that story comprehension activities will not necessarily lead to generalized improvements in story production without explicit instruction. It is important, then, to provide students with strategies for both understanding and producing stories. Vallecorsa and deBettencourt suggested using a story map, like the one in Figure 14-10, to help students with narrative production. Students use the map to guide and organize their story production, drawing on the story element structure we have discussed.

Nelson and Van Meter (2002) emphasized the importance of having a real communicative purpose in composing a story, a purpose beyond merely pleasing the clinician or getting a grade. Classroom units on biography and autobiography make ideal contexts for encouraging students to write their own life stories, a topic that cannot help being of vital interest to the author. Again, we can motivate story production by having students write plays for production or video recording, or by having them produce contemporary versions of literature the students read in class for publication (with the student's permission) in a class literary magazine distributed to friends and family.

Monroe and Troia (2006) suggest teaching students the SPACE mnemonic for writing stories. This device encourages them to remember to include *Setting elements, Problems, Actions, Consequences,* and *Emotions* in their stories. In a similar vein, Montague, Graves, and Leavell (1991) suggested providing students with "story grammar cue cards." Students can be given a set of index cards, each of which contains a major story grammar element and a set of questions to answer in producing that element in a story. They use the cards as cues as they construct their stories. The cards can be used in the process of writing story summaries for book reports or as a guide to the student's original story compositions. Box 14-8 provides an example of a set of story grammar cue cards. Nathanson, Crank, Saywitz, and Ruegg (2007) showed that even cue cards as simple as those in Figure 14-11 were effective in improving narrative production in middle school students with LLD, when combined with adult modeling and verbal rehearsal of the meaning of each card. Students

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TABLE 14-4 Graphic Organizer for K-W-H-L Strategy for Improving Narrative Comprehension

What Do I Already *K*now Before Reading?	What Do I *W*ant to Know?	*H*ow Can I Learn More?	What Did I *L*earn After Reading?
Odysseus is a hero.	Why is the book so long?	Web sites on Trojan War.	Odysseus fought in the Trojan War.
The story is from a very long time ago. It has something to do with the Trojan War.	What does Odysseus have to do with an odyssey? What is an odyssey?	Watch the movie "Troy."	An odyssey is a long trip.
I saw a Simpsons episode that was about this. What happened was . . .	Why didn't Odysseus just go straight home instead of stopping at all those places?	Review Greek mythology unit from last year's English class.	Odysseus was in trouble with some of the gods, so they made his trip long and hard.

TABLE 14-5 An Example of a Story Grammar Checklist for Dickens' *A Christmas Carol*

Story Grammar Element	Event from Story	Check Off
Setting		
When	Christmas, over 100 years ago	✔
Where	England	
Who	Mr. Scrooge	
Problem	It's Christmas, a time to be generous, and he is very stingy.	✔
Internal response	Hates Christmas	✔
Plan or attempt	Wants to ignore it	✔
Response	Goes to bed early; a ghost visits him to bring him visions of Christmases past, present, and future	✔
Additional plan or attempt	(Additional episodes in the story can be charted)	
Additional response:		
Resolution or consequence	Mr. Scrooge learns the meaning of the holiday and the joy of giving.	✔

Adapted from Graves, A., & Montague, M. (1991). Using story-grammar cueing to improve the writing of students with learning disabilities. *Learning Disabilities Research and Practice, 6,* 246-250.

Setting_____

Character(s)_____

Time_____ Place_____

The problem_____

_____

_____

The goal_____

_____

Action_____

_____

_____

Reactions_____

_____

_____

Outcome/Resolution_____

_____

FIGURE 14-10 Story map for narrative production. (Adapted from Vallecorsa, A., & deBettencourt, L. [1997]. Using a mapping procedure to teach reading and writing skills to middle grade students with learning disabilities. *Education and Treatment of Children, 20,* 173-188.)

BOX 14-8 An Example of a Set of Story Grammar Cue Cards

Card 1: Setting
Where and when does the story take place? Who are the main characters?
Card 2: Problem
What happens to get the story started? What is the problem the main character must solve?
Card 3: Internal Response
What thoughts or feelings does the main character have about the problem? What makes him or her want to do something about it?
Card 4: Plan
What is the main character's goal? What does he or she plan to do? What are his or her intentions?
Card 5: Attempt
What does the character do to carry out the plan?
Card 6: Consequence
What happens when the character tries to carry out the plan? Is it successful or unsuccessful? How and why? What else happens when the character tries to carry out the plan? Did he or she intend for that to happen?
Card 7: Reaction
How do the characters feel about what happened in the story? What do they think about the problem, the plan, and the result?

Adapted from Montague, M., Graves, A., & Leavell, A. (1991). Planning, procedural facilitation, and narrative composition of junior high students with learning disabilities. *Learning Disabilities Research and Practice, 6,* 219-224.

Characters: Who?	Setting: Where?	Actions: What happened?	Emotions: How did they feel?

FIGURE 14-11   Simple story cue cards.   (Adapted from Nathanson, R., Crank, J. N., Saywitz, K. J., & Ruegg, E. (2007). Enhancing the oral narratives of children with learning disabilities. *Reading & Writing Quarterly, 23(4),* 315-331.)

should be encouraged not to answer the questions one by one, but instead to include information that will answer the questions within their story. Students can use the cues to guide their production of oral and written summaries for "book talks" given to peers or younger students and "book review" magazines produced in class. Story grammar cue cards also can help increase students' comprehension and summarization of stories they read. They can use the cards as study guides in their reading of curricular literature. Being encouraged to ask themselves the questions on the cards can help them to organize their processing of the story and aid in retention. Again, reciprocal teaching approaches, using visual organizers, and highlighting background knowledge in activities such as K-W-H-L are strategies that can improve narrative expression as well as comprehension. Harris, Graham, Mason and Friedlander (2008) suggest the POW mnemonic seen in Box 14-9 for helping students generate stories. Merritt, Culatta, and Trostle (1998) provide additional suggestions for improving narrative discourse skills.

Expository Texts

Most of the texts secondary students encounter outside of literature classes take an expository form. We talked in Chapter 10 about the difficulties inherent in expository texts, especially for our students with LLD. Expository texts include both classroom books and teachers' lectures. Students will be expected both to understand information presented in these formats, and to produce expository speech and writing. Larson and McKinley (2003a) argue that success in school relies on expository text competence. The SLP's role in developing this competence involves helping students acquire strategies for producing and understanding these difficult text structures in both oral and written forms, which should result in improving both reading comprehension and writing across a range of academic subjects. Remember, too, what Snyder (2010) reminds us: understanding expository texts is reliant on having some background knowledge of the text's topic, so an important preparatory activity for reading these texts is foregrounding and adding to that knowledge by means of oral discussion before reading. Vaughn et al. (2010), in reviewing studies addressing expository skills in students with LLD, found there were several elements common to successful programs. These are summarized in Box 14-10.

Let's look at how we can incorporate these effective practices in our work.

BOX 14-9   POW! Tips for Writing Stories

Pick an idea:
- Who is the main character?
- When does the story take place? Where?
- What does the main character do or want to do?
- What do the other characters do?
- Then what happens?
- How does the story end?
- How do each of the characters feel?

Organize thoughts and notes:
- Does the story follow a timeline?
- Do events and plans cause outcomes?
- Does it make sense?

Write some more:
- Add more details
- Use more descriptive words
- Include what characters thought and felt

Adapted from Harris, K. R., Graham, S., Mason, L. H., & Friedlander, B. (2008). *Powerful writing strategies for all students.* Baltimore, MD: Paul H. Brookes.

BOX 14-10   Essential Elements in Strategy Instruction

EXPOSITORY TEXT
- Controlling task difficulty by sequencing materials to maintain high levels of success
- Interactive, small group (3 to 10 students) instruction (ideal group size appears to be 6 students)
- Teaching students to generate their own questions as they proceed through material and asking guiding questions that stimulate thinking and invite interactive responses
- Modeling think-alouds to make the process as clear and explicit as possible, and having students think aloud as they complete tasks
- Providing extended practice and feedback from both adults and peers
- Explicit teaching of the steps in comprehending or producing exposition, using "think sheets," mnemonics, visual organizers, and other strategies
- Explicit teaching of text structures

Adapted from Baker, S., Gersten, R., & Graham, S. (2003). Teaching expressive writing to students with learning disabilities: Research-based applications and examples. *Journal of Learning Disabilities, 36,* 109-123.

Comprehending Expository Text   Scott and Balthazar (2010) emphasized that one of the things that make expository texts difficult is that, not only is their structure more complex than other discourse genres, but their syntax is, too. They identified three syntactic structures common to expository texts, but uncommon in other discourse:

1. Extensive premodification and/or postmodification of the head noun of the noun phrase (NP) (e.g., *The oldest known fossil skeleton of a human ancestor, a female specimen nicknamed Eve* has been found, scientists revealed yesterday.)

2. Multiclausal sentences with tightly orchestrated hierarchical structure so that there are several levels of subordination within a single sentence (e.g., The animals adapt by making sure that when there is food available they get and store as much of it as possible by having reservoirs for fat storage, such as the camel's hump.)

3. Information structured within and across sentences. Without intonation to highlight the new information in a sentence, expository texts often reserve the end of the sentence for new information. Adverbial subordinate clauses often precede the main clause they modify to allow for the placement of new information at the end (e.g., *When a camel drinks,* it takes in as much as 50 gallons of water at a time.). Ideas often carry across sentences as well (e.g., Once DNA's structure was known, scientists worked to learn how it provides a library of instructions that control the cells that make up our bodies and those of other creatures. They learned *this structure* is consistent across all living things.).

Scott and Balthazar argue that one technique to help students learn to understand these forms is *priming*. Priming involves modeling sentences with these kinds of forms immediately before asking students to summarize an expository passage. For example, if the SLP models summarizing an expository passage using relative clauses, and students are then asked to provide their own summary, Scott and Balthazar report that the students are likely to increase their rate of production of relative clauses. Priming is a technique that can be useful both in our direct work with struggling readers, and in our consulting with classroom teachers, as a concrete suggestion for improving students' ability both to understand and produce expository texts. Culatta, Blank, and Black (2010) provide additional guidance for using teacher talk to enhance comprehension of expository texts.

Vaughn et al. (2010) showed that, even when students use strategies successfully to support their understanding of narratives, they don't spontaneously carry these strategies over to expository texts. For this reason, it is important to teach strategies for comprehending expository texts explicitly. Katim and Harris (1997) suggested using a paraphrasing strategy. Entitled RAP, the strategy entails having students read one paragraph at a time. After each, the strategy instructs the students to:

*R*ead
*A*sk questions
*P*ut ideas in their own words

If students have difficulty, they are provided with an organizer like the one in Box 14-11. Katim and Harris demonstrated that the use of this strategy improved reading comprehension significantly for both typical students and those with LLD in an inclusive classroom setting.

BOX 14-11   Steps in the RAP Strategy

Step 1: Read a paragraph.
Step 2: Ask yourself, "What were the main idea and details of this paragraph?"
Places to look, if you're stumped:
    Look in the first sentence.
    Look for repetitions of the same word or words in the whole paragraph.
Questions to ask yourself, if you're stumped:
    What is the paragraph about?
    This paragraph is about _____.
    What does it tell me about _____?
    It tells me _____.
Step 3: Put the main idea and details into your own words.

Adapted from Katim, D., & Harris, S. (1997). Improving the reading comprehension of middle school students in inclusive classrooms. *Journal of Adolescent and Adult Literacy, 41,* 116-123.

A learning-strategies approach to exposition includes helping students identify the macrostructures typically used in this genre (Bakken & Whedon, 2002; Ukrainetz, 2007). Englert and Hiebert (1984) reported on a classification system proposed by Meyer (1975) that includes six basic expository text structures. Piccolo (1987) suggested using both verbal and visual organizers to help students identify these common expository structures. Westby (2005) and Ukrainetz (2007) gave some examples of verbal organizers that can be helpful. These appear in Table 14-6. The "comprehension cues" in Table 14-6 can be used as study guides, as students prepare to be tested on material with each type of structure. They are also questions students should be taught to consider to guide their processing of expository material and can serve as self-cues for writing expository texts with each of the structures they are learning. Westby et al. (2010) reported that identification of expository text structures and use of graphic organizers promoted growth in summarization skills, which, in turn, have been found to result in more accurate comprehension (Thiede and Anderson, 2003). Examples of visual organizers, following those suggested by Piccolo (1987) and others appear in Figure 14-12.

Identifying these structures is a useful learning strategy because it gives students a set of organizers they can bring to the task of processing new information in expository text formats. We need to remember, though, that these ideal formats are not followed in all expository writing, and much of what students read is not so easily classified into one macrostructure or another. The point of teaching this strategy is not to get bogged down in meticulous identification of text structure, but simply to give students some organizing tools that can help them make more sense of and retain more information from the large amount of reading they must do to complete the high school curriculum. Analysis of text structure can easily be combined with other learning strategies approaches, such as RT.

Bakken and Whedon (2002) suggest that, after helping students to identify the structure of a text, the clinician provide a note-taking form specific to that structure. Dickson, Simmons, and Kameenui (1995) used comparison/contrast texts as an example to demonstrate the use of notesheets, such as those in Figures 14-13 and 14-14, to aid students in comprehending expository structures. Figure 14-15 presents an example note-taking form that might be given to a selection identified as a Sequence structure. Each

TABLE 14-6   Verbal Organizers for Identifying Expository Text Structures

Text Structure	Function	Key Words	Comprehension Cues
Sequence	To tell what happened or how to do or make something	*First, next, then, second, third, following, finally, subsequently, from here to, before, after, eventually*	Give the steps . . . When did . . . happen?
Enumerative	To give a list of things related to a topic and describe each	*An example, for instance, another, such as, to illustrate*	Give examples . . . Describe and give examples of . . . Give a list of . . .
Cause-effect	To explain or give reasons why something happens or exists	*Because, since, reasons, then, therefore, for this reason, results or effects, consequently, so, in order to, thus, hence, depends on, influences, affects, is a function of, leads to, produces*	Explain . . . Predict . . . Why did . . . happen? How did . . . happen? Give the causes (reasons, effects, results, etc.) of . . .
Descriptive	To tell what something is	*Is called, is, can be defined, can be interpreted, is explained, refers to, is someone who, means*	Define . . . Describe . . . List . . . What is . . . Who is . . .
Problem or solution	To state a problem and offer solutions	*The problem is, a solution is, challenges facing, proposed ways of addressing*	Describe the problem of . . . What are some proposed solutions to . . . ?
Comparison or contrast	To show likenesses and differences	*Different or same, alike or disparate, similar or dissimilar, although, or, however, on the other hand, compared to, contrasted with, rather than, instead of, but, yet, still*	Compare and contrast . . . Discuss similarities and differences . . . How are . . . alike and different?

Adapted from Westby, C. (1998a). Communication refinement in school age and adolescence. In W. Haynes & B. Shulman (Eds.), *Communication development: Foundations, processes and clinical applications* (pp. 311-360). Baltimore, MD: Williams and Wilkins and Ukrainetz T. (2007). The many ways of exposition: A focus on discourse structure. In Ukrainetz T. (ed). *Contextualized language intervention*. (pp. 247-288). Greenville, SC: Thinking Publications.

structure is practiced on material that is controlled for difficulty until students can take notes on it effectively, then a new structure is introduced. After several structures have been learned in this way, students are encouraged to identify text structures from several possible alternatives, and choose the correct note-taking form for reading each one. Once students can accomplish this successfully on below-grade-level material, texts closer to grade level are gradually introduced.

DiCecco and Gleason (2002) presented an additional strategy-based approach to improving comprehension of expository text in students with LLD. Their approach, presented in an intensive format (daily 40-minute sessions for 4 weeks), included:

- vocabulary and preparatory set instruction before reading, including foregrounding and adding to background knowledge of the topic (Snyder, 2010)
- oral reading by students with literal and inferential questions asked by the teacher
- presentation of relationships among ideas within the passage using graphic organizers (GOs) like the ones in Figure 14-16 as a postreading activity
- having students write summaries of each text read

Students were taught the following strategy for writing summaries:

- List key points.
- Combine the points that go together.
- Number the points in a logical order.
- Reread the list in order.
- Write each numbered point into a paragraph.

DiCecco and Gleason were able to show that this combined approach resulted in more improvements in understanding of relational information by students with LLD than did approaches without the intensive, GO-supported instruction.

Another learning-strategy approach to improving students' comprehension of expository text material is the multipass or survey, question, read, recite, review (SQ3R) method (Just & Carpenter, 1987; Robinson, 1970; Schumaker et al., 1982), originally developed during World War II to teach GIs to acquire the specialized job skills needed for the war effort. This procedure can be combined with the identification of expository structure to help students get the most out of their reading of expository material. Here we would teach the students the five SQ3R steps outlined in Box 14-12. This approach can readily be combined with reciprocal teaching. To do this, we would first model the SQ3R method on an expository text passage, then give each student a turn to act as facilitator in guiding the rest of the group through the process. The ultimate goal, of course, is to get students to use the method independently on their classroom material.

Englert and Mariage (1991) developed a metacognitive approach to study skills that combines many of the techniques we've been discussing. Labeled the POSSE strategy, it is used to teach students a sequence of steps, similar to SQ3R, that can be used to maximize their acquisition and retention of curricular material. Students are taught to go through each of the following steps in the POSSE program, one for each letter in its acronym title:

Predict. Scan the text for headings, boldface print, pictures, and any other information they can use to invoke a preparatory set, activate background information, and generate prereading questions.
Organize. Brainstorm their prereading questions into a set of categories of information that the passage will contain. They might schematize this, using a semantic map or visual organizer.

Problem/Solution

Topic sentence: Students arriving at school late cause disruption.

Miss buses

Problem: Students arrive late

Oversleep

Stop for snacks

Solutions: Give incentives/punishments for being on time/late.

Deduct points from first period grade for lateness.

Send notes to parents for late arrival.

Strart "Early Birds Club" with special activities for early arrivals.

Cause/Effect

Topic sentence: Logging is endangering ancient forests.

Cause: Loss of old growth trees.

Effect: Destroys habitats for threatened species.

Lumber is an important building product.

Logging provides jobs.

Animals can't find food or build homes.

Some species will become extinct.

Clincher: The interests of loggers need to be balanced with health of forests.

Sequence

Topic sentence: To make an easy "homemade" treat, try instant pudding.

You'll need a box of mix, cold milk, and a mixing bowl and spoon.

Mix vigorously.

Chill in refrigerator for one hour.

Combine ingredients in bowl.

Pour into individual cups.

Clincher: This makes a simple dessert that's a real family pleaser.

Enumerative*

Topic sentence: William Shakespeare wrote three kinds of plays and a form of poetry called sonnets.

4. Sonnets
It had 14 lines.
Every other one rhymed.
He became a poet when he couldn't get a job as a playwright.

3. Histories
Stories about the lives and adventures of England's kings and queens.

2. Tragedy
Hero is defeated by the evil force.

1. Comedy
Hero always won the battle over evil.

Clincher: Shakespeare wrote 38 plays and numerous sonnets.

Descriptive*

Topic sentence: The prairie dog is an American ground squirrel.

They are different from other ground squirrels.
They have small cheek pouches.
They hibernate.

How it got its name.
It sounded like it barked.

Prairie dogs

One squirrel stays on mound.
This squirrel gives warning.
Others hide until the danger is over.

The prairie dog hole.
6 yards from main nest.
Topped by mound of soil.
One exit for each animal.
Each one houses 15 animals.

Clincher: The prairie dog is an interesting kind of squirrel.

Comparison/Contrast

Topic sentence: Soccer and hockey are becoming popular with Americans.

Similarities

Differences

Neither is as big here as baseball, football, or basketball.

Both are fast, tough, contact sports.

Both are popular in Canada.

Hockey is played in winter on ice; soccer in spring and fall.

Hockey uses a stick and puck; soccer a ball that's kicked.

Clincher: These games, though different, are fun to watch and to play.

FIGURE 14-12   Visual organizers for expository text structures.   (Adapted from Calfee, R., & Chambliss, M. [1988]. Beyond decoding: Pictures of expository prose. *Annals of Dyslexia, 38,* 243-257; Meyer, B. [1975]. *The organization of prose and its effects on memory.* Amsterdam: North Holland; Nelson, N. [1993]. *Child language disorders in context: Infancy through adolescence.* Columbus, OH: Merrill; Pehrsson, R., & Denner, P. [1988]. Semantic organizers: Implications for reading and writing. *Topics in Language Disorders, 8,* 24-37; Piccolo, J. [1987]. Expository text structure: Teaching and learning strategies. *The Reading Teacher, 40,* 838-847; Richgels, D., McGee, L., Lomax, R., & Sheard, C. [1987]. Awareness of four text structures: Effects on recall of expository text. *Reading Research Quarterly, 22,* 177-196; and Westby, C. [1991]. *Steps to developing and achieving language-based curriculum in the classroom.* Rockville, MD: American Speech-Language and Hearing Association.)

*Reprinted with permission from Piccolo, 1987.

Comparison/Contrast Notesheet

Key words

-er words
different
but
like
similarly
in contrast

Questions to ask

1. What is being compared?
2. What features are being compared?
3. How are they alike?
4. How are they different?

Theme:_____

Use **A** if features are alike and **D** if features are different. Use **?** if you cannot tell.

Feature	A	Is alike **a** or is different **d**	B

FIGURE 14-13   Note sheet for identifying topics and features in comparison/contrast expository texts.   (Adapted from Dickson, S., Simmons, D., & Kameenui, E. [1995]. Instruction in expository text: A focus on compare/contrast structure. *Learning Disabilities Forum, 20,* 8-15.)

Topic:
_____

Similarities
_____
_____
_____

Differences
_____
_____
_____

FIGURE 14-14   Comparison/contrast organization sheet. (Adapted from Dickson, S., Simmons, D., & Kameenui, E. [1995]. Instruction in expository text: A focus on compare/contrast structure. *Learning Disabilities Forum, 20,* 8-15.)

Sequence

General topic: _____

Step	Difference between this and previous step
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

FIGURE 14-15   Sample note-taking form for sequence expository text structure.   (Adapted from Bakken, J., & Whedon, D. [2002]. Teaching text structure to improve reading comprehension. *Intervention in School and Clinic, 37,* 229-233.)

Search. Read the passage with their questions and organizer in mind. They look for the information they highlighted in their prereading questions.

Summarize. Give an oral summary of the passage, stating the main idea, supporting ideas, and most salient details. Then ask additional questions.

Evaluate. Identify gaps in understanding. Compare what was learned with what was predicted, clarify misunderstandings they encountered, and predict the topic of the next section of the passage.

Vaughn and Edmonds (2006) advocate collaborative strategic reading (CSR) for older struggling readers. This approach emphasizes the use of cooperative learning groups to assist students in comprehending texts and lectures. The strategies practiced in this approach focus on comprehension monitoring.

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BOX 14-12   Five Steps in the SQ3R Learning Strategy

Survey: Skim the table of contents, headings, boldface print, illustrations, summary sections, and so on to glean the passage's main idea and general organization. Get a preparatory set on the material.
Question: Ask a set of preparatory questions based on the survey of the material to review prior knowledge and set up some purposes for reading.
Read: Read one section of the material and try to answer the preparatory questions developed for that section.
Recite: Give answers to the questions, take notes of main points and details associated with each, and give examples of important ideas contained in the text.
Review: Go over the main points, with the help of the notes. List major subpoints and give details for each. Rehearse to try to remember the main points and subpoints.

Adapted from Just, M., & Carpenter, P. (1987). *The psychology of reading and language comprehension.* Boston: Allyn and Bacon; Robinson, F. (1970). *Effective study.* New York: Harper and Row; and Schumaker, J., Deshler, D., Denton, P., Alley, G., Clark, F., & Nolan, M. (1982). Multipass: A learning strategy for improving reading comprehension. *Learning Disability Quarterly, 5,* 295-304.

Students are given explicit instruction in four strategies that comprise CSR:

Preview: recall what you know about the topic of the text; predict what it will be about
Click and clunk: monitor comprehension during reading or listening by recognizing when you are "clicking" along, understanding what you read, and when you come to hard words and ideas (clunk)
Get the gist: restate the most important idea in the paragraph or passage
Wrap-up: summarize what you've learned, and ask questions like ones a teacher may ask on a test
    Ask an easy question that can be found in the text answered in one or two words
    Ask a harder question that requires putting information from different parts of the text together in 2 to 3 sentences
    Ask a really hard question, one that requires getting information from what you read and other things you have learned

Vaughn and Edmonds suggest assigning roles within the cooperative learning group, such as:

Leader: guides others through previewing, assists with wrap-up, identifies "clunks"
Clunk Expert: makes sure students write down their clunks, then helps others resolves them
Gist Expert: helps formulate the main idea, makes sure gist is written down
Note-Taker: makes sure all information in recorded and assignment is completed

Box 14-13 provides a sample "learning log" that students might use to record their responses in a CSR activity. Vaughn and Edmonds stress that graphic organizers can be combined with this, as with the other strategies we've discussed, to help students organize material they need to learn. They suggest that "concept maps" can be helpful in improving students' understanding of difficult new ideas encountered in expository text. An example concept map appears in Figure 14-17.

But Horn (2010) as well as Snyder and Caccamise (2010) warn that it will be important to combine strategy instruction with some degree of explicit teaching in domains of content needed to understand expository material. They advocate supplementing strategy instruction with content-oriented activities such as:

Encouraging active engagement with texts by having students review notes, rewrite content, and teach it to others
Encouraging retrieval practice through summarizing and re-telling
Explicitly teaching words from the Academic Word List (AWL), a collection of word families found to occur frequently across different curricular texts (Coxhead, 2000; www.victoria.ac.nz/lals/resources/academicwordlist/default.aspx)
Providing alternative sources of similar content such as newspapers, magazines, movies, videos, podcasts, and other internet resources to strengthen students' knowledge about the topic of the exposition, introducing them before, during, or after reading
Guiding students not only to identify text structures, but to develop their own graphic organizers to summarize and review expository content. Using these self-created organizers as a basis for speaking and writing about the text is especially helpful

BOX 14-13 Learning Log for CSR Groups

Group Members' Names: _____ Date: _____
Text or Page #s Read: _____

PREVIEW BEFORE READING:
What do I already know about this topic?
What do I think I will learn?

CLUNKS AND GIST DURING READING:
What are the clunks?
What is the gist?

WRAP-UP AFTER READING:
What is my easy question?
What is my hard question?
What is my really hard question?

Adapted from Vaughn, S. & Edmonds, S. (2006). Reading comprehension for older readers. *Intervention in School and Clinic,41,* 131-137.

FIGURE 14-17 Example concept map. (Adapted from Vaughn, S. & Edmonds, S. [2006]. Reading comprehension for older readers. *Intervention in School and Clinic, 41,* 131-137.)

And we shouldn't forget the simple things. Hall-Kenyon and Black (2010) remind us of the importance of calling students' attention to formats and visuals within expository texts, including headings, subheadings, boldface type, text boxes and side bars, diagrams, charts, and maps. Horn (2010) suggests guiding students on "walk throughs" of texts before reading, looking for these devices and discussing how they will support understanding the material.

Writing Expository Text. Green (2009) summarized the writing difficulties common to students with LLD. They include struggles with the motor act of writing, writing that is short and sparse, mechanical errors in spelling and punctuation, more limited complex syntax and vocabulary, less cohesion, less sensitivity to audience, less adherence to genre, and lower overall quality. Schumaker and Deshler (2009) reviewed literature showing that teens with LLD were capable of learning and using strategies for complex writing skills, applying these skills to assignments in general education classes, and of being successful in these classes, given adequate opportunities for practice and support. Moreover, Strum and Rankin-Erikson (2002) demonstrated that the use of visual supports and graphic organizers resulted in significant increases in both length and overall quality of expository writing of students with LLD. Graham and Perin (2007) identified a set of interventions that have been shown to be effective in improving writing for adolescents. These are listed in Box 14-14, and we'll

talk in more detail about these interventions in the following sections. It is important to note that both Graham and Perin, as well as Mason and Graham (2008), report that strategy instruction was the most effective method for use with struggling writers, although they needed more instruction and practice than typical students to master it. These findings suggest that SLPs have a large role to play in improving writing for students with LLD by providing explicit instruction and extended, mediated practice in the use of interventions like those in Box 14-14, and giving students scaffolded opportunities to apply the strategies to a range of curriculum-based assignments with controlled levels of difficulty. Again, we as SLPs want to focus on strategy instruction and practice, rather than on tutoring writing for a particular topic or assignment.

Since Graham and Perin identified explicit strategy instruction as the most effective intervention for struggling adolescent writers, let's look first at some strategies aimed at improving the writing process.

Strategies for Planning Writing. We talked earlier about the basic steps in the writing process: planning, composition, and revision. Nelson (2010) and Wong (2000) suggest teaching the POWER strategy: plan, organize, write, edit, revise. For students with LLD the first phase—planning and organizing—is usually a problem. Baker, Gersten, and Graham (2003) point out that a major difficulty for students with LLD is generating ideas for writing. They tend to have a relatively sparse knowledge base to begin with and even then fail to access all their knowledge about a topic when writing. They may forget ideas they do generate because of interference from poorly developed spelling skills and laborious handwriting, and they terminate the planning process too soon, going on to composition before they develop an adequate plan for their writing. The result is written products that are sparse and unelaborated.

As we have said before, Kamhi (2009), Nippold (2010), and Snyder (2010) argue that increasing knowledge is an essential element of improving both reading comprehension and written

BOX 14-14 Interventions Found in Graham and Perin (2007) Meta-Analysis to Be Effective in Improving Writing in Adolescents

- Teach strategies explicitly for planning, composing, revising, and editing.
- During planning, identify purpose, genre, audience, and characteristics (e.g., addresses both sides of an argument for persuasive genre) of written product.
- Use "inquiry" in prewriting: engage students in developing ideas, such as reading topic related material, or comparing and contrasting examples or cases.
- Teach prewriting strategies such as prompting planning before writing, organizing ideas with visual organizers such as semantic webs.
- Provide writers with models of each type of writing, highlighting text structures for narrative or various kinds of expository writing; have students analyze and imitate models.
- Encourage use of word processing as a primary tool for writing.
- Use peer collaborative groups for planning, drafting, and revising.
- Teach complex-sentence production; sentence combining is an especially effective tool.
- Teach summarizing.

From Graham, S., and Perin, D. (2007). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology, 99,* 445-476.

expression. Graham and Perin (2007) advocated using an "inquiry" strategy to address this problem. This involves students' using the writing planning process to gain information about the topic they are to write about. That is, we teach students that expository writing is not just putting words on paper, but is, in fact, gathering information and *then* organizing it to communicate to others. We can help students identify sources of new information, including library books, internet resources, interviewing knowledgeable people, and making observations to gather facts about the topic. This information can become the content of the other planning activities, such as listing topics and related ideas, as well as making outlines, graphic organizers, semantic webs and text structure diagrams.

Baker et al. (2003) found that teaching steps in the planning process explicitly, with think-alouds and encouragement for students to engage in extended dialogue with the teacher and peers during the planning process was effective in improving the writing of students with LLD. Graham and Harris (1999) propose a three-step planning strategy:

1. *Think:* Who will read this?
   Why am I writing it?
   What do I know about this topic?
   What do I want to say?
2. *Plan* what to say, using brainstorming with teacher and peers and an organizing think-sheet (Fig. 14-17 and 14-18).
3. *Write,* then **say more.**

Figure 14-18 provides a brainstorming and organizing think-sheet students can use to aid in the second of these steps, with the example of "Snowboarding" as the topic for writing. After students generate the basic ideas for the piece (the ovals surrounding the topic oval), they indicate several supplementary ideas for each basic idea on the lines beside its oval. They then number the ovals in the order in which they will appear in the composition. An alternative approach is simply to list all the ideas that come to mind about a topic, then use highlighters to color code ideas that should go together in the same paragraph (all the ideas about the dangers of snowboarding can be highlighted in blue; those about the different ways to use the board can be highlighted in yellow, etc.). When one of these processes is completed, students try to add additional ideas (e.g., to fill oval number 5). Figure 14-19 provides another example.

Information we gained from our assessment of the writing process (see Chapter 13) can guide in developing this part of the intervention plan. The important point to remember is that encouraging students to make fuller use of the planning phase of writing is a crucial step in producing better written products. And, as Baker et al. (2003) pointed out, the main function of think-sheets is to get students to think out loud, and provide opportunities for extended dialogue and feedback from teachers and peers. In other words, think-sheets and other visual organizers are really there to give students something to talk about with others as they plan their writing. Nelson, Van Meter, Chamberlain, and Bahr (2001) remind us that an essential role the SLP can play is to encourage students to use oral language in the planning phase. We can, in collaborative settings or communication classroom settings, work with groups of students containing those with LLD to get them to talk through

Organizing My Ideas for Writing

falling off

2. Dangers

1. Fun

speed

Topic: Snowboarding

3. Different things you can do on a board

4. Brands

5.

FIGURE 14-18   Sample brainstorming and organization think-sheet.   (Adapted from Hallenbeck, M. [1996]. The cognitive strategy in writing: Welcome relief for adolescents with learning disabilities. *Learning Disabilities Research and Practice, 11,* 107-119.)

Name _____

Topic: Women in the Civil War

Who: Who am I writing for? my history teacher and the others in my history class.

Why: Why am I writing? to show that it wasn't only the soldiers who took part in the

     Civil War.

What: What do I know? It was hard to get clothes and things in the South because all

the factories were in the North.

_____

_____

_____

How: How can I group my ideas?

Nursing	Getting food

_____ _____

_____ _____

_____ _____

Making clothes	Writing letters

_____ _____

_____ _____

_____ _____

How will I organize my writing?

_____ Sequence   _____ Comparison/contrast   _____ Enumerative

_____ Cause/effect   _____ Description   _____ Problem/solution

FIGURE 14-19   Example planning sheet for expository writing.

their planning activities, modeling and eliciting think-alouds from students before they transfer their thoughts to think-sheets and other visual forms. Mason and Graham (2008) report that teacher modeling of the planning process is one of the most effective techniques for improving student writing.

Kerrigan (1974) developed another structured method for teaching students the planning phase in writing. The six steps in this procedure are given in Box 14-15. The steps can be translated into a think-aloud protocol. In using these protocols for intervention, though, we would give students the script for the protocol, based on the steps in Box 14-15, rather than leaving them on their own to develop it. In this way we would be guiding the students' thinking and providing them with a base from which to expand skills in the writing process. And we also want to remember the importance of initially controlling the difficulty of the task so that students experience success that makes them willing to persist, and of providing guided practice, feedback, and interactive questions throughout the activity.

Wiig (1984) presented an additional strategy for getting students into the composition process. She had students first free-associate to a topic, listing words or drawing a picture. Next, the students generated a list of key words about the topic that describe its interesting, unexpected aspects. These key words were then built into simple sentences. The sentences were sequenced to reflect the structure of the topic (temporal, causal, and so on). The simple sentences were then elaborated with missing details, adverbs, and modifier phrases. They were finally combined into complex sentences. This process can be carried out on paper or using a word processor with a separate printout for each step in the process. Again, once students have been guided through these steps several times, they are encouraged to guide themselves and to use similar strategies in independent writing activities.

Using Text Structures for Planning Writing. An additional strategy on Graham and Perin's list of effective interventions for planning writing is the use of text structures and models. The expository text structures we discussed earlier are good tools for organizing students' production of written reports, research papers, and other content-based writing assignments. After going through each of the text structures, using Piccolo's procedures (outlined later) and practicing with verbal and visual organizers, it might be

useful to have students apply the structures to their own writing. We might take a homework assignment, such as writing a report on a particular country, and write it two different ways: once using, say, an enumerative structure, and once using, perhaps, a descriptive format. Exercises like this can help students develop more flexibility and efficiency in their written communication.

Piccolo suggested starting with sequence structures first, because they are most similar to the time-based organization in narratives, and following the order given in Table 14-6 when introducing expository types to students. She recommended the following a series of steps for teaching students to recognize each of the expository macrostructures and provided detailed lesson plans for accomplishing each of these steps:

1. Define and label the structure.
2. Have students examine model paragraphs, using verbal and visual organizers to find the critical attributes of each.
3. Write a group paragraph modeling the original paragraph using a visual organizer (see Figure 14-12).
4. Have students compose paragraphs individually, using the visual organizer.
5. Look for the pattern in paragraphs from students' texts.

We can combine the use of text structures with models of good writing, as well. If, for example, we are working with a communication class on writing expository texts, we might have them read the following paragraph taken from Lewis's journal of the Lewis and Clark expedition, to use as a model of a problem/solution text structure:

> On June second they arrived at a major fork in the river, in north-central Montana, an estimated 465 river miles upstream from the mouth of the Yellowstone. It shouldn't have been there. No Indian informant had mentioned it. There was not even a hint of it from anybody. Yet it posed the most significant geographical question of the entire Expedition. Which of these rivers was the Missouri? The issue was fraught with danger. They needed to reach the Rockies, find the Shoshoni Indians, get some horses, portage to the head of the Columbia, and reach the Pacific before winter closed in. To choose the wrong route would consume twice the time it would take to correct the mistake and would . . . not only lose them the whole of the present travel season, but "would probably so dishearten the party that it might defeat the expedition altogether."

After reading, we can have students use the paragraph as a model to write about a situation in which they had to make a difficult choice, then apply the same model to writing about a difficult choice faced by a character in a history text from the curriculum.

Of course, following the steps in procedures like these does not lead to the production of great literature. Eventually students have to go beyond these simplistic protocols to produce truly original writing. The advantage of simple systems like these is that they help students take that first step on the long journey toward mature, independent writing. It gets them thinking, planning, and writing, and as Vaughn et al. (2010) note, the best way to improve student writing is to get students to write!

Strategies for Composition. Once students have been guided to plan writing, we can attend to the next phase of writing, composition. Here students must turn their raw ideas into literate statements and organize the ideas into a coherent composition. Wong, Butler, Ficzere, and Kuperis (1996) suggest using "prompt cards" to aid students in turning ideas into sentences. These cards remind

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BOX 14-15   Basic Steps in Beginning the Process of Composition

Step 1: Write a short, simple sentence that states one idea.
Step 2: Write three sentences about the sentence in Step 1. Be sure they relate to the meaning of the entire sentence, not just one part of it. Each of these will be the topic sentence for a new paragraph.
Step 3: Write four or five sentences about each of the three topic sentences in Step 2.
Step 4: Make the sentences in Step 3 as detailed as possible. Try to say a lot about each idea, instead of talking about a lot of different ideas.
Step 5: Start a new paragraph with each topic sentence in Step 2. Follow each of these topic sentences with the detail sentences you wrote in Steps 3 and 4. Make sure that each of the sentences in each paragraph relates to the topic sentence.
Step 6: Make sure each sentence in the composition is related to the sentence that comes before it. Be sure each paragraph is clearly related to the paragraph that comes before it.

Adapted from Kerrigan, W. (1974). *Writing to the point: Six basic steps.* New York: Harcourt, Brace, Jovanovich.

students of the verbal organizers used in each type of expository writing. Clinicians and students can work together to design prompt cards for each expository category, using the information in Table 14-6 as a guide. A prompt card for cause/effect writing, adapted from Wong (2000) is presented in Figure 14-20. When a student decides to use the cause/effect structure for sentence generation, the card can be displayed and the student encouraged to use it to help produce sentences appropriate for that form.

Encouraging Word Processing. As Graham and Perin (2007) showed, removing handwriting as an obstacle to composition can improve students' writing. Cochran and Bull (1991) and Nelson et al. (2001) provided ideas for using word processors to enhance the writing process. They suggested that the *Logowriter* software program (Logowriter, 1990) is particularly suited to working with students at advanced language levels. It allows students to create both text and graphics, which can be linked together. These kinds of productions make ideal "newspapers" and "magazines" for publishing student work. Westby and Clauser (1999) suggest *The Amazing Writing Machine* (Broderbund, 1995) and the *Ultimate Writing and Creativity Center* (The Learning Co., 1996), as well. Additional resources include *Secret Writer's Society* (Learning Upgrade LLC, 1999), *Storybook Weaver Deluxe* (The Learning Company, 2004), *Write On! Plus, Author's Toolkit and Literature Series I* (Sunburst, 1997), *Diary Maker* (Tom Snyder Productions, 1994), *The Writer's Companion* (Visions Technology in Education, 2003), and *Composition* (Homeworkhelp.com, 2005). In addition, internet resources allow students to produce materials that combine text, graphics, video, and audio information. These applications can allow students to develop exciting materials that incorporate their writing. Landis (2002), MacArthur (2000), and Strum and Koppenhaver (2000) provide additional suggestions for using assistive computer technology with students with disabilities.

Strategies for Editing and Revising. The final step in a writing intervention program is to focus students' attention on the quality of their written products. This attention takes place in the context of *editing* and *revising.* It's a good policy to keep the processes of generating and editing writing distinct. We want students to feel relatively uninhibited by worries about errors during the planning and process stages of writing, so that ideas can flow freely. Once the basic composition has been generated, though, it is legitimate and necessary to edit and revise for clarity, organization, and mechanics. A learning-strategies approach to this aspect of writing requires that we get students to monitor and correct their own written products, rather than correcting them ourselves.

Gerber (1993) suggested that we encourage students to start the editing process by reading their composition aloud. This slows down the reading, allowing more time to detect errors and for the student to hear how the product might sound to others. Wiig (1984) suggested that the first passes through the composition in the editing process should focus on mechanics: spelling, punctuation, capitalization, and paragraph segmentation. This gives us opportunities to supply basic-skill instruction in these areas, if needed, and to emphasize to students the importance of editing their own work for these elements. Once basic skills in writing mechanics are adequate, we can focus on strategies, such as computer-assisted spelling and grammar checkers in word processing programs as well as careful proofreading, to maximize the accuracy of error identification. It is useful for most students to develop a strategy of making several passes through the composition, each time looking for just one element: spelling, capitalization, or punctuation. Mason and Graham (2008) report that teaching students with LLD the COPS strategy (*Capitalization, Organization, Punctuation, Spelling*), which is summarized in Box 14-16, was effective in improving editing of written products. They also showed that teaching an InSPECT strategy for editing word processed writing, which also appears in Box 14-16, was effective.

Graham and Harris (1999) cautioned, however, that too many students with LLD think editing means *only* correcting mechanical errors. Students also need to learn that revising is essential in writing. Revising differs from editing in that its aim is to improve the overall quality of the composition rather than just correct mistakes. Graham and Harris (1999) described a strategy for revising that includes a series of self-directed prompts and reported that its use led to a significant increase in meaning-based revisions and overall writing quality in students with LLD. The strategy is summarized in Box 14-17.

Introductory phrases

This paper explains . . .
We will discuss why . . .
The cause of. . .

Explanatory phrases

The reasons for . . .
For this reason . . .
As a result of. . .
In order to . . .

Concluding phrases

To sum up the reasons for . . .
In conclusion, the explanation for _____ is . . .
As we have seen, the cause of_____ can be considered . . .

FIGURE 14-20 Prompt card for writing a cause/effect expository structure. (Adapted from Wong, B. [2000]. Writing strategies instruction for expository essays for adolescents with and without learning disabilities. *Topics in Language Disorders, 20[4],* 29-44.)

BOX 14-16 Effective Strategies for Improving Editing of Written Products for Students with LLD

COPS

C-Have I *capitalized* the first word in sentences and all the proper nouns?
O-Have I made any errors in *overall* appearance such as margins, messiness, or spacing errors?
P-Have I used end *punctuation,* commas, and semicolons correctly?
S- Are the words *spelled* right; can I sound them out, or should I use a dictionary?

InSPECT FOR WORD PROCESSING

In your document,
Start the spell checker.
Pick the correct alternative.
Eliminate unrecongnizable words.
Correct additional errors.

From Mason, L.H., and Graham, S. (2008). Writing instruction for adolescents with learning disabilities: Programs of intervention research. *Learning Disabilities Research & Practice, 23,* 103-112.

BOX 14-17 Self- and Peer Prompts for Revising Compositions of Students with LLD at the Advanced Language Stage

SELF-PROMPTS

Read your composition.
Find the sentence that gives the main idea. Is it clear?
Add two sentences to make it clearer or stronger.
SCAN each sentence:
- Does it make *Sense?*
- Is it *Connected* to the rest of the composition?
- Can you *Add* more?
- *Note* errors.

Make necessary changes on your computer or on your paper with a red marker.
Reread the composition. Make any final changes.
Recopy or print out revised version.

PEER PROMPTS

(Two peers provide suggestions to each other on how to revise their respective writings.)
Listen as your partner reads the piece out loud and read along.
Tell what your partner's paper is about and what you liked best.
Reread your partner's paper and make notes:
- Is everything clear?
- Can any details be added?

Discuss your suggestions with your partner.
Revise your own paper.
Exchange papers and check for errors:
- Capitalization
- Punctuation
- Spelling

Adapted from Graham, S., & Harris, K. (1999). Assessment and intervention in overcoming writing difficulties: An illustration from the self-regulated strategy development model. *Language, Speech, and Hearing Services in Schools, 30,* 255-264.

Peer Collaboration. Graham and Perin (2007) emphasized the efficacy of involving peers in collaborative work on writing. Box 14-17 also gives a strategy for peer revision, in which students work in pairs to provide prompts to each other. Westby and Clauser (2005) suggested using a form like the one in Table 14-7 to aid in peer revision activities. The form helps peers provide specific comments, rather than vague generalities, like "This is a good paper," on their fellow students' writing. Baker et al. (2003) suggest an additional possibility for peer collaboration at the revision stage: cognitive apprenticeship (CA). CA involves pairing the student with a peer who is a more effective writer as a "mentor" and having the mentor think-aloud as she or he goes through the revision process, talking through strategies like those in Box 14-17, discussing and questioning the apprentice and demonstrating the ways in which the writing can be improved by changing words, sentences, and organization. This procedure would follow editing for mechanical errors in order to allow the student to focus on the improvement of tone, meaning, and organization in the writing. But whether students work individually or with peers, those with LLD need to be given practice in focusing on the revision process not only to correct errors but also to make meaning-related changes that enhance the organization and quality of their writing.

Self- and Peer Assessment. We also can encourage students to use some of our assessment instruments for self-assessment, as well as collaborative assessment with peers. Students can be given, for example, the holistic evaluation criteria listed in Table 13-10. The clinician can give guided practice in applying the criteria to work the students are producing for some of their academic classes. They can then be encouraged to use these criteria in revising writing, attempting to make changes that would result in a higher score. They can be encouraged to focus on one criterion at a time, such as providing sufficient information, giving clear cohesion, or using a literate language tone. Again, they can be taught to make several passes through the writing, each time attending to just one of the criteria and making changes that improve that one element. After several passes, they can be asked to use the criteria to reevaluate their writing sample and see how much they have improved it. As Baker et al. (2003) showed, teaching self-monitoring is an important aspect of improving writing for secondary students with LLD.

The goals of a learning-strategies approach to expository writing instruction for students with LLD are twofold. First, we want to help students to get more fluent in the planning process of writing and to learn to devote some time to planning and information gathering before producing the actual product. Second, we want to impress on them the importance of editing and revising and to help them see these steps as essential in the production of a finished writing product. By giving students some self-prompting and cueing strategies for achieving these steps in the writing process, and by providing them with extensive practice at controlled levels of difficulty using models and peer collaboration, we are providing the tools they need to develop into independent, literate writers. And the research done on writing instruction for students with both typical achievement and LLD assures us that these strategies are

TABLE 14-7 Guidelines for Peer Comments on Expository Writing

Guideline: When You Work with a Partner to Revise Your Writing, Ask Yourself, Did I:	Example
Praise specific aspects of the writing?	*You gave a vivid description of rainforests in the first paragraph.*
Ask questions that guide thinking?	*You said the rainforest is endangered. Why? Give three reasons.*
Make comments that link to text?	*You said tigers are disappearing from the rainforest because of hunting. That surprised me; isn't hunting illegal? Are there other reasons?*
Offer to think together about how to improve the essay.	*I got confused in the second paragraph when you talked about acid rain. Maybe we can figure out a way to make that clearer. What did you mean?*

Adapted from Westby, C., & Clauser, P. (2005.) The right stuff for writing: Assessing and facilitating written language. In H. Catts & A. Kahmi (Eds.) *Language and reading disabilities* (2nd ed.). (pp. 274-340). Boston: Allyn & Bacon.

effective, although students with LLD will need more help and more practice than their typically achieving peers.

Persuasive Text

We talked earlier about the prevalence of persuasive texts in high stakes tests at the secondary level. Once basic skill instruction has been used to familiarize students with the functions and structures of persuasive writing, we can use the same sorts of strategies for helping them learn to evaluate and improve their own persuasive writing as we do for other genres. These strategies include graphic organizers, think-aloud procedures, "think-sheets," and so on, geared toward persuasive writing. Figure 14-21 provides an example visual organizer for a persuasive essay. Ralph, Andrews-Weckerly, and Lewis (2006) reported that giving students not just a goal for a persuasive text, but an elaborated set of goals—such as stating a viewpoint on the question, stating reasons for the view, elaborating the reasons, stating the alternative view, giving reasons for an alternative, and giving rebuttals—resulted in significant improvements in the persuasive writing of secondary students with LLD. This strategy of providing a set of guidelines for elaborating arguments in persuasive writing is an additional intervention for improving our students' writing in this high stakes area.

The Metas

Learning-strategy approaches are ideally suited to working on "meta" skills with students at the advanced language level. Since "meta" skills require awareness and conscious attention, they mesh well with learning-strategies approaches that teach students to use planning and self-evaluation. We've already talked about a variety of metalinguistic strategies for the areas of semantics, syntax, and pragmatics. Let's look at the other two areas of "meta" skills we've been discussing, self-regulation and metacognition, and examine some learning-strategies approaches for each.

Self-Regulation

Students continually need to evaluate their own performance in order to decide when to invoke the strategies they have. This aspect of metacognition is often called self-regulation, or executive

function. Hughes, Turkstra, and Wulfeck (2009) evaluated executive function in adolescents with LLD and showed that many of them have impairments in executive functions that affect their performance in activities of daily living and academic achievement. Duckworth and Seligman (2005) report that executive function in adolescence predicts academic success better than IQ, so it's clearly an important skill to cultivate. But here's the good news: Blakemore and Choudhury (2006) reviewed research on adolescent brain development that suggests adolescence represents a time of significant brain reorganization, particularly in the frontal lobe, where executive processes take place. As a result, the brain may be especially sensitive to instruction and practice in executive function, and metacognition at this point in development. That means that adolescents may be especially "teachable" in executive and metacognitive functions during their secondary school years, so that effort spent on these skills during adolescence can have an especially large "pay-off."

Self-Regulated Comprehension

One aspect of self-regulation involves students' ability to *monitor their comprehension* of both written and spoken material. When working on comprehension monitoring, the strategies we teach students address both detection of gaps in their understanding and procedures for doing something to fill in those gaps. Bunce (1991) suggested using a barrier-game format to develop comprehension-monitoring skill for spoken material. Here students take turns being speaker and listener, giving and following a set of directions for, for example, drawing a map from a pattern in the book for a geography assignment. The directions given by each speaker are audiorecorded. After the map has been drawn and the pattern and drawn map compared, students listen together to the audio. They identify areas in the instructions that were unclear or misleading and discuss how the directions could have been given differently to result in a more accurate product. Students can then generate a list of "pointers" for giving clear directions. They can try the exercise again, this time stopping each other at points at which the speaker has failed to follow the "pointers" developed by the partners. Students also can be encouraged to ask specific questions of themselves as they hear each step of the directions. These questions are designed both to detect errors in understanding and to provide a strategy for correcting the problem. Questions such as the following might be used:

- Did I "get" it? What did the instruction tell me to do?
- Can I follow the direction? Do I have everything I need?
- Do I need to ask (student) to repeat the instruction? Part of it?
- Do I need to ask what a word means?
- Do I need to check that I got it right? Shall I repeat what I heard and ask if it's correct?

After some work of this kind in the barrier-game setting, students can be encouraged to apply their strategies to classroom lectures. Here video- or audiorecorded lectures can be used. Students can be required to listen to a portion of the lecture, take notes, then examine their notes for gaps in their understanding. In the lecture format, unlike in the barrier game, it may not always be acceptable to stop the lecturer to ask for clarification, repetition, or additional background information when a comprehension gap arises. For this reason, students need to learn to give themselves signals in their

Visual organizer for persuasive essay in response to prompt: 'In some schools, officials have the right to search students' personal property (lockers, backpacks, purses) without permission. Decide whether you are **for** or **against** officials having this right. Write an essay for the school newspaper to convince other students of your position. Be sure to include supporting details.

Thesis: I think that school officials should/should not have the right to search students' personal property without their permission.

Argument: First,
Warrant:
Data:

Argument: Second,
Warrant:
Data:

Argument: Third,
Warrant:
Data:

Restatement of thesis: In summary,

FIGURE 14-21 Visual organizer for persuasive essay.

notes that a problem occurred. A question mark can be placed in the margin, for example, whenever the student detects a gap in comprehension. Students then need to develop strategies to clarify these points. They can be asked to brainstorm with the SLP some ways to fill in the gaps. They might, for example, ask a friend after class, stay after class to ask the teacher, look up an unknown word in a dictionary or internet search engine, check a detail on a map, or reread the relevant passage in the textbook.

The goal of the development of these comprehension-monitoring strategies is to get students to recognize when they fail to understand; to have some options for repairing the difficulty; and to place the responsibility for monitoring comprehension, as well as the ability to do something about it, in their hands.

Strategies for *monitoring reading comprehension* have the same goals. Here we want to encourage students to use a strategy, such as SQ3R, focusing particularly on the development of a preparatory set of questions. Students would use the questions to guide their reading and note any questions they were unable to answer because of difficulties with comprehension. Self-questioning, using queries like the ones we looked at, is also helpful for getting students to recognize gaps in their understanding. Students can be encouraged to place a small "sticky" note in the margin of the text to indicate a passage, word, or phrase that they did not understand. They might write a quick note to themselves on the "sticky" to indicate what else they need to know, or what preparatory question the passage could answer if they were able to decipher it. Again, we can encourage students to brainstorm a list of ways to fill in their comprehension gaps. Asking classmates or parents (during homework time), getting to class a minute early to ask the teacher, and checking a dictionary or the internet might be ways to start this list. In addition, Thiede and Anderson (2003) showed that asking students to summarize what they read resulted in increased accuracy in comprehension monitoring. Having students use a summarization strategy, then, combined with explicit instructions to ask themselves how well they summarized and how they could improve their summaries, can also increase comprehension monitoring.

It is important to note that comprehension monitoring of written material can only take place in the context of understanding most of the material in the text. If students are reading significantly below grade level, they may not be able to monitor reading comprehension adequately because the gaps are too frequent and too extensive. If this is the case, some modification of the material they are required to read may be needed, or accommodations for them to get the information from some source outside classroom texts may be necessary. As we saw, controlling the difficulty of material is crucial to helping students develop effective strategy use.

Self-Regulated Writing

Santangelo, Harris, and Graham (2008) identify self-regulated strategy development (SRSD) for writing as the approach with the strongest empirical track record of efficacy for improving student writing. SRSD focuses on helping motivate students to monitor and regulate their own actions during writing, so that they internalize the strategy being taught. If, for example, we applied SRSD to the SCAN strategy in Box 14-17, we would first have students think and talk about problems they have in writing and why it would be helpful to them to be better at it. We would model the SCAN strategy several times on examples of writing for different purposes. Placing students in cooperative learning groups, we could have them practice using the strategy with peers, first for a simple piece of writing, and then for gradually longer and more complex assignments. Perhaps the most important step in this process for the development of self-regulation is having students use the strategy independently, evaluate their results, and discuss how using the strategy improved their performance, using a checklist like the one in Figure 14-22. This kind of self-monitoring can help students develop the habit of "double checking" themselves as they complete academic assignments. Wong (2000) presents another example of a prompt-sheet that can be used for teaching self-regulatory strategies in the area of curricular writing. This appears in Figure 14-23.

Metacognition

Metacognition involves, as we've seen, awareness and management of our own thought processes, and reflection on our own and others' thinking as an object of thought, or "thinking about thinking." Turkstra and Byom (2011) called it *executive function;* Kuhn and Dean (2004) discuss it in terms of *critical thinking.* Hughes, Turksra, and Wulfeck (2008) showed that these skills are significantly impaired in adolescents with LLD. In working on learning strategies in the metacognitive area, we are essentially teaching students tactics for becoming critical readers and thinkers. Kuhn and Dean suggested that one way of supporting metacognitive development is to encourage students to reflect on and evaluate their activities: *Why are we doing this? What was gained from having done it?* Another source of metacognitive development is the internalization that occurs when students learn to ask themselves questions they have been asked often in similar circumstances. If students participate in discourse where they are frequently asked, "How do you know?," "What evidence do you have for that statement?," or "What makes you say that?", they become more likely to pose such questions to themselves.

Smith (2010) suggests that one of the best ways to develop metacognition is through revision in writing. Revising focuses students' attention on the choice of language and the thoughts

_____ I found a quiet place to work.
_____ I read or listened to the teacher's directions carefully.
_____ I thought about who would read my paper.
_____ I thought about what I know about the subject.
_____ I thought about what I wanted my paper to accomplish.
_____ I used brainstorming to plan my paper before I wrote.
_____ I organized my ideas before I wrote.
_____ I got all the information I needed before I wrote.
_____ I thought about the reader as I wrote.
_____ I thought about what I wanted to accomplish as I wrote.
_____ I continued to think and plan as I wrote.
_____ I revised the first draft of my paper.
_____ I checked to be sure a reader could understand what I meant.
_____ I checked to make sure I had accomplished my goals.
_____ I checked my paper for spelling, capitalization, and punctuation errors.
_____ I reread my paper before turning it in.
_____ I asked other students or my parents to read the paper to see what they thought.
_____ I rewarded myself when I finished.

FIGURE 14-22   Self-monitoring checklist for student writing. (Adapted from Graham, S. [1992]. Helping students with LD progress as writers. *Intervention in School and Clinic, 27,* 134-144.)

POWER CHECKLIST

*P*lan

____ Did I complete a think sheet?

____ Did I talk it over with my teacher and other students?

____ Do I have my think sheet with me?

____ Did I put my name, date, and title of the essay on my paper?

*O*rganize

____ Have I chosen an organizational structure for my paper?

____ Did I use a graphic organizer to lay out my ideas?

*W*rite

____ Did I follow my plan?

____ Did I include all the ideas in my graphic organizer?

____ Does the first paragraph state my opinion and give supporting ideas?

____ Do my middle paragraphs elaborate my main idea?

____ Does my last paragraph give a summary and reasons for my conclusion?

*E*dit

____ Have I checked for spelling mistakes?

____ Have I checked for grammar mistakes?

____ Have I checked for punctuation mistakes?

____ Have I checked for capitalization mistakes?

____ Have I asked a teacher or peer to check over the paper with me?

____ Have I made all the corrections?

*R*evise

____ Have I read my paper aloud and conferenced with my partner?

____ Have I found ways to make my paper clearer and more mature?

FIGURE 14-23   Checklist for self-regulation in writing a persuasive essay.   (Adapted from Wong, B. [2000]. Writing strategies instruction for expository essays for adolescents with and without learning disabilities. *Topics in Language Disorders, 20[4],* 29-44.)

behind it, helping them evaluate the soundness of both their language and thought. In working on the revision processes in writing, modeling the process of assessing the soundness of what is being expressed with *think-alouds* will be helpful in teaching this kind of critical thinking. Vaughn et al. (2010) reviewed literature that suggests that other learning strategies approaches, too, foster metacognition, especially if they contain the following elements:
• Extended practice with feedback from adults and peers
• Use of interactive questions
• Breaking tasks down into component parts
• Using prompts and cues that are gradually faded

CONTEXTS OF INTERVENTION IN THE ADVANCED LANGUAGE STAGE

Agents of Intervention

For students with advanced language, most intervention is delivered by the SLP in collaboration with other special educators and mainstream teachers. One additional agent of intervention at this

level, though, is the normally achieving peer. We've talked already about using peers to help our students improve their functional language and classroom communication skills. Peers also can serve as intervention agents to provide content mastery instruction to students with LLD. In this role, they would work as tutors, perhaps during study halls or homeroom periods, to go over homework, share classroom lecture notes, or answer the curricular questions of a student with LLD. Stenhoff and Lignugaris (2007) showed in a meta-analysis that peer tutoring in secondary settings resulted in improved academic performance of students with mild disabilities and could be classified as a practice with a strong evidence base. Murray-Seegert (1989) described a program in which regular education students, some of whom were at risk for school failure themselves, volunteered to work with students with disabilities to receive course credit for an "Internal Work Experience."

The advantages of using peer tutors to help our clients with content mastery, rather than tutoring them ourselves, are twofold. First, peer tutoring involves the client in direct social interaction with peers, which may blossom into friendship and could provide the student with additional *entree* into the peer circle. Choosing a

popular peer to act as a tutor can help to facilitate such outcomes. Second, using peers as content mastery tutors frees up the SLP's time to do what we do best: developing programs that improve communication, rather than working with individuals on subject matter in which we may be less than expert (Ehren, 2007a). Finally, research (summarized by Anderson, Yilmaz, & Wasburn-Moses, 2004) indicates that, when peer-tutoring is instituted class-wide, all students show increases in test results, and students with LLD show larger increases than typical students. When consulting with classroom teachers who have students on IEPs in their class-rooms, suggesting class-wide peer tutoring is one way to accom-modate the student with LLD while benefiting all the students in the classroom.

Larson and McKinley (1987) provided guidelines for recruiting and training peer tutors. They suggested first enlisting the enthusi-asm of other teachers and administrators in the program. This can be accomplished by discussing it at in-services, sending out brief newsletters, and talking informally with faculty and administrators. They advocated recruiting tutors through school newspapers and teacher recommendations and suggested making the process of choosing tutors a selective one, involving formal applications and interviews. This both helps to ensure suitability of the tutors and makes them feel they have achieved something merely by being selected over others. Additional incentives, such as course credit or recognition for volunteer service at awards assemblies, also are wise additions to the program.

In using peers to provide content mastery instruction, we need to provide some training to the tutor (Stenhoff and Lignugaris, 2007). Here it is important to emphasize that the tutor is not to do the work for the client, but to help guide the student's attention and develop learning strategies. If we do some learning-strategy instruction in collaborative lessons in the regular classroom, we can instruct the tutors to use elements of the methods taught in these sessions, such as SQ3R or POSSE, when addressing the curricular area with which they are helping the client.

Some books about tutoring also can be recommended to peer tu-tors and might be kept in the school library. These include *Longman Guide to Peer Tutoring—2nd Edition* (Gillespie & Lerner, 2007), *Peer Tutoring: A Teacher's Resource Guide* (Gordon, 2005), *Devel-oping a Successful Tutoring Program* (Koskinen & Wilson, 1982a), *Tutoring: A Guide to Success* (Koskinen & Wilson, 1982b), *A Guide for Student Tutors* (Koskinen & Wilson, 1982c), and *Tutoring Can Be Fun* (Klausmeier, Jetter, & Nelson, 1972).

Nelson (2010) suggested another use of peers as intervention agents. She advocated a "learning buddy system" in which a nor-mally achieving and a disabled student take notes on classroom lectures, then share their notes afterward. The key to this system is to have the client take the notes, but to examine and compare them after the lecture with those of the peer. The peer's notes can be copied by the student with LLD, but not before the pair has examined the two versions and identified any inconsistencies or gaps in the client's notes. This system not only provides the client with better access to the information presented in the lec-ture, but supplies a way to improve note-taking skills by learning from detailed comparison with those of an academically success-ful peer.

Finally, we should think about having the student with LLD serve as a tutor for others. Vaughn et al. (2010) suggested that working with a partner for sustained amounts of time, switching roles between tutor and tutee, was a highly effective practice in working with students with LLD. Moreover, they found that when

students with LLD serve in the role of tutor in reading situations, listening to others' accurate oral reading, following along silently, then formulating relevant questions about what the tutee read, positive effects are increased. We may, then, want to think about ways in which we can engage students with LLD in "tutoring" younger successful readers, or in exchanging tutor/tutee roles with peers for reading practice.

Service Delivery Models

Larson and McKinley (2003b), in discussing service delivery options for secondary students with LLD, argued that the pull-out, or clinical, approach has many problems at this level. They observed that students do not want to give up study halls and free periods for therapy and should not be pulled out of regular classes. They also pointed out additional problems, such as the lack of con-nection to the curriculum, the lack of communication between the SLP and other faculty, and the "patchy" nature of this kind of intervention. They argued that, although a range of service delivery options should be available, the major portion of the intervention program for adolescents with LLD should take place either in spe-cial course-for-credit programs designed for these students or in collaborative or consultation formats aimed at helping the student succeed in mainstream classes.

Ehren (2002, 2007b), in discussing ways in which SLPs can contribute to academic success for secondary students with LLD, emphasized that, even when we are not seeing students on a one-to-one basis, the therapeutic aspect of our interactions with them should be paramount. That is, whether we are seeing students in a clinical setting, communication classroom group, or as part of an in-class collaboration, the same elements are critical to making our efforts effective, and our involvement different from what the student gets from the regular teacher. Our intervention should be:

- Individualized and responsive, using ongoing, dynamic assessment and constantly modifying the program to meet the student in his or her current zone of proximal development
- Systematic; that is, organized and sequenced into small segments to control for task difficulty, providing instruction that includes explanation, modeling, and guided practice that is scaffolded by questions, explanations, and conversations
- Intensive, engaging for extended periods of time (more than would be spent in a typical classroom) on guided, interactive activities that are goal-directed and provide opportunities to achieve mastery and generalization, achieved through collaboration with special and general education teachers

Let's look at our four service delivery options and talk about how we can use them to achieve this kind of intervention at the secondary level.

The Clinical Model

Although pull-out instruction will probably make up only a small part of the intervention at this level, at some times and for some clients a pull-out/sit-in program is appropriate. When using pull-out with secondary students, we want to be sensitive to the stu-dents' feelings of embarrassment about needing help and find ways to minimize them. Working with students in small groups, perhaps during "club" or homeroom period, may help. We also want to be sure to see groups rather than individual students so that no one feels singled out. We should limit the duration of the pull-out intervention, using it only to lay the basis for collaborative or con-sultative work in the classroom. Coming into the classroom to do

individual intervention may be just as embarrassing to a student as being pulled out. When we do come into the class, it should be to provide instruction collaboratively to the whole group.

Deshler et al. (2009) advocate a "supported inclusion" model for adolescents with LLD. Pull-out/sit-in instruction can be an effective part of this model, in conjunction with collaborative work on study skills or other metacognitive activities in the mainstream classroom. We can "prep" a small group of clients on the SQ3R method, for example, before going into their English class to teach it to the group. This preparation gives the clients a "leg up" on the other students in mastering the technique and gives them that extra guided practice they probably need to succeed with it.

The Language-Based Course for Credit

Nippold (2010) argues that most direct instruction to students at the advanced language level should take place in a language-based class offered as an "elective" within the curriculum. Larson and McKinley (2003b) discussed some of the factors needed for its success. First, they emphasized that students must receive credit toward graduation for the course. This entails receiving grades, although grading can be done in a variety of ways. Students may contract to do certain tasks, which, if completed, ensure them a certain grade in the course. Alternatively, the course may be graded on a pass-fail basis. Portfolio grading—that is, grading products of participation in the course rather than testing—is popular in the mainstream curriculum and can be used in the language-based course for credit as well.

Larson and McKinley (2003b) suggested scheduling classes to conform to the existing structure of other classes in the building. If some courses are offered in 6- or 8-week modules, these can be ideal scheduling vehicles for language-based classes as well. Semester-long or year-long courses also are options. If other classes in the building last 50 minutes, the language-based course should, too. The classes should be scheduled along with other subject areas in as similar a way as possible.

To get students motivated to take these courses, they need to be held in "real" classrooms, not therapy rooms or other stigmatized settings. Since few SLPs in secondary schools have the luxury of their own classrooms, teaching the class in a mainstream setting may require a nomadic existence, in which the SLP moves each period to whatever classroom is available. Larson and McKinley argued that the benefits of holding the class in regular education areas are worth this inconvenience.

The name of the course also is an important consideration. Larson and McKinley (2003b) and Nippold (2010) suggested avoiding names that might carry a stigma, such as "Remedial Communication," and opting instead for titles that sound supportive and mainstream. Some suggestions include "Effective Communication," "Communication Studies," and "Communication Laboratory."

To as great an extent possible, we want to group students in a class on the basis of shared needs and similar levels of current functioning, although scheduling considerations also come into play here. When choosing students for the class, Larson, McKinley, and Boley (1993) suggested that class size should be in the 3- to 12-student range and that there should be no more than a two-grade spread among students in the class. They advocated involving students actively in the planning of goals and objectives for the class and in choosing from among a set of appropriate topics and activities. The purpose of the class should be explained, and the clinician should be as open as possible about the fact that the class

is designed to help the students overcome some of the difficulties they have in school.

The content of the communication class is determined to a large extent by the assessment data on individual students. In general, the goal is to focus on cognitive and communicative skills and strategies that enable students to function effectively in school, home, vocational, and leisure settings. Virtually all the activities we discussed in the section on processes of intervention are adaptable to the communication classroom setting. An advantage of this setting, too, is that, in addition to using activities with mainstream curricular content controlled for level of difficulty, the clinician can focus on a few units or themes that are of high interest to the students, and use these as a context for some of the activities we've discussed. Sports, ancient mythology, careers, and issues in local or school politics have been used effectively as themes in communication classrooms for adolescent students. Ehren (2002, 2009) suggested a balance of skills and strategy instruction.

Consultation and Collaboration

All the issues involved in collaborative and consultative service delivery models that we discussed in Chapter 12 apply at the advanced language level as well. The success of these models requires scheduled conference time with other faculty and the building of administrative support, for example. Many of the techniques we discussed for achieving these goals in elementary schools can be used effectively in secondary schools as well.

Larson, McKinley, and Boley (1993) pointed out the difficulties of providing consultation and collaboration at the secondary level. These include the fact that teachers are very independent in their development of course material and that they deal with so many students, spending very little time in one-to-one interaction with each. Furthermore, no one teacher has primary responsibility for any student. Larson et al. argued that secondary teachers may need to be "sold" on the idea of the importance of language as a basis for success throughout the curriculum. A yearly in-service presentation on information like that given in Chapter 10 can help get this message across. Ehren (2007b) warned us of the need to take a "low horse" approach. Rather than coming in on a "high horse," and affecting to know how to solve all the student's problems, she suggests we make tactful offers to learn from teachers, make suggestions where they are welcomed, and value and respect the competence and experience of educators with different areas of expertise.

Consultation

One of the first obstacles we'll encounter in providing consultation at the secondary level, as we've seen, is finding teachers who will agree to consult with us. It may help to approach several of a student's teachers and ask whether they would be willing to talk with you periodically about thoughts for helping the student do better in the class. If the consultation is originally focused on the student rather than the teacher, teachers may be less likely to believe the consultation's object is to "correct" poor teaching. Ehren (2002) suggests asking, "Can you share with me any approaches that especially help Peter?" or "Is there something I can do to help Mike succeed in your class?" rather than telling the teacher what to do. Additionally, when we do get to making suggestions, we can back them up with concrete help such as making visual aids or lecture outlines for the teacher, the consultation is more likely to be well-received. As we discussed before, not every teacher will be willing to enter a consultative relationship. We should try to identify first those who are most interested and receptive, and establish

relations with these. English and Language Arts teachers are most likely to have an interest in working with an SLP. As success is seen, it will be easier to find new recruits. Larson and McKinley (1995) and Marvin (1990) provided additional suggestions for effective consultation.

Anderson et al. (2004) identified six practices that appeared to be the most effective in helping students with LLD succeed in general education classrooms. As part of our consultation with classroom teachers, we can suggest the following procedures:

- *Mnemonic strategy instruction:* We can encourage teachers to present strategies such as Keywords and POSSE, or offer to present them in collaborative teaching sessions.
- *Visual and graphic organizers:* Sharing some of the graphic organizers we use with our student with their classroom teachers can encourage them to use these supports, which are valuable to general as well as special education students.
- *Guided notes:* We can work with teachers to provide prepared handouts that guide a student through a lecture or discussion with visual cues and spaces for the student to write key facts and concepts. Teachers may choose to provide these to all students, or only to those on IEPs.
- *Class-wide peer tutoring:* As we discussed before, this practice helps students take responsibility for their own learning and benefits even top students as well as those with special needs.
- *Linking current knowledge to new information:* Using techniques we've discussed, such as creating anticipatory sets and activating background knowledge, facilitates the ability of all students to assimilate new information.
- *Reciprocal teaching:* Providing students with problems, procedures, and materials, having them brainstorm ways to use what they have been given to solve the problem after modeling and support from the teacher helps students master concepts through their own thinking and experimenting.

In general, consultation with secondary teachers about adolescents with LLD can have two goals: to *modify* the *presentation* of material and to make some *accommodations* for the student in the classroom. That is, we can try to make some changes in how the teacher talks to the students, which will benefit the student with LLD and mainstream students as well. We also can provide guidance and assistance in accommodating the kinds of written assignments, tests, note-taking, etc., that the student with LLD must do to participate in the mainstream curriculum.

Modifying Presentation of Information
One approach that can be used is to encourage what Nelson (1998) called "mediational teaching" or what Silliman and Wilkinson (1991) called "dialogic mentoring." We talked earlier about some methods for implementing these approaches, including reciprocal teaching. An additional technique was suggested by Westby (2005). It makes use of Bloom's (1956) taxonomy for categorizing levels of thought. Teachers using this approach would, when students reply to questions, use the answer to identify students' current level of thinking ability and then provide a scaffolding question that encourages the student to operate at the next-higher level. Examples of questions at each level are presented in Table 14-8.

When encouraging teachers to use any of these dialogic-mentoring techniques on a consulting basis, it is important to prepare written summaries of the technique and to discuss it with each teacher, giving detailed examples of how it might be used within that teacher's curricular area. Another helpful approach is to offer to teach one class of the teacher's collaboratively, using the technique, to give a chance for the teacher to see it in action. It is also important in working with teachers on their questioning techniques to encourage teachers to make answering a positive experience for students with LLD. Lunday (1996) suggested circulating "tip sheets" to teachers like the one in Box 14-18 to remind them of the importance of the way they use questions in their classes.

Lasky (1991) presented some additional guidelines for modifying the teacher's presentation of information for the benefit of the student with LLD. She suggested, first, that we ask teachers to use a *slow rate of presentation.* This is perhaps one of the simplest modifications teachers can make and can be extremely helpful to students with LLD. Besides just talking more slowly, teachers can be encouraged to insert short (1-second) pauses within long or complex sentences to give students additional processing time. A second suggestion is to ask teachers to provide *redundancy.* Teachers can paraphrase difficult material so that students hear it several different ways. They also can summarize the main points of the material at the end of the presentation. Even verbatim repetition, with modification of the stress and intonation pattern for emphasis, can be an effective rhetorical technique and provides helpful redundancy. Visual and graphic organizers are also very

TABLE 14-8 Sample Questions Based on Bloom's (1956) Taxonomy

Level	Definition	Example
Knowledge	Remembers and repeats information presented, answers simple questions.	How many electoral college votes does Texas have in presidential elections?
Comprehension	Demonstrates understanding by paraphrasing or restating information in own words.	Explain how the electoral college works.
Application	Uses information, rules, methods, or principles learned in new but similar situations.	How is the electoral college system like a parliamentary system, such as the one we discussed in Israel?
Analysis	Identifies components, gives explanations, identifies problems.	How would an electoral college system work if it were applied to our student government?
Synthesis	Abstracts from previously learned material to generate solutions to new but related problems.	What kinds of problems can arise from an electoral college system of presidential elections?
Evaluation	Compares alternatives, states and justifies opinions, provides evidence for responses.	Discuss how national election policies should be reformed and why.

Adapted from Westby, C. (2005). Assessing and facilitating text comprehension problems. In H. Catts & A. Kahmi (Eds.). *Language and reading disabilities* (2nd ed., pp. 157-232). Boston: Allyn & Bacon.

BOX 14-18   Sample Teacher "Tip Sheet" for Classroom Questions

Asking Questions: Expecting Answers
Teachers ask questions that they expect students to be able to answer. Questioning students helps the learning process. A teacher's response to students' answers can foster this learning process and also protect the student's self-esteem.
Here are a few basic but powerful behaviors:
Provide wait time: Pausing to allow a student more time to answer instead of moving on to the next student when you don't get a response
Dignify responses: Give credit for the correct aspects of an incorrect response
Restating the question: Asking the question a second time
Rephrasing the questions: Using different words that might increase the probability of a correct response
Providing guidance: Giving enough hints and clues so that the student will eventually determine the correct answer
These actions may seem insignificant, but they send a powerful message of acceptance to students. Students who feel accepted become active learners!

From Lunday, A. (1996). A collaborative communication skills program for Job Corps centers. *Topics in Language Disorders, 16,* 23-36.

helpful ways of supporting the learning of students with LLD, and we can remind teachers that they will probably be helpful to many students in the class. Lasky also advised us to have teachers *provide contextual cues.* These might include stating the topic to be discussed; using visual aids such as slides, overheads, and charts to reinforce the verbal presentation; putting an outline of the presentation on an overhead or handout; and asking directed questions to focus students' attention on critical points in the presentation and aid in recall. Another suggestion is to *relate new information to something the students already know.* An easy way to do this is to use names of the students in the class in examples the teacher gives. Choosing examples from areas in which students have experience or interest, such as sports, also aids recall. In consulting with teachers on these techniques, we can present them with a simple list of "suggestions for helping students with disabilities 'make it' in your classroom." The list might look like this:

1. Talk slowly.
2. Pause within long sentences.
3. Repeat important information.
4. Provide visual cues.
5. Relate new information to something students already know.

We might give the list to a willing teacher and ask him or her to see what changes might be made. When the teacher identifies some, we can talk about them in more detail, making concrete suggestions and giving examples from the teacher's classroom content.

In addition to giving teachers techniques like these, we also can offer some simple tips for helping our students succeed in the classroom. These might include asking teachers to write all their instructions on the board as they say them. This both slows them down, so directions are easier to process, and provides an additional visual version that students can refer to if they didn't get it the first time or if they forget the instructions. Conversely, we

can ask teachers to read written instructions given on tests and homework assignments aloud, again providing an alternate modality for students who may have trouble processing information from printed material. Asking teachers to pause briefly after they ask a question can give the student with LLD additional time to retrieve an answer. If asking for a list of answers (such as three causes of World War I), teachers can, after a pause, ask the student with LLD for an answer first. This gives him or her the opportunity to provide a correct answer, before all the "good" answers are taken. Mainstream students can provide other aspects of the answer (Lavoie, 1989). Ehren (2002) made some additional suggestions, including:

- Advising teachers to present learning experiences in addition to listening, such as debates or other participatory activities.
- Asking teachers to provide greater guidance and support to students with LLD by breaking assignments down into parts, and giving more opportunities for practice.
- Suggesting teachers take the time to explain to students with LLD privately where they have made errors and how they can correct them.
- Helping teachers use anticipatory sets to marshal and evaluate their students' background knowledge on curricular topics. If background knowledge gaps are identified, the SLP can help the student find ways to catch up.
- Encouraging teachers to use peer-assisted activities such as cooperative learning groups, peer learning buddies and class-wide peer tutoring to provide students with LLD opportunities to practice social skills being developed in the communication classroom setting.
- Ask teachers to offer choices to students with LLD about how they complete assignments, the topics they write on, etc. Choices help the student feel more involved.

Accommodations for Students with Disabilities
In addition to providing teachers with suggestions for modifying the presentation of language in the classroom, consultation can be used to plan the accommodations a student may need to succeed in a particular class. Here we may encounter some resistance, even from formerly cooperative consultees. Some teachers may feel it is "not fair" to make accommodations for students with LLD that are not made for others in the class. Why, for example, should only one student get an outline of the lecture or the opportunity to make a detailed map instead of a written report about a country when the others don't get to do the same? Some of these concerns can be addressed by encouraging the teacher to go ahead and give the aid to *every* student. An outline of a lecture, or flexibility of assignments, will no doubt be of help to all.

Other accommodations, though, such as allowing extra time on tests or reducing the number of questions that must be answered, may not be appropriate for mainstream students. In cases like these, we might want to use an example like that presented by Lavoie (1989). We might ask teachers to imagine that one student in the class suddenly chokes on a piece of gum. Let's say the teacher knows how to do the Heimlich maneuver, but as the student chokes, the teacher tells him, "Well, I could do a Heimlich, but it wouldn't be fair if I did one for you and didn't do it for everyone in the class." The point is that most students do not need the accommodations, but if someone does, it is eminently "fair" to provide them, since survival in the classroom for *this* student may depend on them.

The two ways we can provide accommodations for students in secondary classrooms are by *modifying curricular materials* and by *modifying the way students are required to demonstrate knowledge.*

Larson and McKinley (1995) provided some suggestions for *adapting materials* for students with LLD. They suggested putting students' textbooks in audio form (student volunteer service organizations, school volunteers, or senior citizens may be recruited for this work). This way, students with difficulty reading can get the information aurally. Students with LLD may be given special permission to write in or highlight textbooks or to make photocopies that can be written in or highlighted. Larson and McKinley also suggested color-coding textbooks for the student. That is, certain textbooks can be highlighted by the clinician and recycled each year for LLD students in the appropriate grade. The clinician can highlight main ideas in yellow, details in blue, and vocabulary to be learned in green, for instance. Students in pull-out/sit-in or language-based courses for credit can work with the clinician to highlight books in study skills units, and these can become part of a clinician's collection of highlighted books available for students in later years. Over time, a clinician can develop an extensive library of color-coded books for the use of students with LLD. Beginning the color coding on older, more worn textbooks may help to enlist administrative support. Simon (1998) suggested some additional ways to adapt classroom materials for students with LLD. These include the following:

- *Marginal glosses:* Key concepts and vocabulary are highlighted, then notes explaining them are written to the student in the margin or on "sticky" notes placed next to the highlighted portions.
- *Cued texts:* Visual cues are used to show relationships among pronouns and their noun referents, or between other elements of text cohesion. For example, the story character's initials can be written above a pronoun referring to that character.
- *Structured overviews:* Mini-outlines, story maps, or semantic webs are placed on "sticky" notes at the beginning of a text section to guide students in reading it.

Again, all these cues can be provided by students working with the clinician within the communication classroom, to be used later by other students for whom the clinician is consulting. Additional ideas for modifying curricular materials for students with LLD can be found in DeMier, Wise, and Marcum (1982), the Oklahoma Project (1982), and Project STILE (1979). There are also helpful Web sites, including www.ldonline.org/article/Accommodations_for_Students_with_LD, the Learning Disabilities Association of American website, www.ldanatl.org/aboutld/teachers/understanding/accommodations.asp, and www.ldat.org/ld_info/accommodations.html

In *modifying the way students are required to demonstrate knowledge,* we are working with teachers to accommodate students' special needs in classroom assignments and tests. We've talked already about providing flexibility in assignments. Students with LLD may not be able to produce written work that is as lengthy or mature as that of their peers, especially if the work must be completed within class time. An SLP can work with receptive teachers to develop rigorous but achievable modifications of class assignments for students with LLD.

We talked earlier, too, about portfolio assessment as an alternative to testing. This method samples student work over a semester or year and allows students to demonstrate their progress by a comparison of work done early in the term with that done later. This system is ideal for students with LLD, who may not perform on grade level but should nevertheless be able to demonstrate significant improvement in their work. Kratcoski (1998), Valencia (1990), and Wolf (1989) discussed methods of portfolio assessment. Fredrick (2009) emphasized the importance of modeling and encouraging use of reflective and metacognitive language during teacher-student portfolio conferences, and found that students can be taught to be more reflective about their work in this way. Even if teachers are reluctant to use this method of evaluation for mainstream students, it is a reasonable accommodation for students with LLD.

Larson and McKinley (1987) discussed some accommodations that can be made in tests for teachers who are unwilling to use other assessment methods. They suggested administering tests orally to students and allowing students to dictate or audiorecord answers rather than writing them. Wiig and Semel (1984) suggested other modifications of tests, such as having fewer problems or questions per page to avoid overstimulation for distractible students and extending time limits to allow students to demonstrate their knowledge without the pressure of a time constraint. Fagen, Graves, and Tessier-Switlick (1984) provided additional suggestions.

Collaboration

The issues in establishing collaborative relations with teachers at the secondary level are the same as those we face in elementary schools, only more so. Friend and Cook (1990) discussed some critical elements that need to be present for collaboration to succeed. These sources can be useful in laying the necessary groundwork. Again, the number of teachers with whom this can work is limited. Teachers of resource rooms may be good first bets, if students with LLD spend part of their day there. English or Language Arts teachers also are good candidates. You may want to make a general offer at the beginning of each school year to work collaboratively in classes that have students with LLD. You might pique teachers' interest by circulating a list of topics you would like to cover in collaborative sessions. Teachers of many subjects would welcome having someone work with them to teach modules such as "Listening Skills," "Effective Study Strategies," "Remember to Use Mnemonics," "Editing Your Writing," or "Do You Know If You Understand?" for example. We talked earlier about doing collaborative intervention for classroom discourse skills in courses that use cooperative learning groups. These also provide excellent opportunities for moving into the classroom. When we get the go-ahead to teach these collaborative units, they provide a good jumping-off point for some pull-out/sit-in sessions with students who are involved in a clinical intervention model. Some of the commercial sources of lessons that we discussed in Chapter 12 also can be appropriate for use in secondary classrooms. Many of the activities we discussed in the Processes of Intervention at the Advanced Language Stage section make ideal collaborative lessons, particularly those on the "metas," writing, editing, comprehension monitoring, and other high level language skills that will be difficult for many students in addition to the identified client.

In collaborative planning we need to work closely with teachers to ensure that they don't see us as just "taking over" the class, leaving them without responsibility. On the other hand, we want to be sure that they don't expect us to work as an aide with only the identified client. Again, we'll need to lay some groundwork in conference sessions with the teacher to establish roles, deciding who will do what with whom in the lessons, following the suggestions we discussed in Chapter 12. Working with teachers to choose one of the models of collaborative intervention in Figure 12-13 can help set the stage for successful teamwork. Using materials such as the planning forms in Appendix 12-2 can also be helpful with secondary teachers, as well as those in elementary schools. This groundwork is crucial for achieving the potential of collaborative intervention.

Also, in going into the classroom to provide collaborative sessions, you will want to observe all the courtesies we discussed in Chapter 12. You'll want to provide the teacher with a structured lesson plan, like the one in Box 12-19 for example. You should provide a commercial lesson plan in case you are sick the day the lesson is scheduled. Punctuality and sticking to the class's time limit also are important. So are providing visual aids and follow-up materials. Most important, perhaps, is to practice what we preach about mediational teaching, question procedures, and good classroom communication. Remember the guidelines that we talked about giving teachers in consultation sessions to improve presentation of material to students? Reviewing these can be a good reminder to ourselves about appropriate classroom language style.

SPECIAL CONSIDERATIONS FOR HIGH FUNCTIONING STUDENTS WITH ASD

These days more than half the students diagnosed with ASD function within the normal range of cognition and have acquired basic spoken language skills (Tager-Flusberg et al., 2005). These students may show high achievement in some areas, but will almost always have deficits in pragmatic aspects of language, in social skills, and peer interactions (Paul, Landa & Schoen, 2011). Many high functioning students with ASD, as well, have difficulty with executive functioning (Tsatsanis, 2005) and with understanding narratives in which much of the plot is driven by characters' internal states, plans, and goals. As SLPs, it falls within our scope of practice to work on addressing these communication difficulties. Many of the interventions we have discussed for adolescents with LLD are appropriate for those with ASD, as well. Robinson and Westby (2009) suggest work on inferencing in narrative as a way to help develop understanding of internal states. They suggest using inference and internal state charts as visual supports for helping students use evidence in the story to identify characters' feelings and to draw conclusions about intentions underlying actions in stories. Examples can be seen in Figure 14-24. The activities for developing self-regulation, metacognition, learning-strategy acquisition, conversational skills, classroom discourse, and the

functional curriculum are all additional approaches that are relevant for students with ASD. In fact, having students with LLD work in communication classes with students with ASD can be a good mix because the students with ASD may be able to serve as models in academic areas, while those with LLD will be stronger in pragmatic and social skills and can serve as models for these domains.

In terms of developing pragmatic, social, and peer interaction skills, there are a few approaches that seem to be particularly well-suited to students with ASD. We've already discussed script-fading and video modeling in Chapter 12. These methods can be used for adolescent students, as well, so long as we adjust their content to chronologically age-appropriate material. Social skills groups of students with ASD are often used, although the evidence to support their efficacy is sparse (Bellini et al., 2007). Approaches with strong evidence are those that include peer models. One peer modeling approach that fits in well at the secondary level is *peer networking* (Kamps et al., 1997; Thiemann-Bourque, 2010). This approach recruits 4 to 6 different peers whose job it is to interact with the student with ASD at different times in the day. Thiemann-Bourque reports that at the secondary level it is important to have the peers themselves identify the difficult times of the day and the kinds of interactions that need to be mediated; for example, perhaps one peer will join the target student at lunch on two days, another at lunch for three days, one at gym, and one while waiting for buses. Training for peers involves the peers meeting with the clinician to identify times of day and social issues that should be addressed; with the clinician they brainstorm strategies to try to deal with each problem. Thiemann-Bourque suggests giving the peers photographs or written scripts to pass on as cues to the target student. The peers are encouraged to prompt the target student using these visual supports, to coach them to maintain interactions, and praise their efforts. A detailed description of this program can be found in Thiemann-Bourque (2010).

Finally, many students with ASD will attend college. For these students, Retherford and Sterling-Orth (2009) provide information on programs and resources. When working with families of these students on transition planning, this kind of information can be useful to share.

Inference chart for *Shiloh* (Naylor, 1991).

Character	Inference	Evidence (How do you know?)
Marty	He loves animals.	He can't eat a rabbit when he learns his dad shot its head off.

Internal states chart for *Shiloh* (Naylor, 1991).

Character	When	Feeling	Why
Marty	At Sunday dinner	Mild disgust; dismay; Doesn't want to eat rabbit	Doesn't like to think about how it died; it ruins his appetite
Mom	At Sunday dinner	Annoyed	Marty plays with his food and doesn't eat what she cooked.

FIGURE 14-24 Inference and internal state charts (Adapted from Robins, L., and Westby, C. [2009]. Social or academic language intervention: You don't have to choose. *Perspectives in Language Learning and Education, 16,* 42-47) and inference chart for *Shiloh* (Naylor, P. [1991]. *Shiloh.* New York: Atheneum).

TRANSITIONAL INTERVENTION PLANNING

The ITP is the vehicle used to identify the goals we target for students 16 to 21 years of age, who must soon leave school and make a transition to another setting. As we said in Chapter 13, the development of the ITP, like that of the IEP, is a collaborative effort among teachers, parents, and the student. The National Joint Committee on Learning Disabilities (1994) listed the responsibilities of school personnel in preparing the ITP. These appear in Box 14-19.

Both the student and the family should have an opportunity to discuss their goals and to think about what the best, realistic post-secondary outcome for each individual student will be. Sturomski (1996) emphasized the importance of starting this process early so

Transition planning includes community referenced skills.

that students can begin participating in community activities outside of school, making contacts and visiting potential post-secondary settings. He reported that students who use community services while still in school are more likely to use them in adult life, as well. ITP guidelines suggest that transition planning begin when a student reaches age 14. Kosine (2007) highlights several elements of successful transitions plans. These are summarized in Box 14-20.

Much of the program for transitioning from school to independent living takes place in the context of the functional strand of the curriculum for students with LLD. Here, as we discussed, the curriculum focuses on developing vocational and daily living skills and on improving social communication abilities. The functional strand of the curriculum in the latter years of secondary school can be closely tied to the educational and vocational programs that students will be involved with when they graduate. If you can establish links with higher education and vocational training or job settings in which your students are likely to participate, these links will facilitate the transition. Perhaps a counselor from the local community college or a personnel officer from a company that has made an effort to provide employment for people with disabilities can be invited to talk to the functional communication class. A "field trip" to one of these sites would also be a way to expose students to the next stage of life. Madaus (2005) discussed some of the issues in helping students with LLD make the transition to higher education. And as we saw, there is now a great deal of information available specifically for high functioning students with ASD about planning for college.

Sturomski (1996), Kosine (2007), and Weidenthal and Kochhar-Bryant (2007) stressed the importance of developing not only basic life skills—such as using money, buying and preparing food, using public transportation, securing health care, and participating in

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BOX 14-19 Responsibilities of Secondary School Personnel in Individualized Transition Planning

Form a transition team consisting of a coordinator, the student, the family, administrators, teachers, and related service personnel.
Include the student and parents in the entire planning process.
Demonstrate sensitivity to the culture and values of the student and family.
Develop an appropriate packet of materials to document the student's secondary school program and to facilitate service delivery in the postsecondary setting.
Provide administrative support, resources, and time to foster collaboration among team members.
Inform the student about laws, rules, and regulation that ensure his or her rights.
Provide appropriate course selection, counseling, and academic support services.
Ensure competence in literacy and mathematics.
Ensure that the student learns effective studying, time-management, test-preparation, and test-taking strategies.
Help the student use a range of academic accommodations and technological aids.
Help the student evaluate the need for external supports and adjust the level of assistance when appropriate.
Help the student develop appropriate social skills and interpersonal communication abilities.
Help the student to develop self-advocacy skills, including an understanding of his or her disability and how to use this information in communicating with others.
Foster independence through increased responsibility and opportunity for self-management.
Encourage the student to develop extra-curricular interests and participate in community activities.
Inform the student and family about admission procedures for diverse postsecondary settings.
Inform the student and family about services that postsecondary settings provide, such as disability services, academic counseling, etc.
Ensure the timely development of documentation and material to meet application deadlines.
Help the student and family select and apply to postsecondary institutions that will offer both the challenge and the support necessary.
Develop ongoing communication with postsecondary personnel.

Adapted from the January 1994 Position Paper of the National Joint Committee on Learning Disabilities.

BOX 14-20 Components of Successful Transition Plans

- While student is still in high school, teach and provide coaching and practice in self-determination skills, which can be used in college or employment, including:
  - Asking teachers for clarification of lecture materials
  - Reporting their learning disability to their teacher(s)
  - Making an appointment with a teacher to discuss needs and/or accommodations
  - Asking a teacher for permission to record class lectures
  - Obtaining teacher approval for another student to take notes or to copy another student's notes
  - Seeking assistance from the school librarian and
  - Making an appointment with a resource person, such as a counselor
- Add post-secondary education counselors, disability specialists and/or vocational rehabilitation counselors to the transition teams.
- Give high school students assignments to:
  - Become familiar with their educational rights under Section 504
  - Become knowledgeable about the college selection and application process
  - Meet with a counselor or disability specialist at a local college
- For students headed to vocational settings:
  - Have students explore the values, attitudes, and habits that make a good employee
  - Learn about the knowledge and skills necessary for careers the student is interested in
  - Arrange for the student to spend time in the work environment

Adapted from Kosine, N. R. (2007). Preparing students with learning disabilities for postsecondary education. *Journal of Special Education Leadership, 20*(2), 93-104.

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recreational activities—but of developing the self-determination necessary to secure the accommodations to which our students are entitled. In fact, the Council for Exceptional Children (CEC) sees the development of self-determination in students with disabilities as one of the hallmark outcomes of a successful transition process. Michaels and Ferrara (2005) reviewed evidence that suggests students with both mild and moderate disabilities with high levels of self-determination at the time of graduation were significantly more likely to be living independently, have greater financial independence, and be working 3 years after graduation than their peers with low levels of self-determination. Students need guided practice while they are in school in advocating for themselves, evaluating and making choices, talking about their disability, explaining its impact, and asking for what will be needed to enable their participation in the community.

As part of the functional strand of the curriculum, the clinician may want to schedule some family conference time, to get parents together with students to talk about what is going to happen after graduation. For students continuing on to higher-education settings, it is an opportunity to discuss whether the student will live at home, on campus, or in an independent-living arrangement. Talking about the realistic pros and cons of each situation with the family can help them focus on how students will achieve their greatest potential. Issues such as cost, the time students must spend on daily living activities as opposed to studying, peer relations, and student preferences must be discussed and weighed.

For students who will go directly to vocational training programs or to the job market, again, living and financial arrangements need to be discussed with the family. Although graduation from high school has traditionally been the time at which adolescents move away from the parental home, more and more mainstream young people are opting for the monetary and emotional support offered by staying under the parents' roof. Some parents want to see their children with disabilities "leave the nest" at the "normal" time. For these families, counseling and referrals to community agencies that can provide some assistance can be given. Other families may feel differently, though. In some families, neither the parents nor the client feel ready to make this move. We should not feel that because a student with a disability is supposed to be "mainstreamed," he or she should be denied the option available to other young people—that of remaining within the family for a few more years. When the feeling of the family is to put off a transition to independent living for a while, the clinician can be supportive by making the family aware of agencies and resources that will be available when the client is ready to make the move. McPartland's (2004) *Implementing Ongoing Transition Plans for the IEP: A Student-Driven Approach to IDEA Mandates—2nd edition* and Harrington's (2003) *Handbook of Career Planning for Students with Special Needs—3rd edition* are useful resources.

For students with severe disabilities, who will be transitioning to adult community programming, perhaps the most important role for the SLP is to insure a viable means of communication that the student can use in community settings. Cascella and McNamara (2005) argue that communication goals for these students be functional, aimed toward enabling independent behavior, rather than developmental, or pegged to the child's mental age. Goals such as making a sound to indicate where the student is when called may be more appropriate than working on getting him to say his name. Making sure that the communication modality used by the student works effectively with listeners who may not be familiar with the student is also important. For a student who uses speech for the main form of communication, but is unintelligible to people outside his circle, some alternative may need to be introduced to allow for interactions in the community. This can involve taking some "field trips" to try out communication methods in order to find what works best to allow the individual to interact in the community. The main goal of working on communication skills with severely impaired students at the transition level is to maximize the degree of independence and interaction they can achieve, so focusing on functionally effective communication in any modality must be our primary objective. Many of the methods we discussed for students at this developmental level in our earlier chapters can serve as points of reference.

provides an example of an ITP summary.

CONCLUSIONS

Planning programs for secondary students with LLD requires thinking about today and thinking about tomorrow. That is, we need to help students perform up to their potential in the school setting now, as well as develop skills that will contribute to a successful adjustment to independent living later. Let's take Michael as our example and look at the kind of intervention program we might develop to address both these sets of needs for a student like him.

Ms. LaBell was the SLP in Michael's high school. When his parents requested a reevaluation, Ms. LaBell reviewed all his records from throughout his school career. She talked on the phone with the family to discuss their concerns. One of their main ones was that Michael seemed to lack "common sense." Despite his strengths in many areas, he was gullible and easily deceived. They were afraid he would be taken advantage of in some way. He also seemed to have poor judgment, and they were worried about how he could live independently. Ms. LaBell also met with several of his teachers and talked with them about his classroom performance using the interview format in Box 13-5. Finally, she talked to Michael himself, and had him fill out a self-assessment (see Figure 13-1).

Ms. LaBell did some formal testing, but, as expected, Michael's scores on standardized tests (she gave him the *Peabody Picture Vocabulary Test—IV* and *Test of Adolescent Language*) were within normal limits. His teachers confirmed that his semantic skills, including advanced vocabulary and definitional skills, as well as his syntax were excellent; excessively so, in fact. He often used big words or long, formal-sounding sentences that the other students had trouble understanding, and he just sounded too stiff, even in the classroom situation. The English teacher did note problems with multiple meanings and figurative language, though, when Ms. LaBell asked her specifically about these areas. Ms. LaBell was able to document this deficit using the *Test of Language Competence.* Ms. LaBell asked Michael's permission to observe him during a peer conversation and conducted a conversational analysis (see Figure 13-4). There she identified a range of difficulties in conversational interactions. Negotiation skills and register variation were particular problems. She had Michael produce both a spoken and written narrative sample and analyzed them for story grammar, cohesiveness, and use of literate language style. Michael's style in both contained many literate language markers. T-unit length and use of low-frequency structures and connectives were higher than average. But his narratives lacked cohesion and did not contain all the expected story grammar elements. Plans, goals, and internal responses were notably absent. Ms. LaBell looked at his comprehension skills and found he did well with expository texts, like his science book, but had more difficulty with narrative and persuasive or argumentative materials. Informal assessment of "meta" skills and comprehension monitoring showed Michael was aware when he had problems, but had few strategies for correcting them. Analysis of written communication skills showed good performance in writing mechanics and lexical choice, but difficulty with the planning aspect of writing and in providing sufficient information, supplying cohesion, and using appropriate detail. Michael also had a great deal of trouble editing his work. He could identify mechanical errors, but had problems revising other aspects of his writing.

Ms. LaBell had a junior- and senior-level communication class running that year. The academic strand focused on study skills, comprehension monitoring, editing, and vocabulary development. The functional strand concentrated on choice-making, daily living skills, self-determination, and career development. There were already six students in the class, and Ms. LaBell convinced Michael, with some difficulty, to trade his elective music class for the communication course.

Michael's strong vocabulary skills were an asset in the class. He was assigned to develop a vocabulary list for the unit on ancient mythology that the class was studying. Michael had to preview the material they would read, pick out words that might be hard for the other students, and meet with Ms. LaBell to develop lessons to teach the words. She often added words to his list that had multiple meanings and helped him develop games and lessons on these words. She also encouraged him to involve the class in figurative-language activities using the words.

In the study skills and comprehension-monitoring units, Michael had needs similar to those of the other students in the class. The group engaged in reciprocal teaching activities to improve their reading comprehension. Ms. LaBell was careful to let Michael act as the "facilitator" early in the sessions on expository texts, since he had good command of this type of material. For narrative texts, drawn from their ancient mythology unit, she had Michael act as facilitator only after several other students had modeled the RT. The SQ3R method was also addressed in the study skills unit. For additional narrative development, the group put on a play about their favorite myth, writing the dialogue and acting out various characters. Michael was assigned to a character who needed to show various emotions, and Ms. LaBell talked with him about each emotion he was to portray, why the character felt that way, and when and why Michael himself might have felt that way. Comprehension monitoring was addressed with barrier games and by using audio recordings from lectures given by teachers the students had for other classes. Students were encouraged to use SQ3R as a way to monitor comprehension of material they read.

Because of Michael's strong expository comprehension skills, he helped Ms. LaBell highlight texts for the other students, using color coding to point out main ideas, salient details, and difficult vocabulary. He also made audiorecordings of text material that other students who were poorer readers needed to study. To work on negotiation and conversational register skills, Ms. LaBell assigned another student with good conversational skills, Jeffrey, to "tutor" Michael in dyadic conversation. They did role-playing activities, audiorecorded them, then listened to the recordings together. Ms. LaBell coached Jeffrey to first critique his own performance, then give Michael some "tips" about his. They then replayed the exercise, and the next time it was Michael's turn to critique first. After they both felt they had gotten it right, Ms. LaBell listened to the recording with them and made further comments.

Ms. LaBell addressed writing and editing by asking students to bring written assignments from other classes and plan and edit them in class. They started the planning process with Hallenbeck's (1996) think-sheet. After producing a draft, students read their drafts aloud to each other and underlined any errors they detected. Ms. LaBell then led them on several passes through the text to detect and correct errors in spelling, capitalization, punctuation, and grammar. In a final pass, they evaluated their writing using Graham and Harris's (1999) self-questions. After going through this process on a few other writing assignments, Ms. LaBell had the students do the activities using reciprocal teaching rather than under her direct instruction. As a final activity, students completed a writing assignment independently, using a checklist to cue them to go through each planning and editing phase. Ms. LaBell also

encouraged Michael to check out a blog Web site and to begin writing about his life there. He found that others responded and even "met" another young man who had a similar disability through the blog site. In addition to having a new "friend" to write to, Michael's resistance to writing decreased as it became a more ordinary activity for him.

In the functional strand of the curriculum, students gave oral reports on jobs that interested them and on job-hunting techniques. They role-played interviewing for an apartment. They did a unit on nutrition and making good nutritional choices, in which the health teacher guest-lectured. This was followed by a unit, taught in conjunction with the school counselor, on self-esteem and making choices to avoid substance abuse. Michael's assignments during this unit involved role-playing situations in which he was invited not only to abuse drugs and alcohol, but to shoplift, and to buy items presented to him at inflated prices. Ms. LaBell emphasized the importance of evaluating options with which students were presented. She used "think-aloud" protocols to get Michael and the others to talk through these choices and arrive at sensible decisions. The class also took a field trip to the local community college and sat in on some classes there. They all talked about what they hoped to do after graduation, and Ms. LaBell encouraged them to consider not only what they wanted but what was realistic for each.

Toward the end of the Michael's senior year, Ms. LaBell invited Michael and his parents to a conference to develop his ITP and discuss his future. Michael wanted to attend the flagship branch of the state university, about 3 hours away from his home. Ms. LaBell thought, on the strength of his excellent math and science scores on SATs, that this was a realistic option, but his parents had doubts about his ability to get along on his own there. Michael at first thought he would prefer to be away from home, but after some discussion with Ms. LaBell and role-playing in class about what was involved in dorm living, Michael decided it might be best to stay home for a couple of years after graduation and take courses at the community college. His parents were relieved and felt the decision was best for them all for now. Ms. LaBell gave them the name of a counselor at the community college who would be able to work with Michael to make the transition to the 4-year college when he finished his associate's degree.

STUDY GUIDE

I. Issues in Intervention at the Advanced Language Stage
  A. Suppose you are attempting to convince a high school principal of the need for communication intervention for students with LLD in the school. Give your rationale.
  B. Discuss student-centered intervention at the secondary level.
  C. How can communication contracts be used with secondary students?
  D. Describe the role of counseling with secondary students.

II. Products of Intervention in the Advanced Language Stage
  A. Discuss purposes of intervention at the secondary level.
  B. Define *content mastery* and describe the SLP's role in it at the secondary level.
  C. What are the criteria for including students in a learning-strategies approach to intervention?

  D. Discuss the academic and functional aspects of the communication curriculum for students with LLD.

III. Processes of Intervention in the Advanced Language Stage
  A. Discuss methods for teaching literate lexicon skills to adolescent students with LLD.
  B. How can secondary students' word retrieval be improved?
  C. Describe methods for addressing figurative language skills.
  D. Outline some approaches to teaching verbal reasoning.
  E. Discuss sentence combining and paraphrasing as syntactic intervention methods.
  F. How can students be exposed to literary language at the secondary level?
  G. Discuss basic skills approaches to improving classroom discourse skills for secondary students with LLD.
  H. What resources are available for exposing teens to advanced narrative structures? Discuss activities that can be used to improve narrative skills in adolescent students with LLD.
  I. Describe activities for increasing appropriate use of cohesive markers.
  J. Discuss basic skills methods for addressing mechanical problems in the writing of secondary students with LLD.
  K. Describe approaches to improving conversational skills in adolescent clients. How can learning-strategies approaches be used to address conversational skill deficits?
  L. What other skills should be addressed in the functional strand of the curriculum?
  M. Give the steps for teaching a learning strategy.
  N. Discuss some strategy approaches to improving semantic skills in secondary students with LLD.
  O. How can syntactic skills be addressed in the editing process?
  P. Describe some learning-strategy approaches to improving classroom discourse skills.
  Q. Discuss reciprocal teaching.
  R. Discuss learning-strategy methods for narrative skills.
  S. Describe the use of verbal and visual organizers for improving expository text comprehension.
  T. Discuss additional learning-strategy approaches for expository text material.
  U. How can learning strategies be used to address the writing process?
  V. Discuss the use of the editing process in teaching strategies to improve written products.
  W. Describe methods for teaching comprehension monitoring at the secondary level.
  X. What is the relation between reading comprehension skills and monitoring of comprehension of written material?
  Y. Discuss metacognitive or study skill instruction at the secondary level.

IV. Contexts of Intervention in the Advanced Language Stage
  A. Discuss peer tutoring as an intervention strategy for students with LLD. How should peers be selected and trained? What should the goal of their tutoring be?
  B. Discuss the clinical model of intervention at the secondary level. What are its strengths and weaknesses?
  C. Describe the language-based course for credit in terms of title, scheduling, content, grading, class composition, and similar issues.
  D. What are some special difficulties in providing consultation and collaboration at the secondary level?

E. Discuss some consultation strategies for helping teachers modify the presentation of material to secondary students.

F. Describe methods of modifying curricular materials for students with LLD.

G. What are some ways we can accommodate students with LLD in terms of demonstrating their knowledge on tests and assignments?

H. How can SLPs in secondary schools engage in collaborative classroom intervention?

V. Students with high functioning autism (HFA)

A. List the most typical strengths and weaknesses of secondary students with HFA.

B. What methods that can be used for students with LLD are also useful for students with HFA?

C. What approaches are more specialized for students with HFA?

VI. Transitional Intervention Planning

A. Discuss the unique needs of high-functioning students with ASD in transition planning.

B. Discuss the role of the ITP in intervention planning for students in high school.

C. What are the responsibilities of the school personnel in transition planning?

D. How can the functional strand of the curriculum be used to address transitional intervention planning?

E. How can learning-strategy approaches be used for transition planning for students with LLD?

F. Discuss family conferencing as an aspect of transitional intervention planning.

G. What is self-determination, and why is it important for young adults with LLD?

Example of an ITP Summary Form

Transition Planning Summary

Statement of Transition Service Needs for students 14 and older (must be completed at each Annual Review following a student's 13th birthday):

Student Preferences/Interests (Sections 2, 3, and 4 must be completed at each Annual Review following a student's 15th birthday):
Was the student invited to attend his/her Planning and Placement Team meeting?
       YES   NO
Did the student attend?
       YES   NO
How were the student's Preferences/Interests, as they relate to planning for Transition Services, determined?
___Personal interview
___Testing
___Vocational assessments
___Comments at meeting
___Interview with family
___Other:
Summarize student Preferences/Interest as they relate to Transitional Services:

Agency Participation:
Were outside agencies involved in the PPT meeting?   YES   NO
(If no, specify reason):
If yes, did the agency's/agencies' representative attend?   YES   NO
(If no, specify reason):
Has any participating agency agreed to provide or pay for services/linkages/transition planning?
NO   YES (Specify):

Justification for Transition Services not being addressed:
If an annual goal and related objectives were not developed for independent living or community participation, provide a justification:

If activities/training are not provided in both the community and the classroom, provide a justification statement:

At least 1 year prior to reaching age 18, the student must be informed of her or his rights under IDEA, if any, which will transfer to her or him at the age.

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Subject Index

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Milestones of Early Communication Development

Typical Age	Pragmatics	Semantics
0-8 mo	Perlocutionary: caregivers attribute intent to child's actions	
8-12 mo	Illocutionary intents expressed with gestures and vocalizations: • Requesting objects and actions • Refusing • Commenting • Communicative games Frequency of communicative acts: 2.5/min of free play	Understanding of 3-50 words First words used for names of familiar people and objects; communicative games and routines; to talk about appearance, disappearance, recurrence
12-18 mo	Locutionary intents express same functions with words that were expressed before with preverbal means Frequency of communicative acts: 5/min of free play	Average expressive vocabulary size: 50-100 words at 18 mo Semantic roles expressed in one-word speech include the followng: • Agent • Rejection • Action • Disappearance • Object • Nonexistence • Location • Denial • Possession Words are understood outside of routine games; still need contextual support for lexical comprehension
18-24 mo	Frequency of word use increases over preverbal communication New intents include the following: • Requesting information • Answering questions • Acknowledging Frequency of communicative acts: 7.5/min of free play	Average expressive vocabulary size: 200-300 words at 24 mo Understand single words for objects out of sight Understand two-word relations similar to those expressed Prevalent relations expressed as follows: • Agent-action • Entity-location • Agent-object • Possessor-possession • Action-object • Demonstrative-entity • Action-location • Attribute-entity
24-30 mo	Frequency of topic continuations increase, mostly through repitition "Please" used for polite requests New intents include the following: • Symbolic play • Talk about absent objects • Misrepresenting reality (lies, teases) Narratives are "heap stories," primarily labels and descriptions	Understanding and use of questions about object (what?), people (who?), basic events [what (x) doing? Where (X) going?]
30-36 mo	Topic continuation nears 50% Topics are continued by adding new information Some requests for clarification provided Use of language in play increases Narratives are "sequences," with theme but no plot	Use and understanding of "why" questions Understanding and use of basic spatial terms (in, on, under, etc.)
36-42 mo	More flexibility in requesting, including the following: • Permission directives (Can you . . .?) • Indirect requests (Would you . . .?) Direct requests decrease in frequency, as indirect requests increase Narratives are "primitive," with theme and some temporal organization	Semantic relations between adjacent and conjoined sentences include the following: • Additive • Temporal • Causal • Contrastive Understanding of basic color words Use and understanding of basic kinship terms
42-48 mo	New functions emerge, including the following: • Reporting on past events • Reasoning • Predicting • Expressing empathy • Creating imaginary roles and props • Maintaining interactions	Use and understanding of "when" and "how" questions Understanding of words for basic shapes (circle, square, triangle) Use and understanding of basic size vocabulary (big, small) Use of conjunctions and, because to conjoin sentences
48-60 mo	Hints that do not mention the intention in the request ("Those smell good!") emerge Ability to address specific requests for clarification increases Narratives are "chains" with some plot, but no high point or resolution	Knowledge of letter names and sounds emerges Knowledge of numbers and counting emerges Use of conjunctions when, so, because, if

Data from Chapman, R. (2000). Children's language learning: An interactionist perspective. *Journal of Child Psychology and Psychiatry*, 41, 33-54; Miller, J. (1981). *Assessing language production in children*. Boston, MA: Allyn & Bacon; Weiss, C., Gordon, M., & Lillywhite, H. (1987). *Clinical management of articulatory and phonological disorders* (ed. 2). Baltimore, MD: Williams & Wilkins.

Syntax	Phonology
	0-2 mo—vegetative sounds 2-4 mo—cooing, laughing 4-6 mo—quasi-resonant nuclei, vocal play 6-10 mo—canonical, reduplicated babbling-CV syllables
	Jargon babble with intonation contours of language being learned

	First 50 words
	  • Most often have CV shape
	  • Use same consonants used in early babbling
	  • Use of reduplication, syllable deletion, assimilation, and final consonant deletion is common
	  • Words are selected or avoided for expression based on favored and avoided sounds

Brown's Stage I: Basic Semantic Roles and Relations Two-word utterances emerge Word order is consistent Utterances are "telegraphic" with few grammatical markers	By 24 mo, 9-10 initial and 5-6 final consonants are used Speech is 50% intelligible 70% of consonants are correct CVC and two-syllable words emerge
Brown's Stage II: Grammatical Morphemes Early emerging acquisition: -ing in, on, plural /s/ Use of no, not, can't, don't as negation between subject and verb Questions formed with rising intonation only Sentences with semi-auxiliaries gonna, wanna, gotta, hafta appear	Awareness of rhyme emerges
Brown's Stage III: Modulation of Simple Sentences Present tense auxiliaries appear (can, will) Be verbs used inconsistently Overgeneralized past-tense forms appear	Speech is 75% intelligible at 36 mo Ability to produce rhyme emerges
Brown's Stage IV: Emergence of Embedded Sentences First complex sentence forms appear Auxiliary verbs are placed correctly in questions and negatives Irregular past tense, articles (a, the), possessive ('s) acquired	Use of reduplication, syllable deletion, assimilation, and final consonant deletion is less common Use of stopping, fronting, cluster reduction, and liquid simplification continues

Brown's Stage Late IV–Early V
Early emerging complex sentence types, including the following:
  • Full prepositional clauses
  • Wh- clauses
  • Simple infinitives
  • Conjoined
	Use of cluster reduction decreases

Brown's Stage V
Later developing morphemes acquired, including the following:
  • Be verbs
  • Regular past
  • Third person /s/
Past-tense auxiliaries used
  • Relative clauses (right branching)
  • Infinitive clauses with different subjects
  • Gerund clauses
  • Wh- infinitive clauses
Basic sentence forms acquired
	Speech is 100% intelligible
	Ability to segment words into syllables emerges
	Use of most simplification processes stops; errors on /s/, /r/, /l/, th may persist

Milestones of Later Communication Development

Typical Age	Pragmatics	Semantics
5-7 yr	Narratives are true "stories" with central focus, high point, and resolution	Reorganization of lexical knowledge from syntagmatic (episodic) to paradigmatic (semantic) networks Average expressive vocabulary size is 3000-5000 words
7-9 yr	Stories contain complete episodes with internal goals, motivations, and reactions of characters; some multiple-episode stories appear Language is used to establish and maintain social status Increased perspective-taking allows for more successful persuasion Provide conversational repairs by defining terms or giving background information Can perform successfully in simple referential communication tasks	School and reading experience introduce new words not encountered in conversation Pronouns used anaphorically to refer to nouns previously named Word definitions include synonyms and categories Some words understood to have multiple meanings Capacity for production of figurative language increases
9-12 yr	Stories include complex, embedded, and interactive episodes Understand jokes and riddles based on lexical ambiguity	Vocabulary used in school texts is more abstract and specific than that used in conversation Students are expected to acquire new information from written texts Can explain relationships between meanings of multiple-meaning words Begin using adverbial conjuncts (4% of utterances contain them) Most common idioms understood
12-14 yr	Expository texts used in school-sponsored writing Most information is presented in expository formats Understand jokes and riddles based on deep structure ambiguity	Abstract, dictionary definitions given for words Use of Adverbial conjuncts increases to 85% of utterances Can explain meaning of proverbs in context
15-18 yr	Language is used to maintain social bounds ("just talking") Persuasive and argumentative skills reach near-adult levels	Average vocabulary of high school graduate is 10,000 words

Data from Chapman, R. (2000). Children's language learning: An interactionist perspective. *Journal of Child Psychology and Psychiatry*, 41, 33-54; Nippold, M. (1998). *Later language development: The school-age and adolescent years*. Austin, TX: Pro-Ed; Westby, C. (1999). Assessing and facilitating text comprehension problems. In H. Catts and A. Kahmi (Eds.), *Language and reading disabilities* (pp. 154-223). Boston, MA: Allyn & Bacon.

Milestones of Literacy Development

Typical Age	Literacy Socialization	Phonological Awareness	Print Knowledge
0-2 yr	Enjoys joint book-reading Learns to hold book right-side up Learns to turn pages Answers questions about pictures, characters	Exposure to rhyme initiates rhyme awareness	Learns to distinguish print from pictures
2-5 yr	Learns the need to turn page to get to next part of story Learns left-right progression of print Learns print is stable; anyone reading a book reads the same words	Can segment sentences into words Can segment words into syllables Can recognize/produce rhymes Can recognize/produce words with same beginning sound Can segment/blend words by onset/rime (s + un = sun)	Learns alphabet song Learns to recognize and name letters Learns letters "have" sounds Learns clusters of letters separated by space form words
5-7 yr	Reads picture books for pleasure, with assistance (e.g., audio-taped book) Reads picture books for pleasure, independently	Can identify (name) first sound in word Can list words that start w/same sound Can count sounds in words Can blend 3-4 sounds to make a word (/h/ + /ª/ + /n/ + /d/ = hand) Can segment words into 3-4 phonemes (hand = /h/ + /ª/ + /n/ + /d/) Can manipulate sounds in words (What's hop without /p/? [/ha/])	Learns alphabetic principle: Words are made up of sounds; sounds can be represented by letters Learns all letter names, letter sounds for consonants Learns sounds for vowels Can match letters to sounds
7-9 yr	Reads "chapter books" for pleasure, independently May read non-fiction for pleasure, as well	Can play with sounds in words, as in pig latin and other secret codes	Begins to learn conventions for punctuation, capitalization, other conventions of print
9-12 yr	Reads for information as well as pleasure		Continues improving knowledge of writing conventions Errors in these decrease
12-18 yr	Develops study skills to retain material read		Masters basic rules for punctuation, capitalization, etc.

Data from Kadervek, J., & Justice, L. (2004). Embedded-explicit emergent literacy intervention II: Goal selection and implementation in the early childhood classroom. *Language, Speech, and Hearing Services in Schools*, 35, 212-228; Kamhi, A. & Catts, H. (2005). *Reading development*. In H. Catts & A. Kahmi (Eds.), *Language and Reading Disabilities*. 2ⁿᵈ Ed. (pp. 26-49). Boston: Allyn & Bacon.

Syntax	Phonology/Metalinguistics
Use and understanding of passive sentences emerges Mastery of exceptions to basic grammatical rules begins	Last residual speech errors overcome Ability to segment words into phonemes emerges Understand concept of "Word" separate from its referent
Literate language syntax needed for academic participation develops A few errors in noun phrases ("much bricks") persist	Articulation is mostly error-free Some difficulty with complex words may persist (*aluminum*) Phonological knowledge is used in spelling Sound manipulation in activities such as pig latin is seen
Syntax used in school texts is more complex than that used in oral language Use of word order variations increases in writing ("Around the house we put a fence?")	Morphophonological knowledge develops and is used in spelling Metacognitive skills emerge
Use of perfect aspect (*have/had* + [verb]) increases Syntax used in writing is more complex than that used in speech	Knowledge of stress rules (*yellow*jacket vs. yellow *jacket*) is acquired
Sentence length and complexity in written language is greater than in spoken Rate of modal auxiliary use increases Full adult range of syntactic constructions reached	Knowledge of morphophonological rules reaches adult level

Reading	Writing
May pretend to read when others are reading	Learns to hold crayon, scribble
Learns to recognize name in print May recognize environmental print (reads "McDonald's" sign)	Begins representational drawing Learns to write name Distinguished drawing from writing Learns to write some letters May use invented spelling to label drawings
Learns to decode by identifying sounds for printed letters and synthesizing sounds across letters to form words Learns some words by sight	Learns conventional spelling for some words Learns to spell by segmenting words into sounds and writing letters for sounds Makes errors based on phonetic correspondences Writing is simpler than speech Writing begins to be more common than drawing
More words recognized by "sight" More phonic patterns are recognized to increase automaticity of decoding (e.g., "silent *e* rule") As reading becomes more automatic, more attention is focused on comprehension Reading moves toward fluency	Learns spelling patterns (e.g., *ight* pattern words) Increases vocabulary of known spellings Makes fewer spelling errors Uses writing to send messages Begins school-sponsored writing, such as book reports Writing resembles level of complexity in speech Oral and literate styles are mixed in writing Narrative writing predominates
Reading is fluent Decoding is efficient and automatic Comprehension is focus; reads to learn	Learns morphophonological rules and patterns in spelling (e.g., *photograph* has two 'o's, you can hear them both in *photography*) Writing has a more consistently literate style; more subordinate clauses Persuasive and expository writing is introduced in the school curriculum
Begins to develop critical reading/thinking skills Learns to distinguish fact from opinion in writing Can construct knowledge from print sources using reasoning, analysis, synthesis and judgment	Level of complexity in writing begins to be greater than in speech More low frequency syntactic forms appear in writing than in speech Persuasive and expository writing continue to improve beyond high school, given adequate experience and opportunity