Susan Unruh · Nancy A. McKellar

Assessment and Intervention for English Language Learners

Translating Research into Practice

Springer

Assessment and Intervention for English
Language Learners

Susan Unruh • Nancy A. McKellar

Assessment and Intervention for English Language Learners

Translating Research into Practice

⌂ Springer

Susan Unruh
Wichita State University
Wichita, KS, USA

Nancy A. McKellar
Wichita State University
Wichita, KS, USA

To my family. And to immigrants
from any land, in any land.
Be not forgetful to entertain strangers,
for thereby some have entertained angels
unawares. Hebrews 13:2

Susan Unruh

To my daughter, Anna, who has brought
me great joy, and to my students,
who have taught me so much.
Many thanks to the friends and strangers
who have graciously shared their cultures
with me.

Nancy McKellar

Preface

At least one in every five children in US and Canadian public schools speaks a different language at home than at school. Yet many school psychologists lack adequate training to work with this population. Our ethical principles say that we should not operate out of our bounds of competency. Many practitioners feel most competent when using standardized tests in assessing children. Often English learners are not represented in the norming samples of these tests. These conditions create a maelstrom in which school psychologists and other educators are in a state of turmoil and, sometimes, paralysis.

At the eye of the maelstrom is the child. A learning disorder does not wait to start to affect an English learner until the child has learned sufficient English to be tested with the instruments we like to use. The learning disorder starts to affect the child the minute he or she walks through the door of the school. The consequences of educators being reactive rather than proactive can be devastating for these children—years of frustration, loss of self-esteem, and, for many, failure and dropping out of school.

This book is intended to empower school psychologists to work with all English learners, no matter the first language of the child and no matter whether the school psychologist is monolingual or bilingual. The first four chapters provide the basics. Chapters 5 through 10 each deal with categories of specific learning disabilities—basic reading, reading fluency, reading comprehension, math calculation, math problem-solving, and writing. Chapter 11 offers tools and procedures that are referenced in earlier chapters. Finally, Chapter 12 presents case studies in the form of psychoeducational reports.

We hope practitioners and trainers will find the information in this book to be helpful. We hope they will become motivated to learn even more. Working competently with English learners is complex, fascinating, and challenging. The rewards are immeasurable.

Wichita, KS   Susan Unruh
Wichita, KS   Nancy A. McKellar

Contents

About the Authors

Susan Unruh, Ph.D., is Associate Professor of School Psychology at Wichita State University. She received her doctorate in School Psychology from the University of Kansas with a specialty in bilingual education. Dr. Unruh has more than 25 years of experience working with English language learners, first as a practitioner in public schools and then in her research at WSU. She has made numerous presentations in the area of bilingual assessment and education at regional, national, and international conferences and has published articles in various journals on the topic.

Nancy A. McKellar, Ph.D., is Associate Professor of School Psychology Program at Wichita State University. She began her career as a special education teacher. She received her master's and doctorate in Psychology from Northern Illinois University, with emphases in school psychology as well as human learning and memory. Since 1984, Dr. McKellar has been a school psychology trainer at Wichita State University, where she developed and teaches the course in school-based interventions. Her research and professional presentations have focused on the needs and ways to help children at risk due to disabilities or circumstances.

Chapter 1
The Challenges of Assessing and Intervening with English Learners

Introduction

Tomás is in the seventh grade. He went to kindergarten and half of first grade in his village in Mexico. Then his parents brought him to the USA but they weren't able to enroll him in school until the beginning of second grade. The family speaks only Spanish at home. Tomás has been receiving ESL services since entering school in the USA. He struggles in all academic areas but especially in reading and writing.

Jian is a first grader. His parents moved to the USA from China when Jian was a baby. His parents typically speak Mandarin Chinese at home but Jian has three older sisters who speak both English and Chinese with him. Jian attended a Head Start program before kindergarten, so he has been exposed to English since he was 4 years old. His teachers are very concerned because Jian seems to be lost in all of his classes. Skills that he appears to have learned one day are gone by the next day.

Maya and her family are Syrian immigrants in Canada. Her family speaks a smattering of English and French, as well as their native Arabic language. Maya is making good progress learning to read and write in English but her math skills are lagging. She has been unable to master her addition and subtraction math facts and her teacher is concerned about introducing multiplication.

All of the children described above are receiving English as a second language (ESL) services and, in all cases, their teachers are concerned because they are not making typical progress compared to other English language learners. Although these children have certain similarities—they are learning English as a second or even third language and they are receiving English language support at school—they also have many dissimilarities in terms of English language acquisition, formal education, exposure to English, and native language spoken. The complexities involved with these differences present dilemmas for their teachers and for school psychologists and other school support personnel. These examples are given here because dissimilarities between English language learners are the rule, not the exception, and are at the heart of the difficulties school personnel face when making

eligibility and entitlement decisions. There are reasons that any of these children should be considered for special education evaluations and reasons that cast doubt on initiating such evaluations. In this chapter, we explore the challenges that are present whenever an English learner is suspected of having a learning disorder. By understanding the challenges and pitfalls, we can make informed decisions that will be in the best interest of the children whose education is in our care.

Definitions

We begin with a definition of terms and acronyms that will be used in this book (Table 1.1).

Table 1.1 Definitions of Terms and Acronyms

Term	Acronym	Definition
Accommodation		A modification of a test itself or of testing procedures which helps students better understand the content of the items and helps them show what they know
Basic interpersonal communication skills	BICS	Language skills needed in social situations; these skills are embedded in a meaningful social context and usually develop within 6 months to 2 years when an individual is immersed in a second language setting (Cummins, 1984)
Bilingual		Speaking two languages fluently
Child study team		A team of educational professionals who conduct comprehensive evaluations to determine eligibility for special education placements
Cognitive academic language proficiency	CALP	Language skills needed in a formal academic setting in order to speak, read, comprehend, and write about subject matter content. They are essential for school success and are estimated to take from 5 to 7 years to develop (Cummins, 1984)
Culture		Behaviors, customs, and attitudes characteristic of a certain group of people
English learner	EL	An individual who is in the process of learning English
English as a second language instruction	ESL	Instruction for students who are learning English as a second (or sometimes third or fourth) language
First language	L1	The first language learned by an individual
Home language		The language typically spoken by most of the people in an individual's home
Immigrants		Individuals who come from the country of their birth to live permanently in a different country
Indigenous		Native to a particular land
Language of instruction		The language used for classroom instruction

(continued)

Table 1.1 (continued)

Term	Acronym	Definition
Learning disorder or learning disability		A serious learning problem affecting a particular academic area
Mainstream		Characterizing the majority culture in a society; their common attitudes, beliefs, and expectations for behavior
Minority		A proportionately small group of people existing alongside those of the mainstream culture, race, or national tradition
Monolingual		Speaking only one language
Multilingual		Speaking more than one language fluently
Multitiered system of support		Academic and/or behavioral interventions that vary in intensity based on students' needs
Newcomer classes		Classes in English as a second language (ESL) programs for adolescents who are just beginning to learn English
Problem-solving team		A team of educational professionals and a child's parents who, together, explore causes and solutions for the child's learning difficulties
Refugees		Individuals who flee their country due to war, political unrest, poverty, persecution, or other cataclysmic events
Scaffolding		Academic supports that are put into place to help English learners learn content in other subjects while they are learning English
Second language	L2	The second language learned by an individual
Sequential bilingual		An individual who learns a first language and then learns another language or languages
Simultaneous bilingual		An individual who learns two different languages from birth
Special education		Individualized educational services for students with disabilities
Specific learning disability	SLD	"A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations," as defined in 2006 federal regulations: Special Education-Assistance to States for the Education of Children with Disabilities, § 300.8(c)(10)

Areas to Investigate When Students Struggle: Curriculum, Instruction, Environment, and the Learner

When a child who only speaks English is struggling in school, there can be many possible causes. There may be problems with the curriculum, with instruction, with the learning environment, and/or problems that are unique to the learner. For example, the *curriculum* being taught may not be at the student's instructional level or the child may not have been present when certain aspects of curriculum were

covered. Thus the child may lack prerequisite skills. *Instruction* may not be delivered in ways that are effective for the learner; teachers may lack the time or training to adequately differentiate instruction for all of their students. In terms of the *environment*, there may be deficiencies in resources which would enable students to study and learn in environments that are safe, affirming, and conducive to receiving help as needed. Finally, there may be characteristics of the *learner*—such as learning disorders, lack of motivation, and ineffective study skills—which make learning a struggle. Obviously, it can be a challenge to isolate the causes of academic struggles even for children who speak only one language.

Children who are learning a second language can have any of the above school challenges, as well. But what makes educating these children particularly perplexing is that in considering curriculum, instruction, environment, and the learner, there are other potential confounding factors in determining the causes of their struggles. The Individuals with Disabilities in Education Act of 2004 (Pub. L. No. 108–445), hereafter referred to as IDEA 2004 in this book, dictates that child study teams must decide that exclusionary factors (detailed later) are not the primary causes for the student's academic struggles.

Curriculum

For students who have attended one or more schools in different countries, it is likely that the curricula are not aligned well, resulting in gaps in prerequisite skills. The formal education of these students may have been interrupted at various points. They may be immersed in English-speaking classes at times when they are able to understand very little of the content, causing further knowledge and skill gaps. Furthermore, children who are English learners have, in effect, twice the curriculum to learn because they are learning to speak, understand, read, and write English at the same time that they are trying to keep up with their grade-level peers in learning literacy, mathematics, and the content in other courses. It is not especially unusual for middle and high school students to study a foreign language—such as Chinese, French, or Spanish—while they are also learning literacy, math, science, and social studies. But devoting a small part of the school day to studying a foreign language is very different from devoting a small part of the school day to learning English when English is being used as the language of instruction for the rest of the day.

Instruction

Second language learners have certain characteristics that are different from individuals who only learn one language. Although many teachers have training in instructing students who are acquiring a second language, many others do not. Teachers and school administrators may not be aware of the scaffolding that can support these students or they may believe that they do not have the time and resources to provide

the scaffolding in their classrooms. And because of the aforementioned gaps in curriculum, there is no guarantee that these children have had adequate instruction in the areas of concern.

Environment

The learning environment may well be complex for English learners, especially when the home environment is taken into account. In a longitudinal study of the academic trajectories for immigrant newcomer youth from Central America, China, the Dominican Republic, Haiti, and Mexico, Suárez-Orozco et al. (2010) looked at school characteristics (segregation rate, poverty rate, and student perception of school violence), family characteristics (maternal education, parental employment, and household structure), and individual characteristics (such as academic English proficiency, academic engagement, number of school transitions) that impacted the newcomer students' academic success. Students who had two adults in the household, had higher levels of academic English proficiency, and were in higher quality schools had more academic success. School segregation and poverty, students' perceptions of school violence, students who reported psychological symptoms, and those who were overaged for their grade had less successful trajectories.

Parents of English-speaking students are able to help with homework and to communicate easily with their children's teachers and other school personnel. This is not always the case for parents of English learners. For example, research has shown that Latino students' academic achievement can be affected if there is positive collaboration between the home and school (Mena, 2011). Many parents have an understanding of the educational system and are able to advocate for their children if things are not going well. However, parents who do not speak English well may be limited in terms of helping children with homework (Trumbull, Rothstein-Fisch, & Hernandez, 2003). Experiences in the USA have been found to vary for Hispanics from how they viewed schools in their home country, especially for low-income families (Orozco, 2008). They may come from a culture in which what is seen as collaboration by parents and schools in the new culture may be seen by immigrant Hispanic parents as interfering with the professionals who are providing the child's education (Denessen, Bakker, & Gierveld, 2007). If parents are in a country illegally, they may feel constrained about communicating with the school and advocating for their children. They may also be dealing with issues of poverty, making it difficult to supply children with the basic necessities of life, much less providing resources to help with schooling.

The Learner

Children with learning disorders not only have lower levels of achievement, but they also suffer from lower levels of academic self-efficacy, positive mood, and hope; they have higher levels of loneliness and negative mood (Lackaye & Margalit, 2006).

They can have negative feelings in the academic context, in effect, feelings of being different and somehow not measuring up to what is expected. Attempting to learn the language of instruction while at the same time struggling with a learning disorder can be devastating. At first, the assumption will likely be made that the child is just having a hard time with the language. However, as time goes on, the child fails to make progress that is typical for English language learning peers and continues to fall further and further behind in learning English and other academic content. When school personnel lack the skills to determine when there is a learning disorder in addition to a language deficit, consideration for and provision of special education services may be denied. These students may be kept in ESL programs both to meet their needs and so that schools can avoid making difficult eligibility decisions. The children see their peers advancing while they continue to try to learn basic English skills. The Oxford Dictionary defines "catch-22" as "a dilemma or difficult circumstance from which there is no escape because of mutually conflicting or dependent conditions" (Oxford Dictionaries, 2015). In a classic catch-22 situation, schools are reluctant to consider English learners as having a disability until they have learned sufficient English but, because of the disability, the child is not able to learn English.

Students with learning disorders who lack English proficiency skills often have other challenges that are unique to them as learners. They and their families may be immigrants who have come to an English-speaking country to escape situations that are life threatening, whether related to poverty, war, persecution, or civil unrest (Unruh, 2011). They may have been exposed to severe and/or sustained trauma, leaving them and others in their families with symptoms of post-traumatic stress disorder. They may not have access to health care and, in particular, mental health care, further exacerbating emotional stressors. Their status in the country may be illegal and they may be subject to discrimination and harassment.

In this book, we take the position that children should never be placed in special education if it is possible to provide for their needs in the general education environment. We also take the position that, if children are struggling to learn, the school *must* provide them with the intensity of services that are necessary to help them learn. If the intensity of services is unavailable elsewhere and the child shows evidence of a learning disorder, then the option of evaluation for special education cannot lawfully be denied, regardless of the level of the child's English proficiency.

What Is the Typical Path to a Comprehensive Evaluation and What Are the Additional Challenges for English Language Learners?

A Brief Explanation of Universal Screening for Multitiered Systems of Support (MTSS) or Response to Intervention (RTI)

The MTSS or RTI model in schools is a systems-wide proactive and preventive approach in which educators endeavor to make the most appropriate instructional match between curriculum, instruction, and student skills. RTI emphasizes

problem-solving and data-based decision making, as well as evidence-based instructional practices (Unruh & McKellar, 2013).

For Fluent English Speakers

Schools must screen children early and regularly to identify students who are not making typical progress. In the USA, universal screening often begins in the second semester of kindergarten and occurs twice yearly after that. Screenings are done with well-researched outcome-based measurement probes, such as the Dynamic Indicators of Basic Early Literacy Skills (DIBELS, 2015) or AIMSweb (About AIMSweb, 2015). The probes typically take a few minutes per child to administer and score. They measure skills that are correlated with academic achievement in reading, math, and writing. Screenings are done in order to give students the intensity of interventions that they need according to a multitiered system of supports (MTSS). Tier 1 is for students who can function well at grade level in the general education classroom, usually about 75–80 % of all students. Tier 2 interventions are for students who are at risk and need some focused interventions, perhaps 10–15 % of all students. Tier 3 is for students who are not making sufficient progress in Tier 2 and need even more intensive interventions. Screening may identify an entire class that is scoring below the level that would be expected, in which case class-wide interventions are warranted. If screening reveals that most of the class members are on track, they will continue in Tier 1; individual students who are not performing on grade level and have skill deficits will be given Tier 2 interventions that are appropriate for students who are at risk of falling further behind their grade-level peers. When these Tier 2 interventions are successful, students who have been identified as at risk should be able to return to Tier 1. However, if students are not making adequate progress at Tier 2, more intensive interventions will be put into place at the Tier 3 level. In many schools, students who are receiving Tier 3 interventions are being monitored for the possible need for evaluation to determine eligibility for special education services.

There are at least three major advantages to the MTSS or Response to Intervention (RTI) approach and at least one major disadvantage (Berninger & May, 2011). Advantages are that (a) educators are focused on the value of early intervention for prevention; (b) RTI is helpful to a wide range of struggling learners (such as children from low-socioeconomic and/or low-literacy homes, and English learners) and not just students with biologically based disabilities; and (c) educators can become aware of a variety of students with instructional and learning needs within general education. The disadvantage is that RTI does not diagnose *why* a student failed to respond to instruction nor does it always help educators know *how* to adapt instruction to successfully remediate the problem.

For English Learners

As with other educational initiatives that intend to improve outcomes for students, the implementation of RTI requires special considerations for English learners. In terms of monitoring students' needs and progress, it can be effective for a wide

variety of students, including English learners and students with learning disabilities (Graves, Brandon, Dueshery, McIntosh, & Pyle, 2011; Samuels, 2011).

English learners can be included in universal screenings but their scores cannot necessarily be validly compared with the scores of monolingual English speakers for whom the screenings were normed. One would not expect a child who has had limited exposure to English to have comparable scores on these screening measures, whether they are measures of initial sound fluency at the kindergarten level or oral reading fluency at the sixth-grade level. Some screeners for English learners have been developed by the publishers of popular outcome-based measures, such as reading measures in grades kindergarten through fifth which compare English language learners at similar grade levels and similar levels of English language proficiency (AIMSweb English Language Learner Profiles, 2015). There are also screening measures that monitor the development of early literacy skills in Spanish, such as the *Indicadores Dinámicos del Éxito en la Lectura* (IDEL, 2015).

With RTI, it is important to remember that one size does not fit all. Research has shown that specific practices support the needs of English learners. Orosco and Klingner (2010) studied one school's implementation of RTI and its effect on English learners. They found that the school involved in the study was unresponsive to English learners' language and literacy needs; and teachers gave inadequate instruction to the English learners and were themselves given weak professional development and insufficient resources. English learners paid the price through inappropriate educational placements. Orosco and Klingner concluded that, for RTI to work for English learners (in reading), educators must provide "… a balance between basic and higher-order skills, direct and explicit instruction, oral language development, and student-based collaborative approaches integrated with phonemic awareness, letter knowledge, word recognition, fluency, vocabulary development, and comprehension skills instruction" (p. 282).

Obviously, interventions must be tailored to the unique needs of students and must be based on sound research. Despite the fact that this does not always happen, there are definite advantages in having data that comes from frequent screenings and progress monitoring. Optimally, these data can be used for planning instruction and making educational placements. Test-teach-test dynamic assessments can help determine whether low-achieving English learners, when given evidence-based interventions in a tiered system of support, still show significantly slower rates of academic growth (Barrera, 2006). Test-teach-test data can be yet another of the multiple indicators that school psychologists can use to help determine learning disorders in English learners. (Please see Chapter 11 for instructions in test-teach-test or dynamic assessment procedures.)

Development of Tier Interventions

For Fluent English Speakers

Schools must put into place evidence-based interventions to help struggling learners who have been identified by the screening process. There are multiple sources of research-based interventions for fluent English speakers, including comprehensive curricular programs and interventions that are targeted toward particular skills and skill deficits. For example, at the time of this printing, the US Government-sponsored website, *What Works Clearinghouse* (WWC), has almost 20 Practice Guides available for educators seeking interventions for struggling monolingual students, covering everything from *Teaching Strategies for Improving Algebra Knowledge in Middle and High School Students* (WWC, 2015b) to *Encouraging Girls in Math and Science* (WWC, 2007).

For English Learners

The research regarding interventions for English language learners is more limited. At the time of the publication of this book, the *What Works Clearinghouse* website had only two Practice Guides available that target English language learners: *Teaching Academic Content and Literacy to English Learners in Elementary and Middle School* and *Effective Literacy and English Language Instruction for English Learners in the Elementary Grades* (What Works Clearinghouse Practice Guides, 2015a).

Another obstacle for the provision of interventions to English language learners is that many teachers may have limited training in addressing their needs (Bunch, Aguirre, & Téllez, 2009), even in areas of large populations of English learners (Shreve, 2005). Others who are in the position of helping to develop interventions, such as school psychologists, also may lack training in this area.

The Involvement of a Problem-Solving Team

For Fluent English Speakers

When students fail to make adequate progress in response to a multitiered support system of interventions in general education, a problem-solving team will typically become involved. The team often consists of the child's teacher(s), parents, an administrator, as well as other support personnel, such as the school psychologist. The mission of the team is to review the data that have already been collected (such as previous school records, test scores, progress-monitoring data, health reports, results of observations and interviews), try to determine possible causes of the lack

of adequate progress in the area of concern, and develop individualized interventions to address the problem. The interventions are monitored and, if they still do not result in adequate progress, the problem-solving team may recommend a comprehensive evaluation to determine possible eligibility for special education services. Teachers who have the child in their classes may be the most concerned—and frustrated—about a child's lack of progress, so they will advocate for a comprehensive evaluation. Parents are sometimes the first to suspect that their child has learning problems. They will start the ball rolling by advocating and/or insisting that schools look more closely at their child's learning struggles.

For English Learners

Teacher advocacy issues: As just mentioned, it is often concerned teachers who push a referral to a problem-solving team. Teachers who are the most knowledgeable about typical progress for English learners are their ESL teachers. However, schools may have various obstacles that prevent appropriate and timely referrals of English learners, as Sánchez, Parker, Akbayin, and McTigue found in their 2010 study. When attempting to make referrals, teachers may experience resistance from administrators and support personnel who assume that the child just lacks English proficiency. The school or district may have policies regarding how long students must spend learning English before they can be referred for an evaluation. If the English learner spends most of the time in the regular education classroom, a referral may be dependent upon the knowledge of regular education teachers and other school personnel with whom the teacher consults, who may or may not have experience with this population.

Parent advocacy issues: Parents do not necessarily have the same relationship with school faculty and staff in different cultures. In Mexico, for example, parents may tend to see school personnel as the experts in education and, although very supportive at home, may not be as likely to try to influence the educators as other parents. Other circumstances can inhibit parents' involvement, as well. Parents who do not speak English or do not speak English fluently may find it difficult to communicate their concerns. If they are invited to meetings and do not fully understand what is being said, they may be reluctant to attend more meetings. If parents are in the country illegally, they may avoid bringing attention to themselves and to their child by interacting with school personnel.

Extra steps are needed to involve parents: There are some extra steps that must be taken in order to involve parents of English learners in the problem-solving process. When an English learner does come to the attention of a problem-solving team, that team should include the parents. If the parents are not fluent in English, meetings must include an interpreter. This adds additional costs, time, and arrangements for the school district or special education cooperative. There can be a tendency for school personnel to want to believe that the parents' level of proficiency is adequate for these meetings so that they do not need to bother with including an interpreter.

There can also be a tendency among some parents to want school personnel to believe that they are more fluent in English than they are, thus saving school personnel from the trouble of making arrangements for the involvement of an interpreter. School personnel may not realize that IDEA 2004 requires that all documents should be translated for parents who cannot read fluently in English. School personnel may prefer to think that parents have sufficient literacy skills in English so that they do not require documents to be translated.

Psychologist advocacy issues: There may also be resistance from the school psychologist in advocating for evaluations for English learners. The professional standards for school psychologists dictate that they must operate within the bounds of their competency (American Psychological Association, 2010; Canadian Psychological Association, 2000; National Association of School Psychologists, 2010). Psychologists who did not receive graduate training in working with second language learners and/or who have been in schools which do not offer many opportunities to work with English learners may believe that they would be operating outside of their bounds of competency to work with these students. Although it is clearly illegal to avoid working with a certain segment of the population (Education for All Handicapped Children Act, 1975), the feelings of discomfort may be subconscious and may lead the psychologist to find excuses to avoid becoming involved.

Administrator advocacy issues: School and district administrators run the gamut between those who have extensive experience with English language learners and those who have next to no experience. Administrators may have an unfounded perception that English language learners are over-identified in special education, thus prompting administrative reservations about referring and placing these students. In their 2015 study, Morgan et al. found that language minority students were significantly less likely than otherwise similar students from English-speaking families to be identified as having learning disabilities or speech and language impairments. Administrators recognize that it costs substantially more to educate a child in special education and may thus, consciously or subconsciously, err on the side of discouraging evaluation and placement.

Resource issues: Issues of resources can also present barriers for English language learners in this process. A problem-solving team will typically brainstorm regarding the nature of the problem and the available resources that provide supports for the student. The supports can involve changes or modifications in the environment, in the curriculum, and in instruction. The supports that are possible depend on the resources available. Schools tend to target the largest numbers of their students when allocating resources. If English learners represent a relatively small group of students in the population, their needs may be seen as a side note, thus limiting options for problem-solving teams in finding supports for the child. Schools and districts with relatively smaller numbers of English language learners may lack options that are available in schools and districts with larger numbers of these students. In addition, administrators do not always provide time in the school day for personnel involved in problem-solving teams—ESL teachers, core

teachers, child study team members, special education teachers, and administrators—to confer with each other. An additional challenge is that of working around the schedules of the parents.

When brainstorming whether or not to refer a child for a comprehensive evaluation, problem-solving teams are conscious of the resources that are available in the schools once a placement is made. Although IDEA 2004 makes it illegal to make eligibility decisions based on resources (Wrightslaw, 2016), the reality is that schools must provide services to identified students and, if appropriate services are not available, school personnel may be reluctant to write an IEP that mandates those services.

Delays due to waiting for English fluency to develop: Educators find it challenging to decide how much time to wait before making a referral for evaluation to consider eligibility for special education for an English learner (Sánchez, Parker, Akbayin, & McTigue, 2010). They may establish a longer period that must be observed by problem-solving teams when working with English language learners, with the objective of giving these students more time to develop English skills. Although this may result in fewer English learners being erroneously placed in special education programs, for the English learners who do, indeed, have learning disorders, it postpones the provision of services that are their right by law. It also prolongs the period of time when the child is lost and frustrated in school. Because so many learning disabilities are language based (Lyon, Shaywitz, & Shaywitz, 2003), the very disability that affects their progress in learning content in reading, writing, and/or math will keep them from learning English, the language of instruction.

Lack of sufficient knowledge: A paucity of knowledge about English learners can affect decisions made by school personnel when it comes to determining the needs of these children. Two mistakes can be made in this regard: Students who are not disabled can be placed in special education and, conversely, students who are disabled can be denied special education services. English learners can be over-referred for special education evaluation due to a number of issues: lack of native language proficiency and literacy, poverty, assessment procedures, referral bias, and lack of learning opportunities (Artiles, 2006). As noted earlier, English learners can be under-referred and under-identified. Both over- and under-identification stem from a lack of sufficient knowledge regarding the interplay of second language acquisition and learning disorders. Several behaviors that are typical of individuals immersed in a second language setting are quite similar to behaviors that are associated with processing difficulties shown by students who have learning disabilities (Chamberlain, 2006).

Additionally, school personnel may have insufficient knowledge of the culture of the child, thus tending to confuse disabilities with cultural idiosyncrasies. This, too, can lead to mistakenly thinking that special education is warranted when it is not. However, a past history of overidentification may have prompted the pendulum to swing in the other direction. School personnel may become overly wary of mistakenly attributing struggles to lack of English proficiency when, in reality, the student is both disabled and has limited English proficiency (Morgan et al., 2015).

What Happens When It Is Determined by a Problem-Solving Team That a Comprehensive Evaluation Is Warranted? How Is the Process Different for English Learners?

For Fluent English Speakers

A familiar process: Once it is determined by a problem-solving team that a comprehensive evaluation is warranted, or when a parent requests an evaluation, the referral process is fairly straightforward. The evaluation team is formed. It typically consists of a general education teacher, a school psychologist, an administrator, a special education teacher, a nurse, and others when needed (such as a speech-language pathologist, social worker, counselor, reading specialist). The team gives notice to parents and obtains consent for the evaluation from them. The team has 60 days to complete the evaluation but will usually try to finish the evaluation and share its findings and recommendations as expeditiously as possible. During this time, interventions to help the student may continue. Teachers give input, the psychologist conducts a psychoeducational assessment, and other individuals conduct assessments and write reports, as appropriate. A determination is made as to whether or not the child can be identified as a child with a disability and, because of that disability, needs special education services. If found eligible, an Individual Education Plan (IEP) is written based on the services needed by the student.

For English Learners

Requirements by law: There is an interplay between two sections of federal policy that deal with assessment and placement of English language learners in special education. Section 300.304 of the special education regulations (Special Education-Assistance to States for the Education of Children with Disabilities [Evaluation Procedures], 2006b) specifies the following:

Each public agency must ensure that:

1. Assessments and other evaluation materials used to assess a child under this part:

    (a) Are selected and administered so as not to be discriminatory on a racial or cultural basis;
    (b) Are provided and administered in the child's native language or other mode of communication and in the form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally, unless it is clearly not feasible to so provide or administer;
    (c) Are used for the purposes for which the assessments or measures are valid and reliable;
    (d) Are administered by trained and knowledgeable personnel; and
    (e) Are administered in accordance with any instructions provided by the producer of the assessments.

These regulations give specifications regarding specific learning disabilities (SLD) and say that SLD does not include learning problems that are primarily the result of *environmental, cultural*, or *economic disadvantage*. And in Section 300.306 (Special Education-Assistance to States for the Education of Children with Disabilities [Determination of Eligibility], 2006a), the regulations specify that the determinant factor cannot be

1. Lack of appropriate instruction in reading, including the essential components of reading instruction;
2. Lack of appropriate instruction in math; or
3. Limited English proficiency.

Exclusionary factors: In considering learning disability determinations, teams must decide that exclusionary factors are not the *primary* cause(s) for the student's academic struggles. The word primary is important. The exclusionary factors may play a role but they must be ruled out as having the most important role. The exclusionary factors are environmental, cultural, or economic factors and lack of appropriate instruction in oral expression, listening comprehension, written expression, basic reading skill, reading fluency skills, reading comprehension, mathematics calculation, or mathematics problem solving. This is where Sections 300.304 and 300.306 intersect. Environmental, cultural, and economic factors must be ruled out as the primary cause of the student's academic achievement deficits in both sections.

Environmental, cultural, or economic factors: The environments of immigrant and refugee families can be inherently stressful and difficult. Often they have moved to an unfamiliar place where people speak a different language. They must learn new cultural expectations and ways of operating within society. They may have little money themselves and, when they start earning money, they may need to send a portion back to family members in their native land. It can be unsettling to children when their parents are under stress, financial and otherwise. Families who have immigrated illegally are under added stress because they do not know from one day to the next whether they will be caught and deported. Children may come home from school to an empty house because a parent has been apprehended and jailed. Unless the child has a history of good grades and then starts struggling after some traumatic event, it is difficult to determine that these environmental, cultural, or economic factors have not affected the child's achievement in school.

Lack of appropriate instruction in oral expression, listening comprehension, written expression, basic reading skill, reading fluency skills, reading comprehension, mathematics calculation, or mathematics problem solving: One challenge in working with English learners is simply that there may be gaps in their academic histories. In the fast-paced schedule of busy school psychologists, it is helpful to have immediate access to the academic records of a student. A child who has always attended the same school and school district will typically have a regular education cumulative file which includes:

- An academic transcript which includes attendance, mobility, grades, teacher comments, and scores on standardized tests;
- Results of any intelligence, aptitude, and psychological and personality tests the student took while at the school;
- Descriptions of disciplinary incidents and actions taken against the student, such as suspensions or expulsions;
- Participation in extracurricular activities, such as sports, music, theater, student government, and honors or awards.

The school nurse will also have a health folder which contains:

- Health-related information, such as chronic and temporary health conditions;
- A history of hospitalizations, the child's medications, and medications administered at school;
- The results of vision and hearing screenings, and accident reports.

Finally, if the student has been evaluated for special education consideration, there will be a file which contains the results of the comprehensive evaluation, including:

- A psychoeducational and developmental history of the child;
- Results of mental ability, achievement, personality, and psychological tests;
- Results of other evaluators, such as speech-language pathologists, occupational and/or physical therapists, medical personnel, counselors, social workers, and others.

This wealth of information may not be available for an English learner who has come from another country, whose formal education has been interrupted, and/or who has moved from school to school and sometimes back and forth between countries. Although it is not impossible to obtain educational records from another country, it can be difficult, especially if a different language than English is spoken in that country. It may be challenging to obtain the desired records and to ascertain specifics about attendance and achievement. This can make it hard to know about the consistency of the child's formal education or about previous evaluations or identification. Parents may be reluctant to provide information about learning issues, health problems, or even the child's actual date of birth. There may be cultural taboos against sharing private family matters and to trust "outsiders" (Leung, Wu, Questin, Staresnick, & Le, 2008). School personnel may not know what kinds of information to collect that has a bearing on academic language acquisition.

Assessment considerations: Standardized tests are normed on certain populations of interest to the test publishers and to potential users of the tests. To the extent that an examinee is similar to the norming population, the standardized test can be a quick, efficient, and valid way to compare that examinee to other students of a similar age or grade. However, if the examinee is dissimilar to individuals in the norming population, the comparison becomes invalid. In the landmark case of *Diana v. State Board of Education* (1970), the inappropriate use of tests to determine special education was challenged. "Diana" was a Spanish-speaking student in California who

had been placed in a class for mentally retarded students because she had a low score on an IQ test that was given to her in English. The court determined that Spanish-speaking students must be tested in their native language to avoid such errors in placement.

It has been known for some time that the examinee's level of English proficiency is a confounding factor in results of achievement, mental ability, and processing assessments (Winter, Kopriva, Chen, & Emick, 2006). Lack of proficiency in English is a threat to the validity estimate of the obtained scores (Hofstetter, 2003; American Educational Research Association, 2014). Tests and subtests with higher levels of English language complexity add a challenge for English learners that monolingual English speakers do not have. Language factors influence the scores and act as construct-irrelevant sources of measurement error (Abedi, 2002). Simply put, for English learners, any test with verbal content becomes at least partially a test of their English proficiency rather than whatever else we think we are measuring.

Limited availability of standardized assessment measures: In assessing English learners, school psychologists and speech-language pathologists sometimes struggle with the issue of determining "language dominance" (Ortiz & Yates, 2002). Obviously, when using standardized tests, we want to know the student's strengths. When doing verbal assessments, we want to learn about their verbal skills both in English and in the first language. As will be detailed in Chapters 2 and 3, language acquisition and language loss are important issues in the evaluation of English language learners. When choosing standardized tests, the question to be asked is not "Which language is dominant?" but, rather, "Which tests have norming samples that are appropriate for the student being evaluated?" (Ortiz, 2014).

Also, students may be dominant in one language over another but still not be fluent in either language (Ortiz, 2014; Salvia & Ysseldyke, 2004). These issues make it difficult for assessors to rely heavily on standardized tests to help make eligibility determinations. However, standardized tests are considered the "gold standard" by many school psychologists, who may feel distinctly uncomfortable diagnosing learning disorders when standardized test scores are not available.

Lack of assessments that effectively differentiate second language development and learning disabilities: As noted at the beginning of this chapter, the characteristics of individual English language learners who struggle academically are complex. Assessment teams must consider, among other factors, (a) the number of years a student has been in an English-speaking country; (b) years of formal, uninterrupted schooling; (c) exposure to English outside of school; (d) exposure to academic English; (e) curricula alignment; (f) quality of instruction; and (g) cultural factors. In some cases, assessments in the native language can be helpful in distinguishing language-processing disorders from lack of English proficiency, but that is not always the case. For example, although psychologists have access to valid assessments for Spanish speakers that have been normed for the Spanish-speaking population in the USA, these assessments may not be valid for students who have not received academic instruction in Spanish or for recent immigrants (Sánchez et al., 2010).

What Is Needed in Schools and Districts to Meet the Needs of English Language Learners?

In a comprehensive study of the procedures used and challenges faced by district and school personnel in making special education eligibility decisions for English language learners in three middle schools in New York State, Sánchez et al. (2010) pointed to five key interrelated elements that are important in order to avoid misidentification:

- Adequate professional knowledge
- Effective instructional practices
- Effective and valid assessments and interventions
- Interdepartmental collaborative structures
- Clear policy guidelines

This book is a resource which addresses professional knowledge, effective instructional practices, and effective and valid assessments and interventions. It is hoped that, with a clear understanding of these areas, schools and districts will be able to work toward developing interdepartmental collaborative structures and clear policy guidelines in order to meet the needs of their growing numbers of English language learners.

References

Abedi, J. (2002). Standardized achievement tests and English language learners: Psychometrics issues. *Educational Assessment*, *8*(3), 231–257.

AIMSweb. (2015). About AIMSweb. Retrieved from https://aimsweb.pearson.com/robohelp/Software_Guide_Test.htm#Preface.htm.

AIMSweb English Language Learner Profiles. (2015). Retrieved from https://aimsweb.pearson.com/robohelp/Software_Guide_Test.htm#Preface.htm.

American Education Research Association. (2014). *Standards for educational and psychological testing*. Washington, DC: Author.

American Psychological Association. (2010). *Ethical principles of psychologists and code of conduct with the 2010 amendments*. Retrieved from http://www.apa.org/ethics/code/index.aspx.

Artiles, A. J. (2006). Forging a knowledge base on English language learners with special needs: Theoretical, population, and technical issues. *Teachers College Record*, *108*(11), 2187–2194.

Barrera, M. (2006). Roles of definitional and assessment models in the identification of new or second language learners of English for special education. *Journal of Learning Disabilities*, *39*(2), 142–156. doi:10.1177/00222194060390020301.

Berninger, V. W., & May, M. O. (2011). Evidence-based diagnosis and treatment for specific learning disabilities involving impairments in written and/or oral language. *Journal of Learning Disabilities*, *44*(2), 167–183.

Bunch, G. C., Aguirre, J. M., & Téllez, K. (2009). Beyond the scores: Using candidate responses on high stakes performance assessment to inform teacher preparation for English learners. *Issues in Teacher Education*, *18*(1), 103–128.

Canadian Psychological Association. (2000). *Canadian code of ethics for psychologists-third edition*. Ottawa, ON: Author.

Chamberlain, S. P. (2006). Alfredo Artiles and Beth Harry: Issues of overrepresentation and educational equity for culturally and linguistically diverse students. Interview. *Intervention in School and Clinic*, *41*(4), 228–232.

Cummins, J. (1984). *Bilingualism and special education: Issues in assessment and pedagogy*. Clevedon: Multilingual Matters.

Denessen, E., Bakker, J., & Gierveld, M. (2007). Multi-ethnic schools' parental involvement policies and practices. *School Community Journal*, *17*(2), 27–44.

Diana v. State Board of Education, Civ. Act. No. C-70-37 (N.D. Cal., 1970, *further order*, 1973).

Dynamic Indicators of Basic Early Literacy Skills. (2015). Retrieved from https://dibels.uoregon.edu/market/assessment/dibels/.

Education for All Handicapped Children Act, 94 U.S.C. § 601 *et seq.* (1975).

Graves, A. W., Brandon, R., Dueshery, L., McIntosh, A., & Pyle, N. B. (2011). The effects of Tier 2 literacy instruction in sixth grade: Toward the development of a Response-to-Intervention model in middle school. *Learning Disability Quarterly*, *34*(1), 73–86.

Hofstetter, C. H. (2003). Contextual and mathematics accommodation test effects for English-language learners. *Applied Measurement in Education*, *16*(2), 159–188.

Indicadores Dinámicos del Éxito en la Lectura. (2015). Retrieved from https://dibels.uoregon.edu/market/assessment/idel.

Individuals with Disabilities Education Improvement Act, 20 U.S.C. § 1400 *et seq*. (2004).

Lackaye, T. D., & Margalit, M. (2006). Comparisons of achievement, effort, and self-perceptions among students with learning disabilities and their peers from different achievement groups. *Journal of Learning Disabilities*, *39*(5), 432–446.

Leung, B., Wu, T., Questin, M., Staresnick, J., & Le, P. (2008). Communicating with Asian parents and families. NASP Communiqué, 36(8). Retrieved from http://www.nasponline.org/publications/periodicals/communique/issues/volume-36-issue-8/communicating-with-asian-families.

Lyon, G. R., Shaywitz, S. E., & Shaywitz, B. A. (2003). Defining dyslexia, comorbidity, teachers' knowledge of language and reading: A definition of dyslexia. *Annals of Dyslexia*, *53*, 1–14.

Mena, J. A. (2011). Latino parent home-based practices that bolster student academic persistence. *Hispanic Journal of Behavioral Sciences*, *33*(4), 490–506. doi:10.1177/0739986311422897.

Morgan, P. L., Farkas, G., Hillemeier, M. M., Mattison, R., Macquga, S., Li, H., & Cook, M. (2015). Minorities are disproportionately underrepresented in special education: Longitudinal evidence across five disability conditions. *Educational Researcher*, *44*(5), 278–292. doi:10.3102/0013189X15591157.

National Association of School Psychologists. (2010). *Principles for professional ethics 2010*. Retrieved from http://www.nasponline.org/assets/Documents/Standards%20and%20Certification/Standards/1_%20Ethical%20Principles.pdf.

Orosco, M. J., & Klingner, J. (2010). One school's implementation of RTI with English language learners: "Referring into RTI". *Journal of Learning Disabilities*, *43*(3), 269–288. doi:10.1177/0022219409355474.

Orozco, G. L. (2008). Understanding the culture of low-income immigrant Latino parents: Key to involvement. *School Community Journal*, *18*(1), 21–37.

Ortiz, A. A., & Yates, J. R. (2002). Considerations in the assessment of English language learners referred to special education. In A. J. Artiles & A. A. Ortiz (Eds.), *English language learners with special education needs*. Washington, DC: Center for Applied Linguistics Retrieved from http://files.eric.ed.gov/fulltext/ED482995.pdf.

Ortiz, S. O. (2014). Best practices in nondiscriminatory assessment. In P. L. Harrison & A. Thomas (Eds.), *Best practices in school psychology: Foundations* (pp. 61–74). Bethesda, MD: National Association of School Psychologists.

Oxford Dictionary. (2015). Retrieved from http://www.oxforddictionaries.com/us/definition/american_english/catch?q=catch-22#catch-22.

Salvia, J., & Ysseldyke, J. E. (2004). *Assessment in special and inclusive education* (9th ed.). Boston, MA: Houghton Mifflin Co

Samuels, C. A. (2011). A Calif. District employs RTI to boost achievement for all. *Education Week*, *30*(22), S6–S8.

Sánchez, M. T., Parker, C., Akbayin, B., & McTigue, A. (2010). *Processes and challenges in identifying learning disabilities among students who are English language learners in three New York State districts*. Washington, DC: Education Development Center Inc. Retrieved from http://ies.ed.gov/ncee/edlabs/regions/northeast/pdf/REL_2010085.pdf.

Shreve, J. (2005). Educators are poorly prepared for ELL instruction. *Edutopia*. Retrieved from http://www.edutopia.org/no-train-no-gain.

Special Education-Assistance to States for the Education of Children with Disabilities [Determination of Eligibility], 34 C.F.R. § 300.306 (2006a). Retrieved from http://idea.ed.gov/explore/view/p/%2Croot%2Cregs%2C300%2CD%2C300%252E306%2C.

Special Education-Assistance to States for the Education of Children with Disabilities [Evaluation Procedures], 34 C.F.R. § 300.304 (2006b). Retrieved from http://idea.ed.gov/explore/view/p/%2Croot%2Cregs%2C300%2CD%2C300%252E304%2C.

Special Education-Assistance to States for the Education of Children with Disabilities [Definition of Specific Learning Disabilities], 34 C.F.R. § 300.8(c)(10).

Suárez-Orozco, C., Gaytán, F. X., Bang, H. J., Pakes, J., O'Connor, E., & Rhodes, J. (2010). Academic trajectories of newcomer immigrant youth. *Developmental Psychology*, *46*(3), 602–618. doi:10.1037/a0018201.

Trumbull, E., Rothstein-Fisch, C., & Hernandez, E. (2003). Parent involvement in schooling— According to whose values? *School Community Journal*, *13*(2), 45–72.

Unruh, S. (2011). Mexico's violence and posttraumatic stress disorder in immigrant children: A call for collaboration among educators. *The Journal of Multiculturalism in Education*, *7*, 1–18 Retrieved from http://www.nwaea.k12.ia.us/documents/filelibrary/word/iclc/PTSD_in_Mexican_Immigrant_Children_6A9C6A43B35B5.pdf.

Unruh, S., & McKellar, N. A. (2013). Evolution, not revolution: School psychologists' changing practices in determining SLD. *Psychology in the Schools*, *50*(4), 353–365.

What Works Clearinghouse Practice Guides. (2007). *Encouraging Girls in Math and Science*. Retrieved from http://www.ies.ed.gov/ncee/wwc/PracticeGuide.aspx?sid=5.

What Works Clearinghouse Practice Guides. (2015a). Retrieved from http://ies.ed.gov/ncee/wwc/Publications_Reviews.aspx?f=All%20Publication%20and%20Product%20Types,3;#pubsearch.

What Works Clearinghouse Practice Guides. (2015b). *Teaching Strategies for Improving Algebra Knowledge in Middle and High School Students*. Retrieved from http://www.ies.ed.gov/ncee/wwc/PracticeGuide.aspx?sid=20.

Winter, P. C., Kopriva, R. J., Chen, C., & Emick, J. E. (2006). Exploring individual and item factors that affect assessment validity for diverse learners: Results from a large-scale cognitive lab. *Learning and Individual Differences*, *16*, 267–276. doi:10.1016/j.lindif.2007.01.001.

Wrightslaw. (2016). Inclusion: Answers to frequently asked questions from the NEA. Retrieved from http://www.wrightslaw.com/info/lre.faqs.inclusion.htm.

Chapter 2
Dual-Language Learner Development

Introduction

Although much has been theorized in the field of education about how children learn a first and a second language, during the past 25 years there has been an explosion of knowledge about what actually occurs in the brain during language acquisition. This has been made possible through advances in medical technology which allow neuroscientists to track the activity of neurons as the brain processes speech, reading, writing, and math. As noted neuroscientist Stanislas Dehaene (2009) says, "Today, the brain's black box is cracked open and a true science of reading is coming into being" (p. 1). The black box is also cracked open for a science of math, writing, and language acquisition. It is important to note, though, that new discoveries about the brain and other aspects of the nervous system are being made daily. In the future, there will doubtless be breakthroughs in the hypothetical paradigms that exist today, forcing the formation of new paradigms to better explain what is happening as the individual speaks and reads. Before we investigate how the brain learns a second language, we explore the topic of how it learns a first language.

How Do Neuroscientists Study What Is Happening in the Brain as Students Learn Oral and Written Language?

There are various methods that are used to study the workings of the brain.

- *Electroencephalography (EEG)* involves recording electrical activity along the scalp. EEG measures voltage fluctuations resulting from ionic current flows within the neurons of the brain.
- *Magnetoencephalography (MEG)* is a neuroimaging technique for mapping brain activity by recording magnetic fields created by electrical currents taking place naturally in the brain, using very sensitive magnetometers.

- *Positron emission tomography (PET scans)* uses nuclear medicine imaging to generate three-dimensional, color images of the functional processing within the brain.
- *Functional magnetic resonance imaging (fMRI)* measures and localizes brain activity by detecting related changes in blood flow.
- *Magnetic source imaging (MSI)* gives information about both the location and the time course of activation of neurons in the brain.

Through these means, neuroscientists can track and localize neuronal activity as the brain initially sees letters, words, phrases, and sentences, processes their auditory and visual aspects, determines their meaning, and formulates a response.

What Is Brain Plasticity?

Brain plasticity, or neuroplasticity, is the brain's ability to reorganize its neural pathways in response to our experiences and what we learn from them. The brain is constantly changing in response to new information and skills that are being learned. It reorganizes and adapts in response to the experiences of the individual. It was once thought that individuals with learning disabilities would have them for life and the most that could be done was to learn to compensate for them. The following rather gloomy statement made by a noted expert in 2001 about the trajectory of learning disabilities illustrates this early philosophy:

> Learning disabilities are neurologically based and must be seen as a lifetime disability. The child with a learning disability will become an adolescent with a learning disability, who will become an adult with a learning disability. Learning disabilities are also life disabilities. The same areas of neurological dysfunction that interfere with learning interfere with life skills, sports, activities, family and peer relationships. At this time, treatment involves remediation and teaching compensatory strategies along with appropriate accommodations (Silver, 2001, p. 4)

In the past, students who struggled to read text might be given "talking books" so they could access the text without reading it themselves. Although this kind of technology can be useful in some cases, neuroscientists have learned that with an explicit, systematic reading program of sufficient intensity and duration, it is possible for the dyslexic brain to actually be trained to reorganize neuronal networks so that it "normalizes" and gains access to the areas that the typical reading brain uses (Shaywitz, 2003; Simos et al., 2007). Like muscles in the body that need to be exercised and trained to accomplish new skills, the brain must also be given opportunities to practice skills, such as reading, in order to form and strengthen those new neuronal connections. Taking away the opportunity to practice reading, then, may be a disservice to a student because it takes away the possibility of forming those neuronal connections.

What Are the Different Aspects of Oral and Written Language That the Brain Must Process?

The brain must break down different elements of oral and written language in order to process them in the appropriate regions. Here are aspects of language that are important to understanding the challenges in learning to speak and write in a second language:

- Phonemes are the smallest unit of speech that can be used to make one word different from another. The phonemes in "cat" are /k/ /a/ /t/. The phonemes in "cap" are /k/ /a/ /p/. Those little sounds—/t/ and /p/—are all our brains need to hear to bring up the image of a kitty cat versus a cap that we wear on our heads.
- Morphemes are the smallest units of meaning, or the smallest contrasting units of language which bring about a change of meaning. A morpheme may appear as a prefix, a base, a suffix, or it may be inflectional. For example, "tele" is from the Greek and means "far" or "far off." It is a common prefix (telescope, television, telegraphy). A common base is "port," from the Latin meaning "door, gate, or passage" (transportation, portage, portable). A common suffix is "ism," meaning practice or belief (racism, Marxism). Common inflectional morphemes are "s" and "ed." The addition of the /s/ as a sound in speech or as a letter in writing is all it takes to let you know if we are talking about one feline or more than one feline.
- Graphemes are the visual symbols (letters or combinations of letters, such as digraphs) that are used in writing. They are the letters or letter combinations that represent phonemes. For example, the grapheme for the /k/ sound in English can be c (as in cat), k (as in kitty), ch (as in choir), ck (as in check), or even que (as in plaque).
- Syntax refers to the rules that govern the way that words are put together in phrases, clauses, or sentences so that they convey a shared meaning. In English we commonly form a sentence using subject, then verb, and then object. An example is "The cat chases the mouse." But we can also say, "The mouse is chased by the cat." Both of these sentences follow syntactical rules that must be learned in order to make sense of sentences in English.
- Semantics refers to the meaning or interpretation of words within phrases, clauses, or sentences. There is a very different meaning between "Will the cat chase the mouse?" and "I saw Will, the cat, chase the mouse."
- Pragmatics refers to the appropriate use of language in different settings and contexts. For example, a father might say to his child, "Eat your vegetables" when both are at home at the dinner table. But it would not be appropriate for the same man to say "Eat your vegetables" to an adult who is sitting beside him at a dinner party.

When the brain gets the auditory input from a person's speech, it must pull apart or analyze the sentence as to phonemes, morphemes, syntax, semantics, and pragmatics.

Once it has processed these elements, it must synthesize them so that it has a coherent understanding of what was said and so that it can make a response, if needed. When the brain gets the visual input of a word, phrase, or sentence in writing, it must similarly analyze it and then synthesize what has been pulled apart in order to understand what has been read. The brain does this processing at lightning speed resulting in, for most people, fluid understanding and expression of oral and written language.

Oral Language: How Does the Brain Learn to Speak and Understand a First Language?

The brain appears to be hard-wired for oral language. Humans do not typically need to attend classes to learn to speak and understand oral speech, as they do to read and write. They just need to be exposed to a language for a sufficient amount of time. As Shaywitz (2003) puts it, "Through neural circuitry deep within our brains, a genetically determined phonological module automatically assembles the phonemes into words for the speaker and disassembles the spoken word back into its underlying phonemes for the listener" (p. 45). This process is natural and instinctive, and it happens over the first years of a child's life.

Before babies are born, they are already becoming attuned to the rhythm of their native language (Mehler et al., 2002). They perceive differing phonemes a few days after birth (Eimas, Siqueland, Jusczyk, & Vigorito, 1971) and the infant's speech areas in the brain, mainly in the left hemisphere, become attuned to the native language (Kuhl, 2004). The planum temporale is an area in the brain that is critical for speech decoding. During childhood, this region learns to process relevant speech sounds in the child's native language while ignoring speech sounds that do not occur in that language. When babies are born, they have the capacity to make any sound—about 150 phonemes—that are present in all of the world's languages (Sousa, 2011). The sounds in the child's native language will be reinforced by parents and others, but the child will not be exposed to all the sounds that are necessary for speaking other languages. By the end of the first year, a sort of "linguistic deafness" in the planum temporale and nearby regions of the brain results because certain sounds that the infant makes spontaneously have not been reinforced by attention from caregivers (Dehaene, 2009). For example, native speakers of Japanese cannot typically distinguish between /r/ and /l/, since these sounds are not used to discriminate words in Japanese.

As toddlers approach their third birthday, they are learning 10–20 new words a day and, by 5 or 6 years of age, children have a vocabulary of several thousand words (Dehaene, 2009). Before the age of 5, there are already vast differences between the vocabularies of children in different socioeconomic groups. A study conducted in Kansas City by Hart and Risley (2003) found that the average number of words in the expressive vocabulary of 3-year-olds in the lowest socioeconomic

group (welfare) was 525; the "middle-lower" group of toddlers had an average of 749 words, and children in the "upper" group had 1116 words in their vocabulary. Even children who have been living in the USA and speaking English since birth come to school with enormous differences in vocabulary.

How Does the Bilingual Brain Differ from the Monolingual Brain?

Children who are brought up in a bilingual home from birth (simultaneous bilinguals) have an advantage, obviously, in learning to understand both languages and speak both without an accent. Neuronal circuits go through distinct periods of heightened plasticity in many regions of the developing brain of children and adolescents (Levelt & Hübener, 2012), making it advantageous to learn additional languages while young. Further, researchers have shown that children and younger teens who grow up speaking two languages show activity in the same language areas of the brain, whereas areas are spatially separate when a second language is learned during late adolescence and adulthood (Bloch et al., 2009). However, plasticity is present in the adult brain, even at the phonemic level. For example, researchers have shown that adults whose first language is Japanese are able to learn to distinguish the English *l* and *r* sounds with computer-enhanced learning (Ingvalson, Holt, & McClelland, 2012).

When the brain is charged with learning anything new, it must develop new neuronal circuits. When learning a new language, in addition to learning a set of phonemes that may differ from the first language, the brain must learn morphemes, vocabulary, syntax, and semantics that may differ—sometimes markedly—from the native language. There is evidence that words that relate to each other are physically closer among neurons making up a semantic network than are unrelated words (Lavigne & Darmon, 2008). Words *within* these networks can activate each other very quickly but it takes longer for words *between* networks to activate each other (Chouinard & Goodale, 2010). This implies that, until words in the second language are associated with those in the first, it takes the brain longer to activate meaning and associate the equivalent vocabulary in both languages. Kovelman, Baker, and Petitto (2008) conducted an fMRI study which compared 10 monolinguals, who spoke only English from birth, and 11 simultaneous bilinguals, who spoke both English and Spanish from birth. They found that both groups processed the individual languages in similar areas of the brain when speaking only one language, mainly in left-hemisphere language regions. But when the bilingual participants were in a bilingual mode requiring rapid switching between the two languages, they showed increased activity in both left and right hemispheres.

By necessity, the bilingual brain takes increased advantage of the neural environment for language and cognitive processing that is provided in the brain (Sousa, 2011). The bilingual brain differs from the monolingual brain not only in the way it functions

but also in its anatomical structure. In addition to the increased activity in the right hemisphere while individuals are in the bilingual mode, the *corpus callosum*—a cable of nerves that connects the two hemispheres—is larger and more densely populated in the bilingual brain as compared to the brain of a monolingual (Coggins, Kennedy, & Armstrong, 2004). The corpus callosum is the passageway that allows communication between the right and left hemispheres. The two hemispheres of bilinguals have increased opportunities and capacities to communicate with each other. In many ways the bilingual brain is actually a better brain because of this increased engagement and flexibility.

How Does Learning English as a Second Language Interact with the Student's First Language?

To understand the impact learning English has on the student's first language, we must understand the concepts of *positive* and *negative transfer*. When the individual is in the process of learning new knowledge or skills, the brain searches neuronal connections that comprise what we call *long-term memory* for similarities between what is being learned and what has already been learned (Lardiere, 2009). If the brain finds similarities, positive transfer can occur—the new learning can be mapped onto the existing connections, making it easier to acquire the knowledge and remember it. Some languages share similarities in phonemes, morphemes, graphemes, syntax, and semantics with English, making them a better fit as the brain searches established neuronal connections. Spanish and French share many similarities with English, in terms of phonemes, morphemes, and graphemes. For example, the English word *drama* is virtually identical to the Spanish in sound, meaning, and spelling. The French *drame* is not identical but is very similar in sound, meaning, and spelling. So positive transfer can occur in the brain when a Spanish or French speaker is acquiring the word *drama* in English.

As an example of negative transfer, the same word can be used. One aspect of Spanish and French that does not occur in English is the gender of nouns. In English, we need to only know the meaning and usage of the word *a* when referring to any drama and *the* when referring to a specific drama. In French and Spanish, the speaker must learn the gender of each noun in order to use the articles that precede the nouns correctly in speech. In French, *drame* is masculine (*un drame* or *le drame*), whereas in Spanish, drama is feminine (*una drama* or *la drama*). So there is negative transfer between Spanish and French in terms of the articles that must precede this noun.

Besides considering the likelihood of positive and negative transfer between the first and second languages, we must also consider the learner's age at acquisition of the second language. It is ideal for both first and second languages to be as fully developed as possible. This does not always happen and the development of the first

language can atrophy when a second language becomes dominant at an early age. Younger immigrants are more likely to lose their first language than are older immigrants (Anderson, 2001).

Before children enter school, they learn their language from their parents and others who live in their homes. The vocabulary that young children learn in their homes is closely associated with the socioeconomic status (SES) of their parents (Hart & Risley, 2003; Sousa, 2011). The National Center for Children in Poverty (2016) reports that over 24 % of US children have at least one foreign-born parent and that immigrant families are disproportionately likely to suffer the effects of poverty and other difficulties that place the children at risk. It should not be assumed, though, that immigrant families are less likely to have rich vocabulary and literacy compared to native-born children. Indeed, Geva and Wiener (2015) point out that in some instances groups of immigrants may be better educated than groups of native-born families.

For English learners, the richness of their vocabulary in the first language is a factor in determining their ease in learning vocabulary in English (Sousa, 2011). There is evidence that the brain stores related words together, such that activating vocabulary items in the same category happens in the same area of the brain (Chouinard & Goodale, 2010). The brains of children who already have a vocabulary word or a concept stored in memory are primed for the storage of related vocabulary and concepts, even if they are in a different language. Children who are learning English are at an advantage when they come with a large vocabulary and the ability to understand complex communication in their native language. English learners can be either simultaneous or sequential bilinguals. Simultaneous bilinguals learn two languages from birth; sequential bilinguals learn a first language and later learn a second language. PET scans have shown that, for simultaneous bilinguals, language is activated in the same area of the brain but children who learn a second language later in life have language areas of activation in the brain that are spatially separated (Bloch et al., 2009; Hernandez & Li, 2007).

The home and community of English learners play roles in the degree to which they will acquire the second language. When children have opportunities to socialize with peers and others who speak English, they are able to acquire more practice in communicating in English. But if they are unlikely to interact with English speakers in their homes and communities, they miss out on English exposure and practice. Similarly, if English learners mainly interact with peers who speak their native tongue at school, they miss out on opportunities to gain vocabulary and fluency in English. In the USA, there are times when an immigrant child's neighborhood school does not offer an ESL program and the district wants to bus the child to a school that has an ESL program. However, parents of these children are sometimes resistant. They may want their children to attend their neighborhood school. Also, they may want their children to be educated wholly in English and may be fearful that sending their children to an ESL program may mean that there will be less direct exposure to English.

Is There a Difference Between Language Learned at Home, in the Community, and at School?

The use of particular vocabulary is dependent upon the setting. For example, the vocabulary we use at a restaurant or grocery store involves knowledge and concepts related to food. Much of the vocabulary and the specific meanings of words used at work are dependent upon the individual's type of job or profession. An architect may talk about an "acute angle" and a doctor may talk about an "acute pain." A high school student may learn the meaning of a "narrative" in English class but is unlikely to use that term in casual conversation. In terms of English learners, Cummins (1984) pointed out a distinction between Basic Interpersonal Communicative Skills (BICS) and Cognitive Academic Language Proficiency (CALP). BICS is a social language that children use on the playground, cafeteria, and halls. CALP is learned in the various classrooms and subjects in school and is typically what is assessed by school psychologists in the tests of achievement and mental ability that they administer (McCloskey & Athanasiou, 2000).

What Behaviors Will Educators See in English Learners as Their Skills Develop?

The behaviors that characterize English language development will vary depending upon an assortment of factors. For example, imagine that you are going to evaluate two English learners: Malek is a third grader from Saudi Arabia; his family moved to Canada a year ago. Ana is also a third grader and her family moved to the USA from the Dominican Republic 3 years ago. Malek's father speaks fluent English but, in the home, only Arabic is spoken and read. Ana's parents started learning English when they moved to the USA; they mainly speak Spanish in the home but encourage their children to speak and read in English as much as possible. They have many books in Spanish and in English in the home. Malek's father is an computer scientist who encourages Malek's interest in mathematics, how things are built, and how things work. Ana's parents both worked in education in their home country and both work as educators in the USA. According to Kohnert (2010), practitioners must consider several factors that differentiate Malek and Ana: (a) The two children may well have uneven proficiency or distributed skills within and across linguistic domains, depending upon the extent to which they have experiences in speaking, listening, reading, and writing in English and in their first languages. (b) School psychologists should recognize the variable presence and nature of cross-language associations; for example, Spanish and English share a multitude of cognates whereas the cognates shared by English and Arabic are more limited. (c) Since every learner is different, educators must realize that there will be individual differences in language performance between Ana and Malek even in response to relatively similar circumstances. Despite the complexities and individual differences

observed in the behaviors of English learners, there are some behaviors that educators will typically see in their language development.

Recent immigrants to a country may initially gravitate toward other students in their classrooms and schools who speak their first language. As they begin to learn English, there may be a "silent period" (Krashen, 1981), wherein the student is learning receptively but is producing little expressive language. During this silent period, students may be practicing "private speech"—repeating what others say and quietly rehearsing by themselves before making tentative forays into using English socially and expressively (Saville-Troike, 1988). Students may also try to communicate using nonverbal cues, such as pointing and gesturing.

English learners use very basic English vocabulary and grammar as they start attempting to communicate in English. In order to communicate, they begin to develop an *interlanguage*, which is composed of elements of the child's first language and of English. At this point, children may rely heavily on certain forms of verbs, such as *ing* verbs like *reading* or *writing*: "I riding the bus." They may use certain words to signify plurals, such as *many dog* or *many chair*, without realizing that they must also add the morpheme *s* to *dog* and *chair*. They may say "I not see you" before they use the correct grammar: "I don't see you."

When babies and toddlers learn their native language, they make similar mistakes as they acquire the language. For example, they may say "No want milk" or "Me no want milk." Even though adults understand the child's initial statement, they will typically respond with a sentence or phrase which implicitly corrects the toddler's grammar: "You don't want milk?" The adult does not say to the toddler, "The correct way to say that is "I don't want milk." There is research to suggest, however, that many English learners do not notice such implicit corrections and the teacher must explicitly make the distinction clear (Han & Kim, 2008; Lyster & Ranta, 1997).

For adolescents coming into an English-speaking middle or high school, the challenges are particularly daunting. Although these students may successfully learn social, nonacademic language fairly quickly, their academic language—the language specific to academic subjects that is learned in the classroom—may lag behind significantly (Gold & Maxwell-Jolly, 2006). Students who enter English-speaking schools with high-quality education from their home country and who receive high-quality instruction in their new language have a better basis for learning English and gaining academic skills than students who come with interrupted schooling and poor academic skills from their country of origin (Dutro & Kinsella, 2010).

According to Dutro and Kinsella (2010), educators should expect that adolescent newcomers will start out with minimal receptive and expression English language skills. Within the first year, students should be able to use basic English but will make many errors. They are likely to understand high-frequency words and everyday comments that are related to communicating their basic needs. It will be difficult for them to understand the vocabulary and concepts that their teachers intend to teach them. If these students are tested, it should be done in their native language, if at all possible. After the first year, typical English learners will begin to show increased understanding of oral and written English. They will respond with basic

vocabulary to visual prompts, use everyday expressions, and be able to speak and write simple sentences in present and past tenses. With structured support, they can produce writing that includes the main idea and basic descriptions. They will continue to make basic errors in speech.

In the next stage, students will show comprehension of familiar topics and they will begin to be able to have more sustained conversations on more varied topics. Their vocabularies become more detailed and wide ranging. They may continue to misuse the past tense of verbs ("We leaved the school") and have difficulty with conditional verb forms ("I give you a call if I decide to come"). After this stage, language use progresses substantially but students may engage in circumlocution—avoiding language that they recognize but that has not yet been internalized. When a language is internalized, it is spoken automatically without deliberate thought as to the proper form of verbs that should be used in sentences.

School psychologists and other educators who assess and intervene with English learners with little to no English must realize that, without significant scaffolding, these students are missing out on much content in the regular education classroom, especially during the first couple of years of schooling in English. The first year in the English-speaking country is the best time to test immigrant children's academic achievement using standardized tests in their native tongue, if such tests are available. After that, enough language loss in the child's first language may occur so that the child no longer fits the norming sample of tests that were normed on monolingual children in the first language. Also, as will be detailed in Chapter 5, we should not assume that a child who has typical reading skills in one language will not encounter difficulties in a language with a more complex orthography. When testing recent immigrants in English, we should expect standardized achievement scores to be low, with the possible exception of math calculation (provided that the notations and symbols are similar in the first language to those in English). We can also expect that if we administer a test in English, verbal subtests on tests of mental ability will result in low scores for immigrants in their first year of schooling in English. However, it is not necessary or even legal to avoid assessing these children until they have gained a certain level of fluency in English. If these children have a language-based learning disability, it will impact their ability to learn English just as it impacts their ability to learn other academic skills. In the following chapters, we will explore better and more valid assessment practices to use with students who do not fit the norming samples of standardized tests.

References

Anderson, R. T. (2001). Lexical morphology and verb use in child first language loss: A preliminary case study. *International Journal of Bilingualism*, *5*(4), 377–401. doi:10.1177/13670069010050040101.

Bloch, C., Kaiser, A., Kuenzli, E., Zappatore, D., Haller, S., Franceschini, R., … Nitsch, C. (2009). The age of second language acquisition determines the variability in activation elicited by narration in three languages in Broca's and Wernicke's area. *Neuropsychologia, 47*, 625–633. doi:10.1016/j.neuropsychologia.2008.11.009.

Chouinard, P. A., & Goodale, M. A. (2010). Category specific neural processing for naming pictures of animals and naming pictures of tools: An ALE meta-analysis. *Psychologia*, *48*, 409–418.

Coggins, P. E., Kennedy, T. J., & Armstrong, T. A. (2004). Bilingual corpus callosum variability. *Brain and Language*, *89*(1), 69–75.

Cummins, J. (1984). *Bilingualism and special education: Issues in assessment and pedagogy*. Clevedon: Multilingual Matters.

Dehaene, S. (2009). *Reading in the brain: The science and evolution of a human invention*. New York, NY: Viking.

Dutro, S., & Kinsella, K. (2010). English language development: Issues and implementation at grades six through twelve. In California Department of Education (Ed.), *Improving education for English learners: Research-based approaches* (pp. 151–207). Sacramento, CA: California Department of Education.

Eimas, P. D., Siqueland, E. R., Jusczyk, P. W., & Vigorito, J. (1971). Speech perception in infants. *Science*, *171*, 303–306.

Geva, E., & Wiener, J. (2015). *Psychological assessment of culturally and linguistically diverse children and adolescents: A practitioner's guide*. New York, NY: Springer Publishing Company.

Gold, N., & Maxwell-Jolly, J. (2006). *The high schools English learners need*. Policy Paper for University of California Language Minority Research Institute. Retrieved from http://escholarship.org/uc/item/6h72r068.

Han, Z.-H., & Kim, J. H. (2008). Corrective recasts. What teachers might want to know. *Language Learning Journal*, *36*(1), 35–44.

Hart, B., & Risley, T. R. (2003). The early catastrophe. The 30 million word gap by age 3. *American Educator*, *27*, 4–9.

Hernandez, A. E., & Li, P. (2007, July). Age of acquisition: Its neural and computational mechanisms. *Psychological Bulletin*, *133*, 638–610.

Ingvalson, E. M., Holt, L. L., & McClelland, J. L. (2012). Can native Japanese listeners learn to differentiate /r–l/ on the basis of F3 onset frequency? *Bilingualism: Language and Cognition*, *15*, 255–274. doi:10.1017/S1366728911000447.

Kohnert, K. (2010). Bilingual children with primary language impairment: Issues, evidence and implications for clinical actions. *Journal of Communication Disorders*, *43*(6), 456–473. doi:10.1016/j.jcomdis.2010.02.002.

Kovelman, I., Baker, S. A., & Petitto, L.-A. (2008). Bilingual and monolingual brains compared: A functional magnetic resonance imaging investigation of syntactic processing and a possible "neural signature" of bilingualism. *Journal of Cognitive Neuroscience*, *20*, 153–169.

Krashen, S. D. (1981). *Second language acquisition and second language learning*. London: Pergamon.

Kuhl, K. (2004). Early language acquisition: Cracking the speech code. *Nature Reviews Neuroscience*, *5*(11), 831–843.

Lardiere, D. (2009). Some thoughts on the contrastive analysis of features in second language acquisition. *Second Language Research*, *25*(2), 173–227.

Lavigne, F., & Darmon, N. (2008, November). Dopaminergic neuromodulation of semantic priming in a cortical network model. *Neuropsychologia*, *46*, 3074–3087.

Levelt, C. N., & Hübener, M. (2012). Critical-period plasticity in the visual cortex. *Annual Review of Neuroscience*, *35*, 309–330. doi:10.1146/annurev-neuro-061010-113813.

Lyster, R., & Ranta, L. (1997). Corrective feedback and learning uptake: Negotiation of form in communicative classrooms. *Studies in Second Language Acquisition*, *19*, 37–66.

McCloskey, D., & Athanasiou, M. S. (2000). Assessment and intervention practices with second-language learners among school psychologists. *Psychology in the Schools*, *37*(3), 209–225.

Mehler, J., Jusczyk, P., Lambertz, G., Halsted, N., Bertoncini, J., & Amiel-Tison, C. (2002). A precursor of language acquisition in young infants. In G. T. M. Altmann (Ed.), *Psycholinguistics: Critical concepts in psychology* (vol. 4, pp. 25–59). New York, NY: Routledge.

National Center for Children in Poverty. (2016). Immigrant families. Retrieved from http://www.nccp.org/topics/immigrantfamilies.html.

Saville-Troike, M. (1988). Private speech: Evidence for second language learning strategies during the "silent period". *Journal of Child Language*, *15*, 567–590.

Shaywitz, S. (2003). *Overcoming dyslexia: A new and complete science-based program for reading problems at any level*. New York, NY: Knopf.

Silver, L. B. (2001, Summer). Controversial therapies. *Perspectives: The International Dyslexia Association*, *37*(3), 1–4.

Simos, P. G., Fletcher, J. M., Sarkari, S., Billingsley, R. L., Denton, C., & Papanicolaou, A. C. (2007). Altering the brain circuits for reading through intervention: A magnetic source imaging study. *Neuropsychology*, *24*(4), 485–496.

Sousa, D. A. (2011). *How the ELL brain learns*. Thousand Oaks, CA: Corwin.

Chapter 3
Data Collection When Working with English Learners

Introduction: Record Review, Interviews, Observations, and Tests (RIOT)

When psychoeducational problem-solving takes place in the schools, many data points are collected in a variety of ways, including record review, interviews, observations, and tests. We first consider data that are typically reviewed when working with any struggling student and then present additional data that should be reviewed for English learners.

Record Review: What Records Are Typically Reviewed During the Problem-Solving Process?

When a concerned teacher or parent asks a school psychologist for help, the psychologist will typically want to review any available records pertaining to the child's academic and behavioral development. One source of information is the child's **cumulative general educational file**. This file normally contains information about the student's educational history, including

- The student's name, birth date, and current and past addresses
- A record of past and present school enrollment
- The student's grades in each class attended, including teacher comments
- A record of absences and tardies
- Immunization information
- Home language surveys
- Results of tests and inventories
- A record of interventions that were put into place if the student was struggling academically and/or behaviorally

- Awards and honors the student received
- Disciplinary information for the current school year
- Legal information, such as that pertaining to welfare or to a child's custody status
- Records of correspondence with the student's parents or others

Another source of information found at schools is found in the school nurse's **health folder**. The following information is usually available:

- A physical examination form
- Certificates of immunization
- The student's health history
- Health emergency information
- A record of the student's visits to the school nurse
- A record of screenings for vision, hearing, height, weight, and other health screenings
- A record of verbal and written correspondences regarding the student's health

If a student has already had a comprehensive evaluation to consider eligibility for **special education** or a **Section 504 plan**, those files would likely include:

- A record of interventions that were put into place before the student was referred for an evaluation and the outcomes of those interventions
- Documentation of the parents' notification and consent for the evaluation
- A multidisciplinary report with contributions from the child's teacher(s), the school psychologist, the school nurse, other professionals who evaluated the student (e.g., speech-language pathologist, social worker, counselor, occupational therapist, physical therapist, audiologist)
- Documentation of the recommendations of the multidisciplinary team
- Documentation of the student's eligibility (or lack of eligibility) for special education program(s)
- Documentation of the parents' decision to accept or reject the recommendations of the multidisciplinary team
- An Individual Educational Plan (IEP), if one was developed

What Additional Records Are Available for English Learners?

Additional records are available for students who are English learners. These **ESL records** may be kept with the student's cumulative general education file or they may be kept by the ESL teacher or department. The records may include:

- The home language survey: This is completed with information obtained from the student's parents. It documents the student's first language, the language most frequently used by adults and others in the home, and the oral and/or written language that parents would prefer to be used when the school is communicating with them.

- Information provided by the parents about the student's educational language history and other relevant educational information.
- Results of English proficiency tests.
- English learner progress reports in listening, speaking, reading, and writing proficiency.
- Recommendations for placement in ESL programs.
- Documentation of the parents' acceptance or waiver of recommended ESL services.

When reviewing records regarding English learners, it is critical to include the ESL records in the review. ESL teachers can be helpful in providing and interpreting the data that are available in these files. For example, it is helpful to know whether or not the student is only exposed to English in school. If this is the case, when we assess a child we would not expect that child to have English vocabulary related to objects and subjects that occur in the home but not in the schools (unless the student has learned the vocabulary in other ways). It also lets us know that the student has the chance to develop English skills in the academic setting, during the 7-h school day, but lacks the opportunity to practice English skills in the home setting. Importantly, it also means that parents who do not speak English may not be able to help a child with homework that requires English proficiency.

In the USA, Title III of the Every Student Succeeds Act (ESSA, 2015) provides funding to help schools educate English learners. It stipulates that English learners are held to the same academic standards as non-English learners and that proficiency in English is tested every year. This yearly testing provides distinct advantages to school psychologists. It allows them to track progress in learning English and it provides a measure of the student's proficiency levels in speaking, listening, reading, and writing English. Best practices require the establishment of the English language proficiency of an English learner who is being assessed (Carvalho, Dennison, & Estrella, 2014). This can help psychologists make decisions about which standardized tests, if any, are appropriate to administer to the student. Additionally, if a child is failing to make normal progress in learning English compared to other English learner peers, it can be a red flag that indicates that the child may not be a typical learner.

If the actual copies of the English proficiency tests are in the student's ESL folder, school psychologists can look for clinical signs of reading and writing disorders. For example, there are mistakes in oral reading and spelling—such as omitting, transposing, and/or inserting letters—that are characteristic of some students with learning disorders. Although there are other ways that psychologists can obtain evidence of the student's current reading and writing errors, the tests in the ESL folder provide an ongoing, developmental record that can be especially revealing.

The schools that English learners attended in their country of origin are another potential source of information. Parents can provide the names and locations of the schools, making it possible to find phone and FAX numbers on the Internet. Authorizations to exchange information may need to be translated and/or interpreters may need to help in requesting records.

Interviews: Who Should Be Interviewed and What Information Should Be Gathered?

School Nurse:

- We mention the school nurse first because it is absolutely critical to check the struggling student's vision, hearing, and other health-related concerns immediately when gathering problem-solving data. It makes no sense to search for solutions to academic or behavioral problems without knowing whether the student can see and hear. School systems across the globe do not necessarily routinely check students' vision and hearing. Even if checked every 2 or 3 years, the child's vision or hearing can deteriorate in between those checks.
- It is essential to rule out other physical conditions that might have an impact on the child's learning and then address those problems as quickly as possible. An undiagnosed health condition can masquerade as an attention-deficit hyperactivity disorder (ADHD), a learning disorder, or an emotional disturbance. The child may not have health insurance or access to medical care. In that case, the problem-solving team should help the family find resources to get the child the care he or she needs.

Parents:

- When a student is struggling at school, parents should be notified and made an integral part of the problem-solving process. Although schools typically have opportunities for parents to conference with their children's teachers at least once or twice a year, for various reasons parents may find it difficult to attend. They may not be able to get away from work or to leave young children. They may lack means of transportation. Parents who are in the country illegally may fear that their presence and involvement at their children's schools will lead to arrest and deportation. A phone call from the child's teacher, school psychologist, or principal (made with the aid of an interpreter, if needed) can help parents understand that their involvement is vital and valued.
- Information to be gathered initially from parents will vary, depending on the nature and intensity of the student's problems. If a complete developmental history is taken, the parent(s) will be asked to provide much of the following information:

  - Gestation and birth information
  - When developmental milestones were reached
  - Health problems, medical treatments, and hospitalizations
  - A history of high fevers, seizures, and any accidents that may have caused trauma to the head
  - A family history of learning problems
  - The quality of relationships the child has with family members and others
  - Stressors experienced by the family, such as divorce, illnesses or deaths of family members, dislocation from home and extended family, or traumatic immigration experiences

- – The child's history of school attendance and early learning experiences in school, both positive and negative
- – The child's special skills and interests
- – The languages the child and others in the family hear, speak, read, and write at home

- When a learning disorder is suspected, parents should be asked:

  - – Has anyone else in the immediate or extended family struggled with learning, especially learning at school?
  - – How has this child's development compared with his or her siblings?
  - – Does the child have problems communicating with peers in the first language?
  - – Does the child have difficulty conveying thoughts and ideas, paying attention, following through on instructions, taking turns, or remembering?
  - – Has the child ever experienced a head injury?
  - – Does the child have a history of ear infections?
  - – Has the child ever experienced a high fever?
  - – Does the child have a history of birth trauma?

- It is always beneficial to ask, at the end of an interview, if there is anything else the parents think it is important to know about their child. It is also helpful to ask parents about their perspectives on the current problem that the student is experiencing. Parents who are not aware of the symptoms of learning disorders may believe that the child is just lazy or incapable when it comes to school work.

Teachers:

- The ESL teachers and paraprofessionals: An ESL teacher is the education professional who best knows how an English learner typically learns and performs. ESL teachers have specialized training in effective instructional practices to use with English learners and in the different stages English learners pass through as they are learning to speak, listen, read, and write in a second language. Perhaps most importantly, experienced ESL teachers have observed the learning of children with similar backgrounds and levels of English proficiency. Just as an experienced fourth-grade teacher is knowledgeable regarding what is typical and not typical in the academic and behavioral performance of fourth graders, the experienced ESL teacher can recognize typical and atypical learning and behavior patterns of English learners.
- Valuable information can also be gathered by interviewing ESL paraprofessionals who work with these students. In some cases, the paraprofessionals are the ones who are asked to work closely and sometimes individually with struggling students. Although they normally do not have as much formal training as the ESL teacher, paraprofessionals may be able to explicitly and specifically describe how the child struggles with learning and with academic performance.
- General education teachers: It may be less evident to the child's general education teacher whether an English learner's struggles can be attributed to lack of English proficiency or to a learning disorder. However, with substantial proportions of

English learners in today's schools, general education teachers are becoming more attuned to what is typical and atypical in the way an English learner learns; they are often receiving formal training in working with English learners. Bearing this in mind, the same questions asked of the ESL teacher and paraprofessional can be asked of the general education teacher.

Observations

Throughout this book, we emphasize the importance of observing clinical signs of learning disorders. The reader is directed to Chapters 4 through 10 where the clinical signs for each of six specific learning disability that are typically assessed by school psychologists areas are described in detail. Clinical signs can be observed by watching the child in the classroom, but also by observing the child's classroom products and responses during testing sessions.

Portfolio Assessment

One method of observation and informal assessment that is particularly relevant to migrant children is portfolio assessment. A portfolio is a collection of examples of the student's work. Various items can be included in a portfolio, such as the student's written products, logs, worksheets, graphic organizers, and other evidence of the student's performance on assignments. If the student has completed a paragraph or an essay, for example, the various stages of conception, drafting, and revisions of the written product can be included in the portfolio. This allows schools to see the student's progress over time, as well as revealing possible clinical signs of learning disorders to the school psychologist. Portfolios can be kept with a student's cumulative file which is a part of the permanent record and moves with the student from school to school.

Tests

How Are Tests Typically Used by School Psychologists for Helping to Diagnose Specific Learning Disabilities?

Models of Determining Specific Learning Disability Program Eligibility

The Severe Discrepancy Model

Prior to the enactment of the Individuals with Disabilities Education Improvement Act (IDEA, 2004), in order to establish eligibility for placement in the specific learning disability program, federal regulations required a determination that (a) when exposed

to appropriate educational experiences, the child's academic achievement was not commensurate with his or her age; (b) that there was a severe discrepancy between achievement and intellectual ability in one or more of seven academic areas; and (c) that the discrepancy was not primarily attributable to

- Visual, hearing, or motor handicaps
- Mental retardation
- Emotional disturbance
- Environmental, cultural, or economic disadvantage

(United States Office of Education, 42, 1977). In the quarter century following these regulations, widespread objection grew regarding the validity of using the several discrepancy model to diagnose severe learning disabilities (see, for example, Hale et al., 2010).

The use of the severe discrepancy model to determine SLD in English learners is fraught with peril, both because it is hard to tease out English proficiency as a factor in low-achievement test scores and because the student must have had the opportunity to acquire adequate cognitive academic language proficiency (CALP)—a process that may take from 5 to 7 years—in order to legitimately compare mental ability and academic achievement test scores. Both for English learners and students proficient in English, other models for identifying learning disorders bear more promise.

The Pattern of Strengths and Weaknesses (PSW) Model

Although IDEA (2004) does allow the use of the discrepancy model, it also permits the response to intervention (RTI) model (detailed in the next section), as well as the use of alternative research-based procedures. One such procedure has been operationalized as the pattern of strengths and weaknesses model. In this model, the psychologist assesses the student's academic and cognitive skills. Certain academic skills are presumed to have "cognitive correlates." For instance, several cognitive skills have been shown to correlate with word reading and decoding: processing speed and working memory (Christopher et al., 2012), verbal memory and naming speed (Christopher et al., 2015), and phonological processing, including phonological awareness, phonological short-term memory, and rapid automatic naming (Torgesen, Wagner, & Rashotte, 1994; Wagner, Torgesen, & Rashotte, 1997). Based on the pattern of strengths and weaknesses hypothesis, if children are struggling with word reading, we would expect them to also have a deficit in one or more of the cognitive skills just mentioned. At the same time, if children have academic *strengths* in other areas than word recognition and decoding, we would expect our assessments of mental abilities and processing abilities to show corresponding cognitive strengths. One difficulty with the pattern of strengths and weaknesses model is that certain cognitive abilities—such as working memory—are necessary for many academic skills, not just for word recognition and decoding. Consequently, if students have deficits in working memory, it may be difficult to identify academic strengths.

As McGill et al. (2016) explain, there are other troubling aspects as to the validity of using the PSW approach, including (a) a lack of consensus on how to operationalize PSW, with different diagnostic models identifying different students as having SLD (one of the justifications for abandoning the severe discrepancy model); (b) problems with diagnostic validity between models, also resulting in lack of agreement and consistency in the identification of students with SLD; (c) a lack of evidence that cognitive correlates are able to mediate academic intervention outcomes; (d) evidence that an examinee's pattern of cognitive factor scores is not stable over time; and (e) concerns about school psychologists' training to implement a PSW model with integrity. McGill et al. (2016) conclude: "Although evidence for the efficacy of the PSW model is presently accumulating, we believe that wholesale endorsement of these claims at the present time is premature" (p. 165).

Is it legitimate to use the pattern of strengths and weaknesses model with English learners? Considering the lack of empirical evidence that this model can validly and reliably distinguish between monolingual students with and without learning disabilities, and the lack of evidence that cognitive correlates of achievement deficits can inform interventions, the PSW model has still to earn its stripes as a method for diagnosing learning disabilities. When we add to that what neuroscientists are learning about the differences between monolingual and bilingual brains, use of the PSW model with bilinguals is on shaky theoretical and empirical ground. Some research has been done on cognitive and academic skill correlates with bilinguals. For example, in terms of decoding and word reading, Georgiou, Parrila and Papadopoulos (2008) report that a majority of studies conducted in transparent or orthographically consistent languages do not show the importance of phonological awareness in predicting reading past the first year or so of schooling. (Issues regarding orthographically transparent and opaque languages are explained in Chapter 4.) Phonological short-term memory also appears to be less important in languages with transparent orthographies (Georgiou et al., 2008). Because of the vast differences between the cognitive demands of various languages and the relative infancy of the stage of research in investigating these topics, practitioners should be vigilant in keeping up with research advances regarding cognitive correlates and the bilingual brain. We also urge caution in relying on hypothetical assumptions regarding the PSW model, whether with monolingual or bilingual learners.

The Response to Intervention (RTI) Model

A third model for establishing eligibility for SLD diagnosis and placement is the response to intervention model. With the enactment of IDEA (2004), states were able to permit school psychologists to help make SLD eligibility determinations based on observing and documenting the child's failure to adequately respond to scientific, research-based intervention. This can be done with the method of *dynamic*

assessment, also known as *single-case design* or *test-teach-test*. Please see Chapter 11 for detailed instructions for these procedures.

Just as with the severe discrepancy model and the PSW model, the RTI model is beset by validity threats, such as lack of consensus on measurement models for defining responsiveness to intervention and on the definition of empirically based approaches, as well as no "true positive," which means that every child who fails to respond to intervention can be determined to be eligible for special education by default (Hale et al., 2010). For English learners, the RTI model can be helpful when used with other multiple indicators of learning problems. However, it is not advisable to use it as the only criterion in determining SLD for English learners, just as it should not be the sole determinant for SLD diagnoses with non-English learners.

When Is It Appropriate to Test an English Learners' Skills in Their Native Language?

In choosing the language of the test, first and foremost the English learner has to be represented in the test's norming sample. Imagine that you have a fourth-grade English learner, Manuel, who has just moved from Mexico to the USA. Manuel completed kindergarten through third grade in a monolingual, Spanish-speaking school. His ESL teacher comes to you within the first month or so of his fourth-grade year and says she is concerned about his lack of academic progress. He is not currently receiving any instruction in Spanish. If you want to test his skills in Spanish, now is the best time. The longer you wait to test Manuel in Spanish, the more cognitive academic language proficiency (CALP) in Spanish will be lost. It's not fair to compare him with other fourth graders in Mexico who have continued learning in Spanish. If there is a test in Spanish that was normed on students who, like Manuel, have also received some of their education in English, then he is likelier to fit that norming sample and you can have more confidence that you are making a valid comparison.

Special education law in the USA specifies that testing for English learners must be "provided and administered in the language and form most likely to yield accurate information on what the child knows and can do academically, developmentally, and functionally, unless it is not feasible to so provide" (IDEIA, 2004, 20 U.S.C. § 1414, Sec. 614(b)(3)(A)(ii)), "and assessment tools and strategies that provide relevant information that directly assists persons in determining the educational needs of the child are provided" (IDEIA, 2004, 20 U.S.C. § 1414, Sec. 614(b) (3)(C). Although we are considering the child's eligibility for special education placement in a comprehensive evaluation, the emphasis should be on "what the child knows and can do academically, developmentally, and functionally" using assessment measures and strategies that will best help determine the child's educational needs. In the USA and other English-speaking countries, we are typically interested in helping the child succeed academically in an English-speaking school system. We must always keep the assessment's focus on determining the child's

educational needs. In some cases, that can best be done with data from record reviews, interviews, observations, and rating forms rather than with data from tests that have questionable validity for this particular child.

It is never sufficient to test English learners solely in their native language when attempting to learn about strengths and deficits in academic skills in English. Because of orthographic differences between English and other languages such as Spanish, it is not appropriate to assume that a child who decodes well in another language will decode well in English.

What Are Guidelines for Selecting Tests to Use with English Learners?

Table 3.1 gives guidelines for choosing and using tests with English learners.

Choosing and correctly interpreting tests used with English learners is one of the most challenging aspects of evaluating these students. In Chapters 5 through 10, we focus on the various specific learning disabilities and how to assess them when working with English learners. We present lists of tests that can be used and, in each chapter, we highlight standardized tests that are well known among school psychologists and that can be effectively used with English learners. Here is an example:

Table 3.1 Guidelines for Selecting and Using Tests with English Learners When using tests …

Do this	Don't do this
If you are going to use standard scores, check the demographics of the norming sample to make sure that your student is represented.	**Don't**: Report scores and make decisions on standardized scores from tests that do not represent your student.
Choose tests that provide diagnostic data that can be linked to instructional interventions. Which specific skills have been mastered and which have not?	**Don't**: Choose tests that yield little diagnostic data.
Choose tests with a sufficient number of items so you can do error analyses on the student's responses.	**Don't**: Use tests that have an insufficient number of items to adequately sample and analyze the student's specific skills.
Choose tests for the purpose of placing students in settings where they will be taught at their instructional level.	**Don't**: Choose measures which yield little information on the student's independent, instructional, and frustration levels.
Make eligibility decisions based on multiple indicators of a learning disorder: clinical signs, interview and record review data, and test-teach-test intervention results. Use norm-referenced test scores when your student was represented in the norming sample.	**Don't**: Make eligibility decisions based on discrepancies between IQ and achievement scores or on a pattern of strengths and weaknesses before the student has grade-appropriate cognitive academic language proficiency skills (CALP).
Provide English learners with the intensity of interventions needed, including special education, if appropriate.	**Don't**: Put off providing the intensity of services needed until the student has gained a certain level of English language proficiency.

Test Highlight: The *Developmental Profile-Third Edition* (DP-3)

The Developmental Profile-Third Edition (DP-3; Alpern, 2007) can be very helpful in assessing English learners, as long as they are younger than 13 years of age. The DP-3 provides standard scores in five different areas of development: physical, adaptive behavior, social-emotional, cognitive, and communication. It can be used as a screener and as a diagnostic instrument. Information is gathered through interviews and/or checklists from parents, caregivers, and teachers. The DP-3 is available in Bulgarian, Czech, Danish, and Spanish but information can be gathered in any other language through the help of an interpreter who helps with parent interviews.

What Is the Process of Intervention for English Learners?

School psychologists are proficient at collecting data. However, there is more variability among us with respect to how we were trained to use data and the experiences that we have had in using data in our practices. Routinely, data are gathered and used to develop hypotheses which lead to appropriate interventions. Data are collected to contribute to the child study team's decisions about whether students are eligible to receive special education services. In schools using a multitiered support system (MTTS) or response to intervention (RTI) service model, data are also collected and used to monitor students' progress as well as to make decisions as to whether to move students in the next tier because they need more intensive services. School consultation involves working with teachers to clarify and address problems using a problem-solving process that often involves using data to plan, implement, modify, and evaluate interventions.

The challenge of selecting an intervention to implement might seem overwhelming or mysterious when a child and the school psychologist speak and understand different languages. However, the overall process of planning and conducting interventions is not unique to educating English learners.

Assessment data should be used as part of the intervention process. The focus of this book is on the academic skills related to reading, writing, and mathematics that English learners must acquire. However, the basic assessment-intervention process (McKellar & Unruh, 2014) for academic difficulties as well as behavioral concerns is the same, the steps of which are listed in Table 3.2.

Using Evidence-Based Interventions

Interventions include effective practices that can be used in various ways; programs that are used with large groups of students; and defined procedures to use with one or a few students. Calling an intervention program "evidence based" is likely to attract users and, if the intervention must be purchased, likely to increase sales. Experienced educational professionals have encountered highly promoted intervention programs that were packaged well but less than effective when implemented.

Table 3.2 The Intervention Process

1. Refine the referral concern
2. Select the problem to start with
3. Determine what information you already have
4. Analyze the problem using hypothesis testing; gather addition information, if needed
5. Measure the skill or behavior
6. Determine whether this is a can't do or won't do problem (See Chapter 11 for instructions on a can't do/won't do assessment)
7. Get consensus among educators and, if possible, parents on the definition of the problem
8. Collect baseline data
9. Set the goal for improvement
10. Plot the aim line on a chart
11. Select an intervention
12. Develop the action plan
13. Implement the intervention
14. Monitor student progress and treatment integrity
15. Make alterations to the intervention and/or the goal as indicated by the data
16. Evaluate student progress and determine the effect size of the change (See Chapter 11 for instructions for determining the effect size of change)
17. Determine how to maintain the successful intervention
18. Evaluate the need to address additional problems

In 2003, the US Department of Education published *Identifying and Implementing Educational Practices Supported by Rigorous Evidence: A User Friendly Guide* (Coalition for Evidence-Based Policy, 2003) to assist consumers of educational research and materials to make informed choices of educational interventions. The guide is an excellent review of the standards by which to judge current and yet-to-be-developed interventions as evidence based.

Published interventions rarely are validated under the same conditions or with the same populations as the situation with which the school psychologist practitioner is working. As the diversity of first languages of English learners expands, the probability of finding an intervention that has been validated with students similar to those with whom you are working decreases. As we discuss in various chapters of this book, other languages vary greatly in terms of their similarity to English, and, thus, the challenge facing the English learner varies. The concept of evidence-based *practice* is based on both evidence-based interventions and the school psychologist's use of the assessment-intervention process.

Where to Find Interventions

In some later chapters in this book, effective practices from model demonstration projects (Project ELITE, Project ESTRELLA, & Project REME, 2015) are discussed. These practices are intended to be useful in literacy instruction for English learners

in kindergarten to grade three who receive literacy instruction in English only. To encourage the integration of the practices into the existing routines of the classroom, examples of how the practices might be incorporated into the classroom are provided.

Spanish is most frequently the first language of English learners in US schools today. Some interventions that have been shown to be effective include the procedures designed to use the English learners' knowledge of Spanish to facilitate their acquisition of English. For example, Carlo and colleagues (Carlo et al., 2002) demonstrated the effectiveness of an intervention to increase the academic vocabulary knowledge and skills of fifth-grade English learners whose first language was Spanish. These English learners were given written and audiotaped versions of text in Spanish the day before the text was introduced in English. Such a procedure represents an effort to increase learners' knowledge and skills by connecting new information to what they already know. Unfortunately, the many school psychologists who are monolingual English speakers cannot implement these interventions without the assistance of a fluent Spanish speaker. For this reason, we have chosen to provide our readers with references, but not explanations, of interventions in which components are in Spanish. You will see these references at the end of each chapter in which interventions are reviewed (i.e., Chapters 5–10).

In this book, we provide information on recommended instructional strategies for English learners and on evidence-based interventions that can be used with one or a few English learners. These are interventions that can be used in schools using either a traditional or an RTI service delivery model. However, school psychologists may be involved in the process of selecting a published intervention program for use in the entire school building or district. Helpful reviews of intervention programs for use with English learners have been published by the Center on Instruction (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006; Rivera, Moughamian, Lesaux, & Francis, 2009).

What Are Recommended Classroom Instruction and Practices for English Learners?

There has been a relatively rapid increase in the population of English learners in schools. Many general education teachers were trained prior to this change in the school population. Calderón, Slavin, and Sánchez (2011) say, "Today most English learners spend their time in regular classrooms with teachers who feel that they are ill-prepared to meet their needs … what matters most in educating English learners is the quality of instruction (p. 107)."

Both the Center on Instruction (Francis et al., 2006; Rivera et al., 2009) and What Works Clearinghouse (Baker et al., 2014) have developed guidelines for classroom instruction that is supportive of English learners. Calderón et al. (2011) identified key elements of effective instruction for English learners based on their review of long-term studies of programs and practices to improve reading and language

outcomes for English learners. School psychologists need to be familiar with these recommended practices in order to share them with teachers during consultation. Best practice recommendations include the following:

- Teach academic vocabulary words and background knowledge intensively, using varied instructional activities. Include explicit vocabulary instruction "in all subject areas before, during, and after reading" (Calderón et al., 2011, p. 110).
- Provide significant opportunities for students to engage in structured, academic talk. Use cooperative learning groups to increase the number of opportunities for English learners to talk. The most effective are "mixed-ability groups of four, have regular opportunities to teach each other after the teacher has introduced a lesson, and are recognized based on the learning of all members of the group" (Calderón et al., 2011, p. 113).
- Teach cognitive strategies. For example, a cognitive strategy for reading comprehension (Francis et al., 2006) is as follows: Begin by making predictions consciously before reading. Then ask questions during reading. Finally, summarize what you have read after you finish reading.
- Provide regular, structured opportunities for students to develop written language skills.
- Provide explicit and intensive instruction in phonological awareness, phonics, and decoding skills, as well as basic mathematics concepts and skills.
- Provide increased exposure to print. Independent reading must be structured and purposeful. Text for reading assignments should be at the English learner's independent reading level.
- Provide small-group instructional interventions, as needed, to struggling students.

Chapters 5–10 contain additional best practice recommendations that are specific to the topics of those chapters.

Teachers may welcome examples of lessons that reflect these best practice guidelines. Two excellent publications to share with classroom teachers are *Making Content Comprehensible for English Learners: The SIOP Model* (Echevarría, Vogy, & Short, 2008) and *Teaching Academic Content and Literacy to English Learners in Elementary and Middle School (*Baker et al., 2014*).*

References

Alpern, G. D. (2007). *Developmental Profile-Third Edition*. Retrieved from: http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3.

Baker, S., Lesaux, N., Jayanthi, M., Dimino, J., Proctor, C. P., Morris, J., … Newman-Gonchar, R. (2014). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved the NCEE website: http://ies.ed.gov/ncee and http://ies.edu.gov/ncee/wwc/publications_reviews.aspz.

Calderón, M., Slavin, R., & Sánchez, M. (2011). Effective instruction for English learners. *The Future of Children*, *21*, 103–127.

Carlo, M. S., August, D., McLaughlin, B., Snow, C. E., Dressler, C., & Lippman, D. N. (2002). Closing the gap: Addressing the vocabulary needs of English language learners in bilingual and mainstream classrooms. *Reading Research Quarterly*, *39*, 188–215.

Carvalho, C., Dennison, A., & Estrella, I. (2014). Best practices in the assessment of English language learners. In P. L. Harrison & A. Thomas (Eds.), *Best practices in school psychology: Foundations* (pp. 75–88). Bethesda, MD: National Association of School Psychologists.

Christopher, M. E., Miyake, A., Keenan, J. M., Pennington, B., DeFries, J. C., Wadsworth, S. J., … Olson, R. K. (2012). Predicting word reading and comprehension with executive function and speed measures across development: A latent variable analysis. *Journal of Experimental Psychology: General*, *141*, 470–488. http://dx.doi.org/10.1037/a0027375.

Coalition for Evidence-Based Policy. (2003). *Identifying and implementing education practices supported by rigorous evidence: A user friendly guide*. Washington, DC: U.S. Department of Education.

Christopher, M. E., Hulslander, J., Byrne, B., Samuelsson, S., Keenan, J. M., Pennington, B., … Olson, R. K. (2015). Genetic and environmental etiologies of the longitudinal relations between prereading skills and reading. *Child Development*, *86*, 342–361. http://dx.doi.org/10.1111/cdev.12295.

Echevarría, J., Vogy, M., & Short, D. J. (2008). *Making content comprehensible for English learners: The SIOP model*. Boston, MA: Pearson Education, Inc

Every Student Succeeds Act, Pub. L. No. 114-95 (2015).

Francis, D., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2006). *Practical guidelines for the education of English language learners: Research-based recommendations for instruction and academic interventions*. Portsmouth, NH: RMC Research Corporation, Center on Instruction Retrieved http://centeroninstruction.org/files/ELL1-Interventions.pdf.

Georgiou, G. K., Parrila, R., & Papadopoulos, T. C. (2008). Predictors of word decoding and reading fluency across languages varying in orthographic consistency. *Journal of Educational Psychology*, *100*(3), 566–580. doi:10.1037/0022-0663.100.3.566.

Hale, J. B., Alfonso, V., Berninger, B., Bracken, B., Christo, C., Clark, E., … Yalof, J. (2010). Critical issues in response-to-intervention, comprehensive evaluation, and specific learning disabilities identification and intervention: An expert white paper consensus. *Learning Disability Quarterly*, *33*, 223–236.

Individuals with Disabilities Education Improvement Act, 20 U.S.C. § 1400 *et seq*. (2004).

McGill, R. J., Styck, K. M., Palomares, R. S., & Hass, M. R. (2016). Critical issues in specific learning disability identification: What we need to know about the PSW model. *Learning Disability Quarterly*, *39*(3), 159–170. doi:10.1177/0731948715618504.

McKellar, N., & Unruh, S. (2014, February). *After the assessment comes the intervention*. Mini-Skills Workshop at the Annual Convention of the National Association of School Psychologists, Washington, DC.

Project ELITE, Project ESTRELLA, & Project REME. (2015). *Effective practices for English learners: Brief 3. Core and supplemental English as a second language literacy instruction for English learners*. Washington, DC: U.S. Office of Special Education Programs.

Rivera, M. O., Moughamian, A. C., Lesaux, N. K., & Francis, D. J. (2009). *Language and reading interventions for English language learners and English language learners with disabilities*. Portsmouth, NH: RMC Research Corporation, Center on Instruction Retrieved www.centeroninstruction.org.

Torgesen, J. K., Wagner, R. K., & Rashotte, C. A. (1994). Longitudinal studies of phonological processing and reading. *Journal of Learning Disabilities*, *27*, 276–291. doi:10.1177/002221949402700503.

United States Office of Education. (1977). Rules and regulations implementing Public Law 94-142 (The Education for All Handicapped Children Act). *Federal Register, 42*.

Wagner, R. K., Torgesen, J. K., & Rashotte, C. A. (1997). Changing relations between phonological processing abilities and word-level reading as children develop from beginning to skilled readers: A 5-year longitudinal study. *Developmental Psychology*, *33*, 468–479. doi:10.1037/0012-1649.33.3.468.

Chapter 4
Oral Language Issues and Assessment of Oral Language

Introduction

A person with oral language proficiency has effective speaking and listening skills. Some manner of assessing students' oral proficiency in English and in their first language should be made before administering measures of achievement, processing, and intelligence to English learners. Typically, speech-language pathologists take the lead in assessing oral language. However, psychologists must have an understanding of the issues so they can make determinations as to the threats to the validity of interventions and to the measures they will administer as a part of an evaluation.

This chapter details formal and informal measures and methods of assessing oral language proficiency in the student's first language and in English. We also discuss the issues surrounding language proficiency in the student's first and subsequent languages as they affect assessments of achievement, intelligence, and processing skills.

Why Is a Measure of Language Proficiency So Important?

One of the thorniest and most enduring dilemmas facing educators who evaluate English learners is that of determining whether students are struggling due to lack of proficiency in English or due to a learning disorder or disability.

The issue of English language proficiency as it affects intelligence assessment has been around for a long time. In the USA, as early as 1917 the Army Alpha and Army Beta were used to screen the mental ability of World War 1 military recruits in order to determine the best positions for them in the Army. The Army Alpha was the first test used; however, the test developers realized that it mistakenly identified examinees who could not speak English as having very low intelligence. The Army Beta, a

nonverbal counterpart to the Army Alpha, was then developed and administered to non-English-speaking draftees and volunteers (American Education, 2016). The Army Alpha and Army Beta eventually became the Wechsler intelligence scales.

In the 1920s, there was an awareness that cultural and language issues affected scores on intelligence tests (McLean, 1995). Mid-twentieth century, Havighurst (1948) wrote an influential chapter entitled "What are the cultural differences which may affect performance on intelligence tests?" By the 1970s, schools were made painfully aware of the dangers of placing students with limited English proficiency in special education programs based on intelligence tests that had been normed on examinees who were fluent in English. In California, nine Mexican-American children whose primary language was Spanish were placed in special education programs after being tested solely in English. In the court case, *Diana v. California State Board of Education* (1970), the court held that schools must assess children in their primary language and they must use nonverbal tests and extensive supporting data in making special education eligibility decisions (Diana v. California State Board of Education, 1970).

We all make judgments about intelligence and skills based on how people communicate by oral language. We understand that individuals who are still gaining proficiency in English will not be able to communicate all that they know and can do. Because of cases like Diana v. California State Board of Education, as school psychologists we are reluctant to attribute learning problems to disability if lack of proficiency in English has not been ruled out. Before making decisions about how to evaluate and intervene in such cases, we need to know about students' language proficiency in both their native language and in English (Carvalho, Dennison, & Estrella, 2014). Special education law requires that students with limited English proficiency are:

- Identified using bilingual materials and resources
- Assessed in both languages with nondiscriminatory procedures
- Offered bilingual alternatives at each stage of the assessment

As noted in Chapter 1, regulations in the USA (Special Education-Assistance to States for the Education of Children with Disabilities Evaluation Procedures, 2006) require that assessments be provided in the child's native language and in the form that is most likely to yield accurate data on what the child knows and can do academically, developmentally, and functionally, unless it is clearly unfeasible to do so.

There are many similarities between Canada and the USA in approaches to working with English learners. But there are distinct differences due to the fact that Canada is a bilingual country. English and French are two official languages in Canada. Most French-speaking individuals live in the province of Quebec but each province and territory have French-language school boards which manage French-first-language schools (Minority Language Education, 2016). (For specific information about education for recent immigrants in Canada, please consult this website: http://www.cic.gc.ca/english/newcomers/after-education.asp.) Recent immigrants will typically be assessed when they come to school in Canada for the first time and then will be given English literacy development services, depending

upon their needs. In this chapter, we explain what happens when recent immigrants enroll in US public schools, which is similar in many aspects to what happens in Canadian schools.

Should We Wait to Do a Comprehensive Psychoeducational Assessment Until the Student Has Reached a Certain Level of English Proficiency?

There are two possible mistakes that can be made with regard to placing a child in special education. One is to make a placement when the child is not really disabled; the second is to fail to place a child who actually has a disability. Over the years and across situations, English learners have often been either under-identified or over-identified as students with disabilities.

Under-identification can happen when teams are reluctant to evaluate and/or place a child because it is unclear whether the child just lacks sufficient English language skills to function academically or whether there is truly a disability. When controlling for confounding child- and family-level variables, Morgan et al. (2015) found that language minority children were significantly less likely to be identified as having learning disabilities or speech-language impairments than similar children from English-speaking homes. (They were neither less nor more likely to be identified with intellectual disabilities, health impairments, or emotional disturbances.) In a study of preschool children, Morgan, Farkas, Hillemeier, and Maczuga (2012) found that children from homes where another language than English was primarily spoken were underrepresented in early childhood special education.

Overidentification can occur when the evaluating team fails to take into account the effects of limited English fluency and cultural differences when they assess a child. Sullivan (2011) found evidence of both over- and under-identification of English learners in special education programs at different levels in a southwestern state. Other researchers have found that language minority children in the primary grades may be initially under-identified with disabilities in kindergarten and first grade but then over-identified as they continue to struggle (Hibel & Jasper, 2012; Samson & Lesaux, 2009).

At times, a kind of paralysis occurs in problem-solving teams with regard to assessing English learners. Various members of the team may feel that it is outside of their level of competency to evaluate English learners. They may lack training and experience and they may not know where to turn for help. There is sometimes a tendency to avoid evaluating these children; it can be relatively easy to find reasons not to evaluate. The problem with this is that an English learner who is truly disabled has even greater struggles and challenges than does the fluent English speaker who has a learning disability. A typical English learner has a tough task—to master a new language and new academic vocabulary while trying to keep up with fluent English speakers in learning the content of the class. Imagine, then, how difficult it would be for an English learner to perform academically with a learning disability.

If an English learner truly has a learning disability, early identification and intervention are critical. Dire consequences—such as academic failure, aversion to

learning, and social and emotional suffering—can occur if educators wait for several years for the student to learn English before investigating the need for special education services (Rinaldi & Samson, 2008).

What Information Is Gathered When the English Learner Enrolls in School?

When families whose first language is not English go to enroll their children in school, they fill out a home language survey. The home language survey will typically ask questions such as the following:

- What is the first language your child learned to speak?
- Is a language other than English spoken in your home?
- What language does your child most often use at home?
- What language do you use most often with your child?
- What language do adults most frequently use in the home?
- In what written language do you prefer to receive school communication?

Information about the parents' literacy may also be elicited in a home language survey by asking whether they can read and write in English and whether they can read and write in their first language. This information is helpful to the school in knowing whether it will be necessary to use translators and interpreters when communicating with the parents. It is also useful for teachers to know whether parents have sufficient English proficiency to be able to help their children with homework.

A home language survey may also include questions regarding whether or not the family is migratory. The Migrant Education Program is authorized by Title 1 Part C Section 1301 of the Every Student Succeeds Act (ESSA, 2015a). This Act provides funds to help schools serve migratory students in a variety of areas:

- Academic instruction
- Remedial and compensatory instruction
- Bilingual and multicultural instruction
- Vocational instruction
- Career education services
- Special guidance
- Counseling and testing services
- Health services
- Preschool services

On the home language survey, parents may be asked whether the family has moved within the last 3 years due to agriculture- or fishing-related work and, if so, whether the move involved going from one school district to another.

An interview with parents and/or students may be conducted. If necessary, interpreters are used during enrollment and during the interview. Parents may be asked such questions as follows:

- What is your native language?
- When did you arrive in this country?
- How well does your child speak his or her native language?
- Has your child ever studied English and, if so, for how long?
- Does your child have special educational needs?
- What is the parents' highest level of education?

Following completion of the home language survey and the interview, the child's English language skills will be assessed. In the USA, in order to receive federal funds, schools must comply with Title III of the Every Student Succeeds Act of 2015b: Language Instruction for English Learners and Immigrant Students. This section of the law requires that English learners' oral and written English skills are tested on a regular basis (Subpart 2, § 3121). New immigrants must be tested when they initially enter a school. Until they meet a required level of proficiency, English learners are tested on speaking, listening, and comprehension. When they are old enough to have been taught to read and write, their English reading and writing skills are also tested. The scores on these tests are used to help make decisions about the necessity for English as a second language (ESL) services. If the child is found to be eligible for ESL services, the tests are repeated on at least a yearly basis to determine the child's progress in learning English and whether or not the child continues to need services. If it is determined that the child no longer requires ESL services, he or she will typically be monitored for a year after exiting ESL to make sure that there is no longer a need for that program.

Because of these Title III (2015b) requirements, it should not be difficult to find out about the English oral and written language skills if an English learner is in an ESL program or has recently exited such a program. ESL teachers are typically the ones who do the testing and who keep track of the results. One of the first things that school psychologists should do in evaluating the needs of an English learner is to go to the ESL teacher to find out about how the child has progressed in learning oral and written English language skills. ESL teachers know how much progress their students should be making with regard to test scores on the tests of language proficiency. If the student in question is not making typical progress, the psychologist should be alert to the possibility that the child may have a learning disability.

What Are Ways to Gather Information About Oral Language Proficiency in the First Language?

Record Review

A review of the student's records should always be done when assessing English language proficiency. The child's cumulative regular education file should be reviewed, as well as the child's ESL file. The record review will reveal scores on tests of English proficiency that are given when children initially enter school and

they progress through the ESL program. It is helpful to ask the ESL teacher if a child's progress in learning English is typical or atypical based on the English proficiency test scores.

There are times when immigrant parents bring along school records from their native country and/or from previous schools in the USA or Canada; other times they do not. Such records may be available by requesting them from schools in the native country; other times they may not be. If we can obtain those documents, they can help in determining whether children have had ongoing problems in school which adds to what we know about their ability to communicate and use language in their academic experiences.

Interviews

Because speech-language pathologists (SLPs) have formal training in assessing language, school psychologists are well advised to work collaboratively with the SLPs when coming to conclusions about the child's oral language proficiency (Geva & Wiener, 2015).

Interviews with parents and teachers can be an effective way to make an informal assessment of the child's proficiency in his or her first language. It is important to ask questions about the child's language history, such as those that are asked in the home language survey. Table 4.1 presents questions for parents and for teachers.

Table 4.1 Interview Questions for Parents and Teachers

Questions for parents	• Did this child begin to talk at about the same age as his or her siblings?
	• Does your child have any problems communicating with family members? With peers or others outside of the family?
	• Is your child able to follow instructions when they are given in the native language?
	• Does your child have problems understanding what you tell him or her at home?
	• How is this child's ability to communicate compared with his or her peers or siblings? Are there problems with
	– Turn-taking in conversations
	– Heavy reliance on gestures rather than speech to communicate
	– Slowness in responding to questions
	– Difficulties in the use of precise vocabulary
	– Difficulty paying attention
	– Need for frequent repetition and prompts during instruction
	– Frequent interruptions?
	• Did your child have problems learning to read and write at school in the native country?
	– Was there the need for different instruction than his or her peers?
	– Did teachers ever express concerns about your child's ability to communicate?

Table 4.1 (continued)

Questions for teachers	• Is there a need for different instruction than peers?
	• Does the child need frequent repetitions and prompts during instruction?
	• Do you need to check frequently to see if the child understands directions?
	• Does the student have these characteristics?
	  – Problems with turn-taking in conversations
	  – Relying heavily on gestures rather than speech to communicate
	  – Slowness in responding to questions
	  – Difficulties in the use of precise vocabulary
	  – Difficulty paying attention
	  – Need for frequent repetition and prompts during instruction
	  – Frequent interruptions

Observations

There are various observation rating rubrics that assess the English oral language proficiency of English learners. One example is the Student Oral Language Observation Matrix (SOLOM; California Department of Education, n.d.), which is in the public domain. The SOLOM has teachers rate the student's comprehension, fluency, vocabulary, pronunciation, and grammar on a rubric.

An informal method of assessing students' English proficiency is simply to observe their use of English and make a determination based on expressive language behaviors. If there are other children and/or adults at school who speak the target child's first language, we can gather data through observations to see whether there are any apparent difficulties communicating. The observations should occur in different settings, such as in the classroom and at recess. Observations made by adults who are fluent in the child's first language are especially helpful. Here are some questions that can be asked:

• How is the learning of this child similar or different from other children whose first language is the same?
• How is the child developing compared with others with the same first language?
• Is there anything about the way this child behaves/learns that concerns you?

Many different rubrics exist for categorizing the fluency level of English learners. Most classification systems suggest five different levels in categorizing English language proficiency, although they may use different labels for the categories. For example, Dutro and Kinsella (2010) use these categories:

• *Beginning Level*: At this level, the student has virtually no receptive or expressive English skills and progresses to having a basic use of English, although with many errors. The student understands high-frequency words and everyday comments.
• *Early Intermediate Level*: At this stage, students begin to independently use routine expressions. They can use phrases and simple sentences both orally and in writing.

They understand and produce present tense and present progressive tense (I help my mother; I am helping my mother), simple future and past progressive (I am going to help my mother; I was helping my mother), and past tense of common verbs (I helped my mother). They have a dramatic increase in their ability to understand general meaning of what is said.

- *Intermediate Level*: This is when students begin to combine the English they know in new ways to ask and answer questions, retell, recognize main points of stories, explain, predict, describe, and make comparisons and contrasts. In their writing, they can begin to use compound sentences; they use a variety of verb tenses and language patterns. They learn to use more precise language, such as synonyms, antonyms, and idioms (That was a piece of cake.).
- *Early Advanced Level*: English learners at this level can start to initiate and continue spontaneous conversations in English. The oral and written material they understand is becoming more and more complex. They can consistently understand general and implied meaning. They can analyze text in order to present, report, or identify main ideas and supporting details. They may still need instructional support to read grade-level text and to write complex sentences.
- *Advanced Level*: At this level, students can fully participate in core curriculum with minimal language support. There may still be limited comprehension of grade-level material and may need help with understanding shades of meaning. They comprehend and use native-like speech, jokes, and idioms.

As can be seen, even at the advanced level, English learners do not fully have the oral and written skills of native English speakers. They continue to need a certain amount of scaffolding as they participate in the mainstream educational curricula. In evaluating these learners at any stage of English proficiency, it is necessary to take into consideration the differences between their skills and the skills of students who are native English speakers. One reason it is necessary to be aware of these differences is that it can have a bearing on what tests will be used with the English learner in an evaluation. For example, school psychologists sometimes give processing tests of rapid automatic naming, in which the task is to read off letters or numbers as quickly as possible. Sequential bilinguals—students whose first language is not English—will not necessarily have the automaticity with numbers and letters in English that they would in their first language. This does not necessarily mean that they have a deficit in rapid automatic naming, just that they are not as automatic with letters and numbers as the group in the norming sample. Again, consultation with the speech-language pathologist can be valuable in making the determination as to which tests would have validity threats if given to English learners.

Tests

Although IDEA (2004a, 2004b) encourages testing students in their native language, if feasible, administering formal standardized measures can be fraught with peril. Whereas it is reasonable to administer and interpret standardized tests when recent immigrants are assessed in their first language, it is not necessarily appropriate to

administer first language measures of language—especially academic language—to a child who has been immersed in education in the second language for a period of time. This is due to loss of the first language or *language attrition*. In many cases, informal measures of gathering data about oral language proficiency in the first language must be employed.

One method of informal assessment that is relevant to all English learners and particularly to migrant children is portfolio assessment. A portfolio is a collection of examples of the student's work. Various items can be included in a portfolio, such as the student's written products, logs, worksheets, graphic organizers, and other evidence of the student's performance on assignments. If the student has completed a paragraph or essay, for example, the various stages of conception, drafting, and revisions of the written product can be included in the portfolio. This allows schools to see the student's progress over time, as well as reveal possible clinical signs of learning disorders to the school psychologist. Portfolios can be kept with a student's cumulative file which is a part of the permanent record and moves with the student from school to school.

What Tests Can Be Used to Assess a Student's English Language Proficiency?

To assess English language proficiency, many states in the USA use the WIDA Measure of Developing English Language (WIDA MODEL, 2016) or the English Language Proficiency Assessment for the 21st Century (ELPA21, 2016). Others have developed their own tests of English proficiency. These are large-scale assessments administered to English learners in Kindergarten through 12th grade; they test speaking, listening, reading, and writing skills. They are typically given annually and are used to determine placement of students in ESL programs, to monitor progress in learning English, and to make decisions about when to exit students from ESL programs.

Table 4.2 shows just a sampling of a variety of tests that can be used to assess English oral language proficiency.

Table 4.2 Examples of Tests for Assessing English Oral Language Proficiency

Test	Grades	Website
Test of English Language Learning (TELL)	Kindergarten through 12th grade	http://www.pearsonassessments.com/products/100001182/test-of-english-language-learning-tell.html#tab-details
Language Assessment Scales (LAS-Links-Second Edition)	Kindergarten through 12th grade	http://www.ctb.com/ctb.com/control/ctbProductViewAction?productFamilyId=454&productId=32348&p=products
preLAS	Pre-kindergarten through first grade	http://www.ctb.com/ctb.com/control/ctbProductViewAction?p=products&productId=808
Stanford English Language Proficiency Test	Pre-kindergarten through 12th grade	http://www.pearsonassessments.com/learningassessments/products/100000659/stanford-english-language-proficiency-test-selp.html?Pid=015-8429-206#tab-details

Test Highlight: The LAS-Links Online

The LAS-Links Online (DRC CTB, 2016) is an example of a language proficiency test that can be used to assess English language proficiency in kindergarten through 12th grade. There is also the *pre*LAS (2016), which measures language proficiency and pre-literacy skills for preschool through first grade. Teachers can administer the test, which is scored according to rubrics and exemplary responses; diagnostic reports are provided that allow teachers to ascertain the student's English language proficiency level in listening, speaking, reading, and writing. The information from the test can be used to inform instruction and to target areas for remediation. A sample reading item has pictures of a yoyo, a trumpet, and a guitar. The examinee reads two sentences: *It has strings*. *It makes music*. The examinee must click on the correct picture. In an example of a writing item, the examinee must choose the correct word—*eat, eats*, or *eating*—to complete the sentence: The man _____ his food. According to the publisher, this test can be used for identification, placement, progress monitoring, determination of whether students are ready to exit an ESL program, and meeting Title III requirements.

What Tests Can Be Used to Assess Students' Proficiency in Their First Language?

Assessments in Any Language

The Center for Applied Linguistics has developed a free searchable database, the Foreign Language Assessment Directory (FLAD; 2016). This resource provides information on over 200 assessments in over 90 languages for 16 intended uses, including proficiency, language dominance, placement, diagnosis, and achievement. Some of the assessments need to be purchased and some are in the public domain.

Adaptive behavior scales can be used to assess students' communication skills in their native language. For example, the *Vineland Adaptive Behavior Scales-Third Edition* (Vineland-3; Sparrow, Cicchetti, & Saulnier, 2016) has a "Communication Domain," which gives scores for the examinee's receptive, expressive, and written language skills. There is a Spanish version of this instrument, so examiners who are fluent in Spanish do not need to work with an interpreter if the child's first language is Spanish. But if the first language is not Spanish, an interpreter can be used while the examiner administers the Vineland to parents. This can produce valuable information regarding the student's ability to communicate effectively in his or her native language.

Another helpful test that yields standard scores under 13 years of age is the *Developmental Profile-Third Edition* (DP-3; Alpern, 2007). Standard scores are provided in five different areas of development: physical, adaptive behavior, social-emotional, cognitive, and communication. It can be used as a screener and as a diagnostic instrument. Information is gathered through interviews and/or checklists

from parents, caregivers, and teachers. The DP-3 is available in Bulgarian, Czech, Danish, and Spanish but information can be gathered in any other language through the help of an interpreter who helps with parent interviews

Assessments in Spanish

Table 4.3 presents a number of tests that can be used to assess various aspects of oral language proficiency in Spanish. Please note that Schlueter, Carlson, Geisinger & Murphy (2013) have edited an index of Spanish tests in print that will be of interest to Spanish-speaking examiners in assessing oral language, written language, and mathematics skills.

Test Highlight: *The Woodcock-Muñoz Language Survey-Revised Normative Update* (WMLS-R NU)

The Woodcock-Muñoz Language Survey-Revised Normative Update ([WMLS-R NU], Schrank, Wendling, Alvarado, & Woodcock, 2010) is an example of a test which can determine a Spanish speaker's skills in the areas of reading, writing, listening, and comprehension in both English and Spanish. Age and grade norms are available. It contains one Spanish form and two English forms; if school psychologists are not fluent in Spanish, the Spanish parts can be read by an ancillary examiner. Age norms are from 2 to 90+ and grade norms are for kindergarten to graduate school. School psychologists who are familiar with the *Woodcock-Johnson-IV Tests of Achievement* and the *Woodcock-Johnson-IV Tests of Cognitive Abilities-IV* will be familiar with the subtests that make up this instrument; they include

- Picture vocabulary, a measure of expressive vocabulary in which the examinee looks at a series of pictures and must say their names.
- Verbal analogies, a measure of higher level thinking skills which require the examinee to make analogies, such as Bear is to Cub as Horse is to _____.
- Letter-word identification, a letter/word recognition task in which the examinee must say the letter or word that is presented in writing.
- Passage comprehension, a cloze measure of reading comprehension in which the examinee must read a sentence or short passage and fill in a missing word.
- Understanding directions, in which the examinee is shown a series of pictures and asked to point to objects in the pictures in a particular order.
- Story recall, in which a series of short stories are read to the examinee who must then retell the story with as many details as he or she can remember
- Dictation, a measure of punctuation and spelling.

School psychologists need to have an idea of students' proficiency in English and in their native language in order to make decisions about test instruments that can be validly used to assess academic, mental ability, and processing skills. This chapter has reviewed various methods for collecting data regarding first and second

Table 4.3 Examples of Tests for Assessing Spanish Oral Language Proficiency

Oral language skills tested	Test in Spanish	Related test in English
• Listening comprehension	*Aprenda: La Prueba de Logros en Español, Tercera Edición* (Harcourt Brace Educational Measurement, 2005)	*Stanford Achievement Test Series, Tenth Edition* (Stanford 10)
Comprehension-Knowledge (Gc): • Language development • Listening ability • Lexical knowledge	*Batería III Woodcock-Muñoz Pruebas de miento Normative Update* (Woodcock, Muñoz-Sandoval, McGrew, & Mather, 2004, 2007)	*Woodcock-Johnson Tests of Achievement-Third Edition* (WJ-Ach-III)
• Spoken language	*Prueba de Habilidades Académicas Iniciales* (Ramos, Hresko, & Ramos, 2006)	*Young Children's Achievement Test* (YCAT)
• Receptive vocabulary	*Test de Vocabulario en Imágenes Peabody* (Dunn, Lugo, Padilla & Dunn, 1986)	*Peabody Picture Vocabulary Test* (PPVT)
• Picture vocabulary • Verbal analogies • Understanding directions • Story recall	*Woodcock-Muñoz Language Survey—Revised Normative Update* (Schrank, W endling, Alvarado, & Woodcock, 2010)	*Woodcock-Johnson-IV Tests of Oral Language*

language proficiency. Again, it is highly recommended to work collaboratively with the speech language pathologist in making these determinations.

References

Alpern, G. D. (2007). *Developmental Profile-Third Edition*. Retrieved http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3.

American Education. (2016). Retrieved http://www.us-education.net/149-army-alpha-and-beta--tests.html.

Carvalho, C., Dennison, A., & Estrella, I. (2014). Best practices in the assessment of English language learners. In P. L. Harrison & A. Thomas (Eds.), *Best practices in school psychology: Foundations* (pp. 75–88). Bethesda, MD: NASP.

Diana v. California State Board of Education, Civ. Act. No. C-70-37 (N. D. Cal., 1970, *further order,* 1973).

Dunn, L. M., Lugo, D. E., Padilla, R., & Dunn, L. M. (1986). Test de Vocabulario en Imágenes Peabody. Retrieved from http://www.pearsonclinical.com/language/products/100000487/test-de-vocabulario-en-imagenes-peabody-tvip.html.

Dutro, E. L., & Kinsella, K. (2010). English Language Development: Issues and Implementation at Grades Six through Twelve. In *Improving education for English learners: Research-based approaches* (pp. 151–207). Sacramento, CA: California Department of Education.

English Language Proficiency Assessment for the 21st Century. (2016). Retrieved http://www.elpa21.org/.

Every Student Succeeds Act, 114 U.S.C. § 1177 (2015a).

Every Student Succeeds Act, 114 U.S.C. Subpart B, § 3121 (2015b). Retrieved http://www2.ed.gov/policy/elsec/leg/esea02/pg42.html.

Foreign Language Assessment Directory. (2016). Retrieved http://webapp.cal.org/FLAD/FLADListing.aspx

Geva, E., & Wiener, J. (2015). *Psychological assessment of culturally and linguistically diverse children and adolescents: A practitioner's guide*. New York, NY: Spring Publishing Company.

Harcourt Brace Educational Measurement. (2005). *Aprenda: La Prueba de Logros en Español*. San Antonio, TX: Harcourt Brace Educational Measurement.

Havighurst, R. J. (1948). What are the cultural differences which may affect performance on intelligence tests? In K. Eells, A. Davis, R. Havighurst, V. E. Herrick, & R. W. Tyler (Eds.), *Intelligence and Cultural Differences* (pp. 16–21). Chicago, IL: University of Chicago Press.

Hibel, J., & Jasper, A. D. (2012). Delayed special education placement for learning disabilities among children of immigrants. *Social Forces*, *91*(2), 503–529. doi:10.1093/sf/sos092.

Individuals with Disabilities Education Improvement Act of 2004, Pub. L. No 108-446 Stat. 2647 (2004a), 20 U.S.C. § 1414, Sec. 614(b)(3)(A)(ii).

Individuals with Disabilities Education Improvement Act of 2004, Pub. L. No 108-446 Stat. 2647 (2004b), 20 U.S.C. § 1414, Sec. 614(b)(3)(C).

LAS Links Online. (2016). DRC CTB. Retrieved http://www.ctb.com/ctb.com/control/productFamilyViewAction?productFamilyId=454&p=products.

McLean, Z. Y. (1995, Summer). History of bilingual assessment and its impact on best practices used today. *New York State Association for Bilingual Education Journal*, *10*, 6–12.

Minority Language Education. (2016). Education in Canada. Retrieved http://cmec.ca/299/Education-in-Canada-An-Overview/index.html#03.

Morgan, P. L., Farkas, G., Hillemeier, M. M., & Maczuga, S. (2012). Are minority children disproportionately represented in early intervention and early childhood special education? *Educational Researcher*, *41*(9), 339–351.

Morgan, P. L., Farkas, G., Hillemeier, M. M., Mattison, R., Macquga, S., Li, H., & Cook, M. (2015). Minorities are disproportionately underrepresented in special education: Longitudinal evidence across five disability conditions. *Educational Researcher*, *44*(5), 278–292. doi:10.3102/0013189X15591157.

Padilla, A. M., & Sung, H. (1999). The Stanford Foreign Language Oral Skills Evaluation Matrix (FLOSEM): A rating scale for assessing communicative proficiency. Educational Resources Information Center. Retrieved from https://eric.ed.gov/?id=ED445538.

*pre*LAS. (2016). DRC CTB. Retrieved http://www.ctb.com/ctb.com/control/ctbProductViewAction?p=products&productId=808.

Ramos, J., Hresko, W., & Ramos, M. (2006). Prueba de Habilidades Académicas Iniciales. PRO-ED, Inc. Retrieved http://www.proedinc.com/customer/productView.aspx?ID=3717.

Rinaldi, C., & Samson, J. (2008). English language learners and response to intervention: Referral considerations. *Teaching Exceptional Children*, *40*(5), 6–14.

Samson, J. F., & Lesaux, N. K. (2009). Language-minority learners in special education: Rates and predictors of identification for services. *Journal of Learning Disabilities*, *42*(2), 148–162. doi:10.1177/0022219408326221.

Schlueter, J. E., Carlson, J. F., Geisinger, K. F., & Murphy, L. L. (2013). *Pruebas publicadas en Español: An index of Spanish tests in print*. Lincoln, NB: The Buros Center for Testing.

Schrank, F. A., Wendling, B. J., Alvarado, C. G., & Woodcock, R. W. (2010). *Woodcock-Muñoz Language Survey-Revised Normative Update*. Retrieved http://www.hmhco.com/hmh-assessments/bilingual/woodcock-munoz.

Sparrow, S. S., Cicchetti, D. V., & Saulnier, C. A. (2016). *Vineland Adaptive Behavior Scales-Third Edition*. Bloomington, MN: Pearson.

Special Education-Assistance to States for the Education of Children with Disabilities [Evaluation Procedures], 34 C.F.R. § 300.304 (2006). Retrieved http://idea.ed.gov/explore/view/p/%2Croot%2Cregs%2C300%2CD%2C300%252E304%2C.

Student Oral Language Observation Matrix. (n.d.) California Department of Education. Retrieved http://www.cal.org/twi/EvalToolkit/appendix/solom.pdf.

Sullivan, A. L. (2011). Disproportionality in special education identification and placement of English language learners. *Exceptional Children*, *77*(3), 317–334.

WIDA Measure of Developing English Language. (2016). Retrieved https://www.wida.us/assessment/MODEL/.

Woodcock-Johnson Tests of Oral Language-Fourth Edition. Retrieved http://www.hmhco.com/~/media/sites/home/hmh-assessments/clinical/woodcock-johnson/pdf/wjiv/wjiv-contemporary-assessment-brochure.pdf?la=en.

Chapter 5
Word Reading and Decoding

Introduction

The focus of this book is on assessing and intervening with English learners. In laying the groundwork for working with English learners, it is beneficial to have a clear understanding of the basics of how the brain actually learns how to read. It is important for school psychologists to understand this process if we want to intervene effectively, whether with monolingual or bilingual learners. An analogy can be made between educators knowing how the brain works and a computer technician knowing how a computer works. We can use a computer with very little knowledge of how the computer works. But if the computer doesn't work, we call on a computer technician whom we expect to have sufficient expertise to diagnose and repair the problem. When developing readers struggle, educators are the ones who are in the position of the computer technician. Parents and children rely on us to know enough about how the brain learns to read so that we can diagnose and intervene in effective ways.

In the past three decades, great advances in neuroscience have provided insights into what happens in the reading brain, resulting in implications for instruction in reading (Shaywitz & Shaywitz, 2008). In order to achieve the Holy Grail of comprehension, the brain must encode incoming visual information (letters and words) to represent auditory information (the sounds of speech). In doing this, the brain makes use of previously learned procedural information about how to process stimuli. If there is a breakdown in any of the components of the reading brain, the whole system is affected.

What to Know Before Word Reading Assessment and Intervention

What Is Happening in the Brain as the Individual Begins to Learn to Read?

Reading is a complex higher cognitive process, requiring the coordination of the auditory system, the visual system, the linguistic system, emotion, attention, motivation, and memory.

The Auditory System and the Linguistic System

When babies are born, they are surrounded with the sounds of the language or languages spoken by their caregivers. The smallest unit of sound is the phoneme. A baby born into a monolingual English-speaking family hears approximately 44 phonemes that make up spoken English. At first those sounds lack meaning but, during the first year of life, the child begins to attach meanings to certain sounds. For example, the phonemes that represent the /d/ sound and the /a/ sound, when put together once or twice, begin to represent the male parent (da or dada). The brain starts to develop neuronal connections that reinforce the attachment of visual input (the father) and auditory input (the sounds of *dada*) to form certain meanings.

The smallest contrasting units of language which result in a change of meaning are called morphemes. For example, dada is a morpheme that represents one male parent. When the -s morpheme is added, it becomes dadas, which can either mean more than one father or, in dada's, that the father possesses the noun that follows (dada's face). The child's brain organizes a hierarchy of sounds and meanings so that it can begin to generalize the knowledge it already has to help with novel situations. By generalizing the use of the phoneme /s/ and morpheme -s to mean *more than one*, the brain can learn a new word such as *apple* and it will correctly assume that the word *apples* means more than one apple.

Concurrently, as developing children begin to make sense of the sounds and images of language, they also learn grammar, or the rules that govern the way phonemes and morphemes are put together in words to form meaningful phrases, clauses, and sentences. As the hierarchy for grammar is established in the brain, it will initially "overgeneralize" and assume that *mans* means *more than one man* until it learns that there are exceptions to the rules and that *more than one man* is *men*.

The Visual System and the Linguistic System

While many children are still in the infancy stage, they also begin to develop a sense of *print awareness*. This happens when parents and other caregivers read stories to their children, have books, newspapers, and other reading materials in the house that

their children see them read, and when certain logographic symbols (such as the "golden arches" in the McDonald's sign) are pointed out to the child. Print awareness is the child's earliest understanding that printed symbols have meanings that are attached to the sounds of the language. Print awareness is the child's introduction to the visual symbols—or graphemes—that are used in writing. Graphemes are letters or combinations of letters that spell the words of a language. For example, the grapheme for the /n/ sound in English can be written as *n* (as in nail) and *kn* (as in knot).

When the brain gets the auditory input from a person's speech, it must pull apart or analyze the flow of sounds into phonemes and morphemes, and determine how they relate meaningfully within the grammar of the language. Once the brain has processed these elements, it must synthesize them so that it has a coherent understanding of what was said and so that it can make a response, if needed. The brain does this processing at lightning speed resulting in, for most individuals, fluid understanding and expression of oral language. When print awareness is added to the process, the child can begin to learn to read. When the brain gets the visual input of a logograph, a letter, a word, a phrase, or a sentence in writing, something similar to the analysis of auditory stimuli happens. The brain must analyze and synthesize the visual input in order to understand what has been read. In the initial stages of reading, this happens very slowly and methodically. This is called decoding.

In beginning reading, the letters of the alphabet are abstract code elements that have to be learned by rote memorization. Young pre-readers must initially learn to coordinate their eyes to focus on about 1° of visual angle—the span of three letters (Rayner, 2013), and they must learn that certain of these abstract code elements (letters) change their names when they change their position (such as d, b, p, and q).

Beginning readers must develop a conscious awareness that words can be broken down into phonemes. Preparation for this skill for many children comes through nursery rhymes and word play, but children who do not get these experiences in their homes must be taught systematically and explicitly in their early education at school.

The Roles of Emotions, Attention, Motivation, and Sleep in Learning to Read

Emotions have a central role in learning (Immordino-Yang, 2015). Research has shown that the physiological systems that support learning, social interactions, and our "gut feelings" are all interrelated and have a direct impact on what we attend to and how motivated we are to learn (Immordino-Yang & Sylvan, 2010). The chemicals that are released in the brain during pleasurable activities help make learning more meaningful and, thus, more easily remembered. If reading is a positive experience for a learner, dopamine is released. Dopamine is a neurotransmitter active in controlling the brain's centers of reward and pleasure. This and other neurotransmitters help focus the learner's attention on experiences that are likely to lead to more pleasurable experiences.

Sleep is also important for children's learning. Adequate sleep has been linked to improved working memory (Könen, Dirk, & Schiedek, 2015), a critical cognitive ability involved in learning. Too little sleep puts children at risk for poor school performance (Keller et al., 2015), including behavioral problems such as irritability, emotional dysregulation, impulsivity, attention difficulties, and poor cognitive performance (Bergin & Bergin, 2009; Curcio, Ferrara, & De Gennaro, 2006).

Review of the Brain Processes in Reading

In summary, in order to learn to read, the brain must encode and decode incoming visual and auditory information. In doing this, the brain makes use of previously learned procedural information about how to process stimuli. Attention, motivation, emotions, and adequate sleep all play roles in helping the brain learn to read. The child must develop a sense of print and phonemic and morphemic awareness in order to learn to decode words.

Is the Process of Decoding the Same in All Languages?

The developing reader's brain must map certain phonemes (sounds) onto graphemes (letters). Written languages vary in transparency with regard to this mapping of phonemes onto graphemes. Italian, for example, is one of the most transparent of languages. There are 33 sounds in Italian and 25 ways to spell those sounds. It takes only 2–3 months for children to learn to read in Italian (Dehaene, 2009). Spanish is another transparent language. There are around 35 sounds in Spanish and 38 different ways to spell those sounds. Decoding words in Spanish is straightforward.

Other languages are less transparent. Although the number of sounds (phonemes) is similar in most languages, the number of graphemes that are associated with those sounds varies greatly. French is an example. There are 32 sounds in the French language but over 250 ways to spell those sounds. English is one of the least transparent languages in terms of learning to read. English has around 44 different sounds and over 1100 ways to spell those sounds (Uhry & Clark, 2005). Consequently, rather than taking children around 2–3 months to learn to decode as it does in Italian or Spanish, it takes children 2–3 years to learn to read in English. Learning to read in Chinese is even more of a challenge. Chinese readers must memorize 7000 signs that are indispensable in daily reading and 40,000 that are used in literature. Chinese students are still learning these signs in high school (Dehaene, 2009).

One common mistake that educators make is assuming that, if a child has learned to decode in one language, the demands on the brain of learning to decode in all other languages will be equal to the first language. Obviously, if it takes 2–3 months to learn to decode in transparent languages and 2–3 years to learn to decode and recognize sight words in English, the processes are making different demands on the brain. One very telling aspect is the term "sight words." This term can have different

meanings. One meaning is that there are a set of around 100 words that appear with the most frequency in English text. These are words such as *the, be, to, of, and, a, in, that, have*, and *I*. Another definition of sight words is that they are words that cannot be "sounded out." They must be memorized because they do not follow the most common rules of pronunciation. An example of such a common sight word is the word *would*. In this word, the letters *w* and *d* can be directly mapped onto the sounds they represent but the pronunciation and spelling of the *oul* must be memorized. The most typical pronunciation of the letter combination *ou* is found in the words *out* and *ounce*. In the word *would*, however, the pronunciation is /*oo*/ as in *wood*. Similarly, most typically the letter *l* would be pronounced as it is in the word *leg*; however, the *l* is silent in the word *would*. These kinds of variations do not occur in phonetically transparent languages such as Italian, Spanish, German, and Greek.

The *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition* (DSM–5; American Psychiatric Association, 2013) notes that the cognitive processing demands of both reading and working with numbers vary significantly across orthographies. It says:

> In the English language, the observable hallmark clinical symptom of difficulties learning to read is inaccurate and slow reading of single words; in other alphabetic languages that have more direct mapping between sounds and letters (e.g., Spanish, German) and in non-alphabetic languages (e.g., Chinese, Japanese), the hallmark feature is slow but accurate reading (pp. 72–73).

What Is Happening in the Brains of Children Who Have Difficulty Learning to Read in English?

From 5 to 17% of children in the USA experience significant difficulty in learning to read (Shaywitz, 2003). Children who score approximately below the tenth percentile level on reading tests will likely suffer disadvantages in our literate society (Dehaene, 2009). The scientific literature on the causes of reading disorders points to multiple influences, including genetic factors, as well as perinatal, postnatal, and environmental factors that influence the circuitry of brain connections. Further, brain activation patterns during reading are similar despite the origin of the problem, as noted by Hruby and Goswami (2011).

> A reader with a genetically based neurological malformation preventing typical reading development may show the same atypical activation as a reader who did not receive quality reading instruction, a reader who received quality instruction but who was not developmentally ready for it, a reader who has linguistic and cognitive deficiencies because of limited early childhood language experiences, or a reader who has emotional problems due to an abusive home environment disruptive of his or her schooling (p. 157).

This suggests that the brain of a child with an inconsistent educational history shows activation similar to a child with a genetically based learning disability.

Deficits in phonological processing are considered the main culprits in producing difficulties in learning to read (Vellutino, Fletcher, Snowling, & Scanlon, 2004).

The brain of the struggling reader has a problem with single-word decoding, which involves the mapping of sounds onto letters. For this reason, tests of phonological skill deficiencies are highly predictive of reading problems (Landerl et al., 2013; Shaywitz, 2003; Vellutino et al., 2004). Typical readers are able to segment words into the phonemic elements; for example, they can tell you that the word *cat* has three sounds—/k/, /a/, and /t/. Typical readers are also able to blend different sounds together to form words. If you give them the sounds /k/, /a/, and /t/, they can blend them to form the word *cat*. Typical readers can tell you that the words *fat* and *cat* rhyme and the words *far* and *cat* do not rhyme. Children who are not able to segment, blend, and rhyme words are at a disadvantage when asked to map phonemes onto graphemes as educators attempt to teach them to read. There are various hypotheses regarding different subtypes of dyslexia: phonological, attentional, visual-magnocellular, auditory, or automaticity/procedural learning (van Ermingen-Marbach, Grande, Pape-Neumann, Sass, & Heim, 2013) but it is well established that most children with dyslexia have phonological deficits (Shaywitz, 2003).

There are several biological layers which are involved with the difficulty the dyslexic brain has with reading (Wolf, 2007). The problem typically starts with the genetic foundation, moves on to neurons and circuits which create neural structures in the brain, develops into faulty perceptual/motor/conceptual linguistic processes, and ends at the behavioral level with the child attempting to sound out words. The struggle of the brain to map sounds onto letters results in decoding mistakes, such as omitting sounds in reading (reading *pat* instead of *past*), inserting sounds (reading *prat* rather than *pat*), and substituting sounds (reading *pet* rather than *pat*). During reading, regions in the left hemisphere of the brain perform most functions more efficiently than right-hemisphere areas. However, right-hemisphere regions are performing these functions—less effectively and less efficiently—for dyslexic readers (Wolf, 2007).

Because of different orthographies, there are different "faces" of dyslexia around the world (Wolf, 2007). As noted in the DSM-5 (American Psychiatric Association, 2013), reading disorder manifests itself differently in different languages. While there appears to be an underlying biological deficit involving phonological processing in all languages, there are striking differences in how much children with dyslexia struggle with word recognition based on the orthographic complexity of the language they are learning (Landerl, Wimmer, & Frith, 1997). Decoding and word recognition are easier in languages with regular or transparent orthographies (Paulesu et al., 2001). Orthographically regular languages—such as Spanish, Italian, Turkish, Greek, Finnish, and German—are easier to learn to read; children typically are finished "learning to read" and ready to start "reading to learn" by the end of first grade (Seymour, Aro, & Erskine, 2003). Countries where these languages are spoken have smaller numbers of individuals with dyslexia (Paulesu et al., 2001). Even children with fluency and comprehension problems are able to successfully map the 40-some phonemes onto the 30-some graphemes. Although these children are effective decoders, teachers begin to see the children's reading difficulties when their students need to read fluently and with comprehension.

Children with dyslexia in English- and French-speaking countries may have problems with fluency and comprehension as do their Italian- and Spanish-speaking peers; unfortunately, those problems are exacerbated by the cognitive complexity of decoding and word recognition. Interestingly, different areas of the brain are activated when individuals read orthographically regular and orthographically irregular words (Paulesu et al., 2000), giving neurological support to observational data regarding the differences between learning to read in orthographies with varying levels of transparency.

What Are Valid Ways to Make Special Education Eligibility Decisions About English Learners?

There may come a time in the future when educators who suspect that a student has a learning disability will be able to send the child for an fMRI or genetic testing to obtain definitive diagnosis. But for now, in making these determinations, decisions are rarely clear cut and are especially complex when working with English learners. Just as physicians look at the preponderance of symptoms when making a diagnosis, school psychologists must look for multiple indicators when diagnosing learning disorders.

Learning disabilities and other psychological conditions are not discrete entities; they occur on a continuum, often with comorbid conditions that confuse the picture even more (Fletcher, Lyon, Fuchs, & Barnes, 2007). Although school districts and even individual school psychologists may wish that they could plug test scores into a formula and make diagnoses based on the outcome—as was often done in the past and is sometimes done presently—the validity of making diagnoses on that basis has not been upheld.

It is possible, though, to collect data consisting of multiple indicators of learning disorders through record review, interviews, observations, and tests when considering the domains of the environment, instruction, curriculum, and the learner. The following sections of this chapter are intended to help guide the practitioner through the process of collecting data regarding the multiple indicators of disorders of basic reading: data from record review, interviews, observations, and tests.

Multiple Indicators of a Disorder of Decoding and Word Reading

Observations of Clinical Signs

There are many clinical signs of disorders in reading decoding and word recognition, as shown in Table 5.1. For example, although any beginning reader may omit letters and sounds or make other mistakes listed below while reading and writing

Table 5.1 Clinical signs of a disorder in word reading

• Omitting letters/sounds while reading words orally and in spelling
• Substituting letters/sounds or words while reading orally and in spelling (*house/home*)
• Letter reversals (b/d), letter inversions (m/w), and word transpositions (*felt/left*)
• Inserting letters/sounds where they don't belong while reading orally and in spelling
• Difficulty rhyming words
• Inability to blend separate sounds together to make a word
• Inability to segment (break apart a word by phonemes)
• Inability to recognize the number of syllables in words
• Slow progress on language proficiency tests of reading
• Speaking later than most children
• Slow vocabulary growth in first language, often unable to find the right word
• Problem learning names
• Trouble learning numbers, alphabet, days of the week
• Confusing basic words (*run, eat, want*)
• Requiring more exposures to a word over a longer period of time
• Spelling the same word differently in a single piece of writing
• Reading errors that show no connection to the sounds of the letters
• Inability to sound out words that are usually easily decodable, such as *mat, cat, hop, nap*
• Slow to learn prefixes, suffixes, root words, and other spelling strategies
• Avoiding reading aloud*
• Relying on context to read words*
• Rhythm of oral reading is choppy*
• Reading single words aloud incorrectly or slowly and hesitantly*
• Avoiding reading; complains that "reading is hard"*
• Incomplete homework; takes a long time to finish assignments*

*These behaviors may also occur when English learners are in the process of learning to read in English

words, students with dyslexia continue to make these kinds of errors past the stage where it is developmentally appropriate. Also, when observing these signs of word reading disorder, we must be aware that some of the signs are also characteristics of students who are first learning to read in English. Those signs are listed at the end of the table.

Record Review

Chapter 11 provides a guide for questions that can be used to gather data regarding learning disorders when doing a record review. Also, please see Chapter 3 for additional detailed information on the data that can be gleaned through record review.

Interviews

Chapter 11 presents the questions that can be answered based on interview with caregivers and teachers. Be sure to get relevant health information from the school nurse and have vision and hearing checked. Also, please see Chapter 3 for more extensive information on data that can be gathered from interviews.

Tests

How Do We Use Tests with English Learners to Determine Disorders of Decoding and Word Reading?

Individuals with dyslexia have been shown to consistently perform poorly on tests of:

- Phonemic awareness
- Phoneme segmentation
- Rhyming
- Short-term memory for verbal input
- Nonsense or pseudo-word reading tasks (Moats, 1996)

Many tests that are used with monolingual English speakers can also be used with English learners; however, we must be judicious about selecting the tests and reporting and interpreting scores. School psychologists can use achievement tests to show what English learners have mastered and what they have not mastered but it is not valid to use standardized test scores for students who are not represented in the norming sample. Choose tests that provide diagnostic data that can be linked to instructional interventions. Choose tests that pinpoint the student's instructional

Table 5.2 Formal Assessments Related to Decoding

Reading tests	For any English learner	For Spanish speakers
	• *Diagnostic Assessments of Reading-Second Edition* (Roswell, Chall, Curtis, & Kearns, 2005) • *Gray Oral Reading Test-Fifth Edition* (Wiederholt & Bryant, 2012) • *Kaufman Test of Educational Achievement-Third Edition* (Kaufman & Kaufman, 2014)	• *Logramos-Tercera Edición* (Aparicio & Nikolov, 2014) • *Aprenda: La Prueba de Logros en Español, Tercera Edición* (Aprenda-3, 2005) • *Prueba de Habilidades Académicas Iniciales* (Prueba, 2006) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Aprovechamiento* (Woodcock, Muñoz, McGrew, & Mather, 2004, 2007) • *Spanish Reading Inventory: Pre-Primer Through Grade Eight-Second Edition* (Johns & Daniel, 2010)
Processing tests	• *Beery-Buktenica Developmental Test of Visual-Motor Integration, Sixth Edition* (Beery, Buktenica, & Beery, 2010)	• *Test of Phonological Awareness in Spanish/Prueba de Conciencia Fonológica en Español* (Riccio, Imhoff, Hasbrouck, & Nicole, 2004)
Mental ability tests	*For any English learner*	*Tests in Spanish*
Please see Chapter 11 for detailed information on these mental ability tests.		
	• *Universal Nonverbal Intelligence Test-Second Edition* (Bracken & McCallum, 2016) • *Developmental Profile-Third Edition* (Alpern, 2007) • *Wechsler Intelligence Scale for Children-Fifth Edition Nonverbal Index* (Wechsler, 2014) • *Differential Ability Scales-Second Edition Special Nonverbal Composite* (Elliott, 2007)	• *The Wechsler Intelligence Scale for Children-Fourth Edition-Spanish* (Wechsler, 2004) (The WISC-V-Spanish is in development.) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew, & Mather, 2004, 2007) • *Developmental Profile-Third Edition* (Alpern, 2007)
Screeners and progress monitors	• AIMSweb (2014) • DIBELS-6 (2016)	• Spanish Reading CBM (AIMSweb, 2014) • *Indicadores Dinámicos del Éxito en la Lectura* (Good, Baker, Knutson, & Watson, 2006)
Additional information about these tests is available in Chapter 11.		

level. Make eligibility decisions based on multiple indicators rather than just on the scores of tests.

There are many tests that can be used to assess accuracy in reading common words and the ability to decode unfamiliar words in English. Table 5.2 lists tests that can be helpful in assessing English learners' reading achievement and processing skills

related to reading. This is not an exhaustive list; however, the tests on this list are examples of ones that school psychologists may have in their arsenal and that can be used to gather data on the specific reading skills of English learners. There is also a list of Spanish tests that can be considered for Spanish speakers who fit the test's norms.

Test Highlight: *The Diagnostic Assessments of Reading-Second Edition (DAR-2)*

The Diagnostic Assessments of Reading-Second Edition (DAR-2; Roswell, Chall, Curtis, & Kearns, 2005) is highlighted here because it has many advantages for use with English learners, as well as their monolingual English peers. The DAR-2 was normed on a sample of 1395 children; 11% were Hispanic. This test measures many of the skills and abilities just described that are necessary for basic reading:

- Print awareness
- Phonological awareness
- Recognition of letters and the sounds that they make
- Basic sight word recognition
- Word analysis (decoding)
- Oral reading accuracy and fluency
- Spelling

It also measures word meaning (vocabulary) and reading comprehension. The DAR-2 may be administered and interpreted by teachers as well as school psychologists. It has two forms (A and B) and its age range is 5 years to adult. It may be given multiple times in order to document a reader's progress. Although it does not yield standard scores, the DAR-2 does indicate approximate grade levels for word recognition, spelling, knowledge of word meanings, and reading comprehension. More importantly, it documents mastery of very specific skills that are necessary in reading. For example, there are brief subtests that determine whether the examinee has mastered such skills as the "rule of silent *e*" and "r-controlled vowels." The components of skills necessary for reading are tested in the explicit and systematic order that they are typically taught or acquired, beginning with print awareness all the way through reading fluency, knowledge of vocabulary, and silent reading comprehension.

Test-Teach-Test Assessments

In dynamic assessment, we first test the student on a particular academic skill to get a baseline. The interventionist then teaches the student with an evidence-based intervention and rates the student's responsiveness or rate of improvement. At the end of the intervention period, the student is retested to see what progress has been made (Peña, Gillam, & Bedor, 2014). It can be onerous for busy school psychologists and other educators to create their own charts showing benchmarks, rate of improvement, goal lines, and trend lines and it is certainly convenient to use programs such as AIMSweb (AIMSweb, 2014) and DIBELS (DIBELS-6, 2016) instead.

Test-teach-test assessments can be created by the school psychologist or by the teacher in order to assess word recognition and decoding, reading fluency, and reading comprehension. When assessing reading, a series of grade-level reading passages and word lists are created which typically range from a year or so below the student's current grade level through a year or so above the current grade level. For English learners, the range of the passages may have to go lower. For example, English learners with a learning disability may be placed in ninth grade when they first come to the English-speaking school but their reading skills in English may be at a first-grade level. The objective of the probes is to find the learner's independent, instructional, and frustration levels in the various components of reading. Examinees start out with the easiest word lists and continue until they can decode less than 85% of the words. That is the frustration level. The instructional level is when they can decode 85–95% of the words and, at the independent level, they can decode at least 95% of the words (Salvia, Ysseldyke, & Witmer, 2017).

Passages can be taken from texts that are in the actual curriculum being used by the school. This is true "curriculum-based assessment," and generally it is recommended that, for each grade level, passages be taken from the beginning, middle, and end of the text, avoiding poetry, plays, and other less familiar formats. It is advisable to check the readability statistics of passages that you take from textbooks. The Intervention Central website (http://www.interventioncentral.org/) has a number of helpful programs that can be used to generate word lists and reading passages (Letter Name Fluency Generator, Dolch Wordlist Fluency Generator, Reading Fluency Passage Generator, and Test of Reading Comprehension-Maze Passage Generator). These are easy ways to determine the readability level of lists and passages. Microsoft Word can be set to "Show Readability Statistics" (first go to Languages and then Proofing). Whenever the Spelling and Grammar check is used, the Flesch-Kincaid reading level can be ascertained.

Teaching and Intervening

What Are Characteristics of Good Classroom Instruction for English Learners?

Classroom instruction as well as reading interventions for English learners should build their academic language and academic vocabulary (Richards-Tutor, Baker, Gersten, Baker, & Smith, 2016). Systematic and explicit instruction that involves scaffolding, modeling, and corrective feedback is recommended. Recommended instructional practices include the use of visuals and gestures, clarifying the meanings of words, regular review, guided practice, building background knowledge, and multiple opportunities to practice skills.

Interventions for English learners are more likely to have positive effects when the intervention is tailored to the student's skill level and less likely to be helpful when a one-size-fits-all approach is taken (Richards-Tutor et al., 2016; Wanzek &

Roberts, 2012). For example, supplemental phonics-based instruction (described below) resulted in significant increases in the phonological awareness of English learners in kindergarten, provided that the students had higher pretest vocabulary and less time was spent on phonics instruction in their classrooms (Vadasy & Sanders, 2010). There were at least 28 different languages spoken in the homes of the kindergarteners in this study.

Early is better than *wait and hope* when it comes to intervening with kindergarteners who have low levels of receptive language. O'Connor, Bocian, Beebe-Frankenberger, and Linklater (2010) found this is to be true for both native English speakers and English learners. Kindergarteners who received additional instruction in phonemic awareness, alphabetic principle, letter knowledge, and oral language made more progress when the intervention was started at the beginning of their kindergarten year rather than midyear. Importantly, this intervention was provided to groups that contained both English-only students and English learners. In this study, at least, unique interventions were not required for children who were assumed to have poorly developed English language because they were English learners.

Not only is early better, but the benefits of *sustained*, early intervention in reading decoding increase over time for both native English speakers and English learners whose first language is Spanish. What is more, the benefits are in improved decoding as well as fluency and comprehension. This was demonstrated in a study by Gunn, Biglan, Smolkowski, and Ary (2000) in which primary-aged children who scored low on screening measures were provided supplemental instruction in reading decoding for 2 years.

The intervention programs that have been shown to improve the vocabulary knowledge of English learners typically involve several strategies (August, Carlo, Dressler, & Snow, 2005). These include:

- Provide multiple exposures to meaningful information about the vocabulary word.
- Provide both contextual and definitional information about the meaning of the word.
- Have students talk about, compare, analyze, and use the vocabulary words.
- Teach high-frequency words and idioms.
- Give students multiple opportunities to read aloud to an adult in order to receive corrective feedback.

If the student's first language shares cognates with English, as is true for Spanish and French, then these cross-language associations can be used to build the student's English vocabulary (August et al., 2005). If English learners are literate in their first language, then cognates that are either phonologically and/or orthographically similar to English can be used to facilitate vocabulary learning. Even for students who can only speak, but not read, their first language, cognates that are phonologically similar can contribute to the English learner's vocabulary acquisition.

What Are Interventions to Improve English Learners' Reading Decoding?

Supplemental Phonics-Based Instruction

Supplemental Phonics-Based Instruction (Vadasy & Sanders, 2010) has been shown to be effective for English learners in kindergarten who have decoding problems. The instruction was provided by paraeducators in 30-minute sessions for 18 weeks. The lessons covered letter-word correspondence, segmenting, word reading and spelling, irregular word instruction, phoneme blending, alphabet naming practice, and assisted oral reading practice. Instructional scaffolding was used as needed.

Here's how the Supplemental Phonics-Based Instruction could be used to help an English learner, particularly a kindergartener:

1. Ask the kindergarten teacher for a text to use. Typically, this will be a beginning text with decodable words.
2. Review the text for any words that you may need to explain to the student. Prepare a list of cards showing these words matched with picture stimuli. You will use this list to explain the meanings of words that are unfamiliar to the student.
3. Use these seven activities to teach the English learner to read the selected passage. (Refer to Vadasy and Sanders for more detailed information on each step.):

   (a) Letter-sound correspondence: Explicitly teach and practice letter names and sounds by having the student point to the letter and say the sound. Pronounce letters and have the student write what you say.
   (b) Segmenting: Say a word. Present Elkonin boxes, with one square for each speech sound in the word. Have the student repeat the word, pointing to each box as she speaks one phoneme, and then sweep her finger under the boxes as she says the word quickly.
   (c) Word reading and spelling: (a) Point to a word, say it slowly without stopping between phonemes, and then say the word quickly. (b) Dictate three words for the English learner to spell: a word with the new sound, a word with a difficult sound, and an easy word. Have the student repeat each word before he or she attempts to spell it and then reread the word after he or she spells it. Correct his or her spelling as needed.
   (d) Irregular word instruction: Read the word aloud. Then have the student point to the word, spell it aloud, and read the word again.
   (e) Phoneme blending: Have the English learner guess the word that you say slowly and stretch out the phonemes.
   (f) Alphabet naming practice: Select one of these activities based on the English learner's level of alphabetic knowledge: (a) Have the student say the letter names while pointing to the letter. (b) Have the student say the alphabet without looking at the letters. (c) Have the student point to letters that you name. (d) Have the student name the letters that you point to.
   (g) Assisted oral reading practice: Have the English learner read aloud the beginning text with decodable words. (See step 1.) Provide assistance as necessary.

Interventions Necessitating the Use of Spanish

There are evidence-based reading interventions that can be delivered in Spanish, for example, Carlo et al. (2002) and Vaughn et al. (2006).

References

AIMSweb. (2014). Retrieved from http://www.aimsweb.com/.

AIMSweb in Spanish. (2014). Retrieved from http://www.aimsweb.com/assessments/features/assessments/features/assessments/spanish-reading.

Alpern, G. D. (2007). *Developmental Profile* (3rd ed.). Retrieved from http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders-5* (5th ed.). Washington, DC: Author.

Aparicio, E., & Nikolov, S. (2014). *Logramos-Tercera Edición (Logramos-3)*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/logramos-3.

Aprenda: La Prueba de Logros en Español, Tercera Edición. (2005). Retrieved from http://www.pearsonassessments.com/learningassessments/products/100000585/aprenda-3-aprenda-la-prueba-de-logros-en-espanol-tercera-edicion.html.

August, D., Carlo, M., Dressler, C., & Snow, C. (2005). The critical role of vocabulary development for English language learners. *Learning Disabilities Research and Practice*, *20*, 50–57.

Beery, K. E., Buktenica, N. A., & Beery, N. A. (2010). *Beery-Buktenica Test of Visual-Motor Integration* (6th ed.). Retrieved from http://www.pearsonclinical.com/therapy/products/100000663/the-beery-buktenica-developmental-test-of-visual-motor-integration-6th-edition-beery-vmi.html.

Bergin, C. A., & Bergin, D. A. (2009). Sleep: The E-ZZZ intervention. *Educational Leadership*, *67*(4), 44–47.

Bracken, B. A., & McCallum, R. S. (2016). *Universal Nonverbal Intelligence Test* (2nd ed.). Austin, TX: PRO-ED, Inc.

Carlo, M. S., August, D., McLaughlin, B., Snow, C. E., Dressler, C., & Lippman, D. N. (2002). Closing the gap: Addressing the vocabulary needs of English language learners in bilingual and mainstream classrooms. *Reading Research Quarterly*, *39*, 188–215.

Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews*, *10*, 323–337. doi:10.1016/j.smrv.2005.11.001.

Dehaene, S. (2009). *Reading in the brain: The science and evolution of a human invention*. New York, NY: Viking.

DIBELS-Sixth Edition. (2016). Retrieved from https://dibels.uoregon.edu/assessment/dibels/index.

Elliott, C. D. (2007). *Differential ability scales* (2nd ed.). San Antonio, TX: Harcourt Assessment.

van Ermingen-Marbach, M., Grande, M., Pape-Neumann, J., Sass, K., & Heim, S. (2013). Distinct neural signatures of cognitive subtypes of dyslexia with and without phonological deficits. *NeuroImage: Clinical*, *2*, 477–490. doi:10.1016/j.nicl.2013.03.010.

Fletcher, J. M., Lyon, G. R., Fuchs, L. S., & Barnes, M. A. (2007). *Learning disabilities: From identification to intervention*. New York, NY: The Guilford Press.

Good, R. H., Baker, D. L., Knutson, N., & Watson, J. M. (2006). *Indicadores Dinámicos del Éxito en la Lectura*. Retrieved from https://dibels.org/idel.htm.

Gunn, B., Biglan, A., Smolkowski, K., & Ary, D. (2000). The efficacy of supplemental instruction in decoding skills for Hispanic and non-Hispanic students in early elementary school. *The Journal of Special Education*, *34*, 90–103.

Hruby, G. G., & Goswami, U. (2011). Neuroscience and reading: A review for reading education researchers. *Reading Research Quarterly*, *46*(2), 156–172. doi:10.1598/RRQ.46.2.

Immordino-Yang, M. H. (2015). *Emotions, learning, and the brain: Exploring the educational implications of affective neuroscience*. New York, NY: W.W. Norton & Company, Inc.

Immordino-Yang, M. H., & Sylvan, L. (2010). Admiration for virtue: Neuroscientific perspectives on a motivating emotion. *Contemporary Educational Psychology*, *35*(2), 110–115. doi:10.1016/j.cedpsych.2010.03.003.

Johns, J., & Daniel, M. C. (2010). *Spanish Reading Inventory: Pre-Primer through Grade Eight* (2nd ed.). Dubuque, IO: Kendall Hunt Publishing Company.

Kaufman, A. S., & Kaufman, N. L. (2014). *Kaufman Test of Educational Achievement* (3rd ed.). Bloomington, MN: Pearson.

Keller, P. S., Smith, O., Gilbert, L. R., Bi, S., Haak, E., & Buckhalt, J. A. (2015). Earlier school start times as a risk factor for poor school performance: An examination of public elementary schools in the Commonwealth of Kentucky. *Journal of Educational Psychology*, *107*(1), 23–245. doi:10.1037/a0037195.

Könen, T., Dirk, J., & Schiedek, F. (2015). Cognitive benefits of last night's sleep: Daily variations in children's sleep behavior are related to working memory fluctuations. *Journal of Child Psychology and Psychiatry*, *56*(2), 171–182. doi:10.1111/jcpp.12296.

Landerl, K., Ramus, F., Moll, K., Lyytinen, H., Leppänen, H. T., Lohvansuu, K., … Schulte-Körne, G. (2013). Predictors of developmental dyslexia in European orthographies with varying complexity. *The Journal of Child Psychology and Psychiatry*, *54*(6), 686–694. doi:10.1111/jcpp.12029.

Landerl, K., Wimmer, H., & Frith, U. (1997). The impact of orthographic consistency on dyslexia: A German-English comparison. *Cognition*, *63*(3), 315–334. doi:10.1016/S0010-0277(97)00005-X.

Moats, L. C. (1996). Phonological spelling errors in the writing of dyslexic adolescents. *Reading and Writing: An Interdisciplinary Journal*, *8*, 105–199.

O'Connor, R. E., Bocian, K., Beebe-Frankenberger, M., & Linklater, D. L. (2010). Responsiveness of students with language difficulties to early intervention in reading. *The Journal of Special Education*, *43*, 220–235.

Paulesu, E., Démonet, J. -F., Fazio, F., McCrory, E., Chanoine, V., Brunswick, N., … Frith, U. (2001). Dyslexia: Cultural diversity and biological unity. *Science*, *291*, 2165–2167.

Paulesu, E., McCrory, E., Fazio, F., Menoncello, L., Brunswick, N., Cappa, S. F., … Frith, U. (2000). A cultural effect on brain function. *Nature Neuroscience*, *3*(1), 91–96.

Peña, E. D., Gillam, R. B., & Bedor, L. M. (2014). Dynamic assessment of narrative ability in English accurately identifies language impairment in English language learners. *Journal of Speech, Language, and Hearing Research*, *57*, 2208–2220.

Ramos, J., Hresko, W., & Ramos, M. (2006). *Prueba de Habilidades Académicas Iniciales (PHAI)*. Retrieved from http://www.proedinc.com/customer/productView.aspx?ID=3717.

Rayner, K. (2013). Children of the Code video: Letters. Retrieved from http://www.childre-nofthecode.org/Tour/c6/letters.htm.

Riccio, C. A., Imhoff, B., Hasbrouck, J. E., & Nicole, G. (2004). *Prueba de Conciencia Fonológica en Español*. Retrieved from http://www.hmhco.com/hmh-assessments/other-clinical-assess-ments/tpas.

Richards-Tutor, C., Baker, D. L., Gersten, R., Baker, S. K., & Smith, J. M. (2016). The effectiveness of reading interventions for English learners: A research synthesis. *Exceptional Children*, *82*(2), 144–169.

Roswell, F. G., Chall, J. S., Curtis, M. E., & Kearns, G. (2005). *Diagnostic Assessments of Reading* (2nd ed.). Austin, TX: PRO-ED, Inc.

Salvia, J., Ysseldyke, J. E., & Witmer, S. (2017). *Assessment in special and inclusive education* (13th ed.). Boston, MA: Cengage Learning.

Seymour, P. H. K., Aro, M., & Erskine, J. M. (2003). Foundation literacy acquisition in European orthographies. *British Journal of Psychology*, *94*, 143–174.

Shaywitz, S. (2003). *Overcoming dyslexia: A new and complete science-based program for reading problems at any level*. New York, NY: Knopf.

Shaywitz, S., & Shaywitz, B. A. (2008). Paying attention to reading: The neurobiology of reading and dyslexia. *Development and Psychopathology*, *20*, 1329–1349.

Spanish Reading CBM. (2016). Retrieved from http://www.aimsweb.com/assessments/features/assessments/spanish-reading.

Uhry, J. K., & Clark, D. B. (2005). *Dyslexia: Theory and practice of instruction*. Baltimore, MD: York.

Vadasy, P. F., & Sanders, E. A. (2010). Efficacy of supplemental phonics-based instruction for low-skilled kindergarteners in the context of language minority status and classroom phonics instruction. *Journal of Educational Psychology*, *102*, 786–803.

Vaughn, S., Linan-Thompson, S., Mathes, P. G., Cirino, P., Carlson, C. D., Pollard-Durodola, S. D., … Francis, D. J. (2006). Effectiveness of a Spanish intervention and an English intervention for first-grade English language learners at risk for reading difficulties. *Journal of Learning Disabilities, 39*, 56–73.

Vellutino, F. R., Fletcher, J. M., Snowling, M. J., & Scanlon, D. M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of Child Psychology and Psychiatry*, *45*(1), 2–40.

Wanzek, J., & Roberts, G. (2012). Reading interventions with varying instructional emphases for fourth graders with reading difficulties. *Learning Disability Quarterly*, *35*, 90–101.

Wechsler, D. (2004). *Wechsler Intelligence Scale for Children—Fourth edition—Spanish*. San Antonio, TX: Harcourt Assessment.

Wechsler, D. (2014). *Wechsler Intelligence Scale for Children* (5th ed.). Bloomington, MN: Pearson.

Wiederholt, J. L., & Bryant, B. R. (2012). *Gray Oral Reading Tests, Fifth edition (GORT-5)*. Austin, TX: Pro-Ed.

Wolf, M. (2007). *Proust and the squid: The story and science of the reading brain*. New York, NY: Harper Perennial.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Normative Update. Retrieved from http://www.hmhco.com/hmhassessments/achievement/bateria-iii-wm#sthash.QpZ1UuKz.dpuf.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Habilidades Cognitivas Normative Update*. Boston, MA: Houghton, Mifflin, Harcourt.

Chapter 6
Reading Fluency and Vocabulary

Introduction

Once children learn to decode and recognize common sight words, they must then begin to process the words by connecting them with meaning so the brain can comprehend what is read. This must be done "unconsciously" by the brain with lightning speed. Skilled college-aged readers all have larger perceptual spans—the number of letters that the eye can fixate on while reading—than do young children, dyslexic readers, and older readers (Rayner, 2009). Fluent readers recognize words automatically; their reading is smooth (Deeney, 2010). An important aspect of fluent reading is knowledge of the meanings of many words. Besides automaticity in recognizing letters and words, the brain must have a comprehensive lexicon of vocabulary in order for the reader to reach the ultimate goal of comprehension. The topic of this chapter is fluency, the bridge between word recognition and comprehension.

What to Know Before Reading Fluency Assessment and Intervention

What Is the Relationship Between Vocabulary and Fluency in Reading?

Vocabulary is essential to comprehension in reading (Jackson, Schatschneider, & Leacox, 2014; Pikulski & Chard, 2005). The lexicon in the brain is huge; the average reader of English knows between 50,000 and 100,000 words, including proper nouns, acronyms, trademarks, and foreign words (Dehaene, 2009). How does the brain learn this vast amount of vocabulary?

To answer this question, we must first explore the differences between receptive and expressive vocabulary, both oral and written. *Receptive oral vocabulary* refers to the words that individuals can understand when they hear them spoken. *Expressive oral vocabulary* refers to the words that individuals can say and use in meaningful ways in speech. *Receptive written vocabulary* consists of the words individuals can read and understand; *expressive written vocabulary* refers to the words they can use meaningfully in writing.

As explained in Chapter 2, receptive oral language develops before expressive oral language. By the end of the first year of life, most children have a receptive vocabulary of about 50 words. Contrast this with only about three words that are in the 1-year-old's expressive vocabulary (Public Broadcasting System Child Development Tracker, 2016). Parents often make the mistake of assuming that their children's receptive vocabulary is only as large as their expressive vocabulary and talk openly about things that they may not really want their child to understand. But children can understand words that they cannot yet use in speech. This is also true of individuals learning a second language. The "silent period" is a time when English learners understand more than they can say.

During the second year of life, receptive vocabulary really takes off for most normally developing children. According to the PBS Child Development Tracker (2016), the child's receptive vocabulary of 200 words at 18 months leaps to 500–700 by age 2. Again, the expressive vocabulary lags behind. By 18 months, the child can use only about 68 words in speech. A year later, the child's receptive vocabulary is up to 800–900 words and the expressive vocabulary burgeons to about 570 words. By the time children reach kindergarten, they typically have a receptive vocabulary of at least 4000–5000 words. According to this source, it is hard to measure children's expressive vocabulary from age 3 on but children typically have a greater receptive than expressive vocabulary (Fig. 6.1).

If English is not spoken in the home, the first exposure to English may be when a child enters kindergarten—or any other grade in school, for that matter. Just starting out, they are at least 4000–5000 vocabulary words behind their monolingual English-speaking peers. This does not necessarily mean that it will take an English learner 5 years to achieve a vocabulary in English that is equivalent to a monolingual 5-year-old's vocabulary. Typical children can learn between 10 and 20 new words a day (O'Grady, 2005), which equals between 1800 and 3600 in a 180-day school year. Obviously, students will be learning words that are taught and used at their particular grade level.

In attempting to understand vocabulary acquisition for English learners, it is important to recognize a distinction between the vocabulary that is used in different settings. To illustrate, a lawyer must know the meanings of such terms as *voir dire*, *tort*, and *habeas corpus*. It is unlikely that an attorney will use these terms at a social gathering, unless surrounded by other attorneys. Psychologists may talk among themselves about *A-B-A designs*, *fixed-interval schedules*, or *schemata* but they would not necessarily expect a lay person to understand these terms. The words that are used in a grocery store, restaurant, and kitchen are different than the ones used in a mathematics class, and those words are different than the vocabulary used in a computer lab.

Development of Receptive
and Expressive Vocabularies
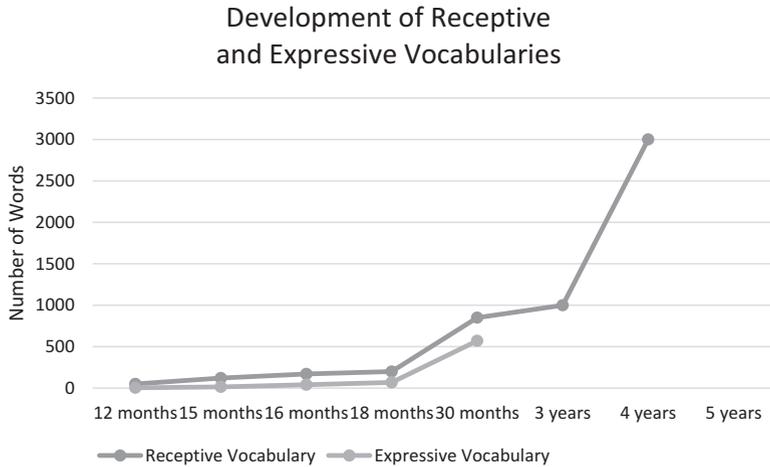
Fig. 6.1 Development of Receptive and Expressive Vocabularies. It is difficult to measure expressive vocabulary from age 3 on but receptive vocabulary typically outstrips expressive vocabulary. Adapted from the Public Broadcasting System's Child Development Tracker: Language. (2016). Retrieved from http://www.pbs.org/parents/childdevelopmenttracker/one/language.html

In terms of understanding the language proficiency of English learners, two helpful categories are basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP) skills, introduced by Cummins in 1984. BICS is social language that individuals use when communicating *outside* of the classroom. Research suggests that it takes children 1 or 2 years to become fluent in the English they will use when communicating on the playground, in the cafeteria, or when visiting their friends and engaging in other social activities.

The other type of language proficiency is cognitive academic language proficiency (CALP) skills. This is language specific to subjects that are studied at school. For example, in math class, a student might be expected to know the meanings of the terms *acute angle*, *addend*, and *circumference*. In language arts, students would be expected to know the definitions of *long vowels*, *antonyms*, and *story elements*. These are terms that would not be used on the playground; they are unique to the various subjects in school. There is some disagreement about how long it takes to develop CALP. It may be 5–7 years if the student has a strong literacy background in the first language (Cummins, 1989) or as long as 10–12 years (Ovando & Collier, 1985). One factor in the amount of time that is required for proficiency in academic language is that students whose first language is the dominant language continue to learn more vocabulary and are, in effect, moving targets for the second language learners who are striving to catch up (McCloskey & Athanasiou, 2000). Also, as Barrera (2006) notes, the expectation that English learners will master cognitive academic language proficiency after a period of a certain number of years "… is the expected rate for learners *without* disabilities" (p. 143). He continues: "What is likely is that second language learners in special education with a continuous school history (9–12 years) will be identified as having limited English proficiency throughout their entire time in school" (p. 143).

BICS and CALP help us understand why children may *appear* to be fluent English speakers yet they struggle to understand what is being taught in the classroom. Educators may chat with children or observe them interacting with their peers and see that they can converse easily in English. When trying to make a decision as to whether these children need to have their first language taken into account when assessing them, it is tempting to believe that their fluency in English is similar to the norming samples of the standardized tests that school psychologists like to use or, in other words, to "engage in denial" (Salvia, Ysseldyke, & Witmer, 2017). It is likely, though, that when educators observe these children speaking English, we are hearing their basic interpersonal communication skills (BICS). These are not the skills that have a bearing on whether or not a student has the vocabulary to succeed in an academic setting at a particular grade level or in a particular subject.

Familiar vocabulary is essential to fluency and comprehension (Snell, Hindman, & Wasik, 2015). What happens when readers encounter words that they do not know? Readers can figure out many unknown words by using context clues. They may know that the root word *port* means "to carry," as in the words *import, export, transportation*, and *portability*. Readers also use affixes, such as *im-, ex-, -tion*, and *-ity*, to infer the meanings of words. Sometimes synonyms, antonyms, and explanations occur in the text that help readers decipher—or figure out—the meaning of words. In most cases, it is more difficult for English learners to use context clues to surmise the meanings of unknown words because they understand fewer of the words than their English-speaking peers (Carlo et al., 2008/2009) and they are missing the grammatical knowledge to effectively use context clues (Carlo et al., 2004).

If readers fail to understand the meaning of a word from its context, they *may* stop to look the word up in a dictionary or thesaurus. When reading on a computer, this may be relatively convenient, but most readers, especially children, do not want to stop very often to look up the meanings of words they do not understand. When we read for enjoyment, we are typically reading at our *independent* level; we have at least 95–99% decoding accuracy and can comprehend most of what we read (Salvia et al., 2017). Reading for enjoyment at the independent level has been shown to dramatically increase English learners' reading comprehension and reading fluency (Pilgreen & Krashen, 1993). Reading for enjoyment can also help close the vocabulary gap (Snell et al., 2015).

Students reading at their *instructional* level will accurately decode 85–95% of what they read (Salvia et al., 2017). When students are reading material at their instructional level, we pre-teach vocabulary and concepts, check frequently for understanding, and provide other scaffolding to make sure that the text is comprehensible to the student.

Unfortunately, many struggling readers and many English learners are given texts to read that are at their *frustration* level. At this level, readers understand less than 85% of what they read (Salvia et al., 2017). Children who encounter 5–15% or more unknown words in their reading will soon just skip the unknown words and lose the meaning. They may also guess at the meanings of unknown words by using context clues but, if they guess wrong, every time they see that word it will reinforce the neuronal connections in the brain that lead them to the wrong meaning.

When text is not comprehensible, the reader becomes frustrated and may avoid reading as much as possible (Shaywitz & Shaywitz, 2004). This is problematic in several ways.

- Reading introduces children and adults to additional vocabulary words and to new concepts and ideas, thus broadening and deepening their understanding of what they read and what they are taught. Avoiding reading leads to students missing out on those opportunities to add to their knowledge.
- Readers typically need multiple exposures to new words in order to learn them (Snell et al., 2015). Children who avoid reading are less likely to get those additional exposures.
- Another problem occurs when there is a vocabulary gap between the learner and other students at that grade level; avoidance of reading will only increase the size of the gap (Krashen, 1989).

At the beginning of this section, we said that most monolingual English-speaking kindergartners already have an oral vocabulary of at least 4000–5000 words. As they learn to read during the next few years their vocabulary will increase by thousands of words. In contrast, the English learner may come to kindergarten—or fifth grade or ninth grade—knowing just a handful of oral and written words in English. If these students are given the same texts as their English-speaking peers, they will need significant scaffolding to read and understand what their classmates are reading and understanding. That is why it is not unusual for school psychologists to test the reading skills of English learners and find that they are reading four or five grade levels below their actual grade placement.

Another challenge for English learners and the educators who serve them is that it is very difficult to make progress in learning a skill that is taught at the student's frustration level. This would be like taking an advanced Greek class before taking introductory Greek. Almost all of the material will go over the student's head and, consequently, nothing will be learned and the student will fail to make any progress.

It is clear that knowledge of vocabulary is necessary both for reading fluently and for comprehending what is read. The vocabulary gap can be closed but it requires lots of opportunities to read at the independent level, explicit instruction in the meanings of words, rereading books, oral language activities such as opportunities for retelling, and deliberate integration of new words into classroom activities throughout the day (Snell et al., 2015).

Besides Vocabulary, What Other Factors Lead to Fluent Reading?

The definition of reading fluency includes three elements: the absence of word identification problems, rate (automaticity and speed), and prosody (smooth reading without hesitations), all of which lead to comprehension (Deeney, 2010). When reading is done automatically, smoothly, and without conscious efforts at decoding,

the reader has more cognitive attention that can be focused on comprehension (LaBerge & Samuels, 1974; Stahl & Kuhn, 2002).

The fluent reader's brain is activated in several areas. Research shows that the work of decoding is done in both the front and back of the brain—Broca's area and the parietotemporal region, respectively (Shaywitz & Shaywitz, 2004). The brain region that makes automaticity possible in reading is in a different area in the back of the brain, the occipitotemporal region. Fluency is built in a step-by-step fashion that occurs after the learning of letters. The brain must then learn to speedily recognize patterns when it encounters sight words and multisyllabic words (Willis, 2009), such as patterns for syllables, conventions in print, and morphology.

The ability to process transient visual and/or auditory information efficiently is highly correlated with reading. This is the reason that we administer measures of processing speed, such as rapid automatic naming and symbol search subtests. The brain must coordinate all of the components of the language system in reading rapidly and automatically so that cognitive energy can be spent on comprehension rather than decoding, processing, and remembering (Frey & Fisher, 2010). The longer it takes the brain to read something, the harder it is to remember it. Children with reading problems are typically slow and labored in their reading.

What Is the Effect of the Language's Orthography on Reading Fluency?

In Chapter 5, we discussed differences between orthographically regular (transparent) and orthographically irregular (opaque) languages. It is important to understand those concepts with regard to orthography's effect on reading fluency, especially if a student has learned to read in a transparent language and is now faced with learning to read in an opaque language. Since the orthography of English is so opaque, most immigrants to English-speaking countries are coming from countries with a more transparent orthography. If a reading disorder is suspected, it can be helpful to test in the student's first language as soon as possible after immigration. Many Spanish speakers emigrate to English-speaking countries. As detailed in the DSM-5 (American Psychiatric Association, 2013):

> In the English language, the observable hallmark clinical symptom of difficulties learning to read is inaccurate and slow reading of single words; in other alphabetic languages that have more direct mapping between sounds and letters (e.g., Spanish, German) and in non-alphabetic languages (e.g., Chinese, Japanese), the hallmark feature is slow but accurate reading (pp. 72–73)

Because of the transparency of the Spanish orthography, students who have learned to decode in that language are unlikely to struggle with tests of word reading in Spanish. If they are going to have problems reading in Spanish, it will most likely show up in reading fluency and/or reading comprehension. Thus, testing their reading fluency and comprehension skills in Spanish while they still fit the norms of instruments normed on Spanish speakers will be helpful in determining whether they have deficits in fluency and/or comprehension.

What Is the Relationship Between Fluency and Comprehension?

There are positive correlations between word reading accuracy, reading speed, and reading comprehension (see, for example, Fuchs, Fuchs, Hosp, and Jenkins, 2001; Schwanenflugel, Hamilton, Kuhn, Wisenbaker, and Stahl, 2004; and Samuels, 2006). Of course, correlation does not infer causation. When making eligibility determinations for the specific learning disability category in the USA, school psychologists must assess *basic reading*, *reading fluency*, and *reading comprehension*. If decoding and word recognition are slow and labored, students cannot read fluently. When they must devote their cognitive energies to word reading, students have a difficult time comprehending what they have struggled to read (e.g., Pennington et al., 2012). If English learners are unable to decode and recognize words, they will almost certainly have problems with fluency and comprehension.

Multiple Indicators of a Disorder of Reading Fluency

Observations of Clinical Signs

Since word reading, fluency, and comprehension are inextricably related to each, the clinical signs that may indicate a disorder in reading fluency are similar to those of word reading and reading comprehension (Table 6.1).
Please note that deficits in reading decoding and word recognition skills will affect reading fluency.

Record Review

Chapter 11 provides a guide for questions that can be answered when doing a record review. Also, please see Chapter 3 for detailed information on the data that can be gleaned through record review.

Interviews

Chapter 11 presents questions that can be answered based on interview with caregivers and teachers. Be sure to get relevant health information from the school nurse and have vision and hearing checked. Also, please see Chapter 3 for more extensive information on data that can be gathered from interviews.

Table 6.1 Clinical signs of a disorder in reading fluency

• Slow progress on language proficiency tests of reading
• Speaks later than most children
• Requires more exposures to a word over a longer period of time
• Struggles with fluency in other areas, such as math and writing
• Rhythm of oral reading is choppy*
• Avoidance of reading; complains that "reading is hard"*
• Incomplete homework; takes a long time to finish homework*
• Avoids reading aloud*
• Reads single words aloud incorrectly or slowly and hesitantly*

*These behaviors may also occur when English learners are in the process of learning to read in English

What Are the Cognitive Skills That Correlate with Reading Fluency and Vocabulary Skills?

In Chapter 3, we discuss the pattern of the strengths and weaknesses model; please refer to that discussion when deciding whether to attempt to use this model with English learners. When assessing across languages, the transparency of the language in which the student is learning to read plays a role in which cognitive skills predict specific reading skills (Georgiou, Parrila, & Papadopoulos, 2008). Phonological short-term memory, speech perception, auditory attention, and flexibility have been shown to be factors in second language vocabulary acquisition (Farnia & Geva, 2011; Nicolay & Poncelet, 2013).

Rapid automatic naming (RAN) is a strong predictor of reading fluency for monolingual English-speaking students (Vaessen & Blomert, 2010). Tests of RAN can present a challenge for examiners of English learners, whether the examinee is expected to read numbers, letters, or colors. In order to have automaticity at a skill, it needs to have been practiced so often that it is done without conscious thought. Many children have automaticity with numbers because they are taught to count from 1 to 10 when they are very young, before they have even started school. Automaticity with letters and colors is also developed at a young age. Rapid naming tasks on processing and mental ability tests are valid for examinees who have had the opportunity to develop automaticity in counting, saying the letters of the alphabet, and naming colors in English. English learners do not have the advantage of those firmly established neuronal connections. For this reason, school psychologists should exercise caution in administering tests of RAN to English learners and should not give those tests unless it is established that the examinee has been in the English-speaking school system for long enough to have developed automaticity with numbers, letters, and colors.

Tests

When Is It Appropriate to Test an English Learner's Reading Fluency Skills in His or Her Native Language?

In Chapter 5, we go over general considerations for deciding when it is appropriate to test English learners' academic skills in their native language. As always, the English learner needs to be represented in the test's norming sample in order to report standard scores. In assessing reading fluency, it can be helpful to assess native language reading fluency skills for diagnostic purposes. If a child has attended a monolingual school in a non-English-speaking country, it will be difficult to obtain valid scores of rapid automatic naming (RAN) using English measures. These children may have adequate RAN skills in their native language, which indicates that they have one of the necessary cognitive correlates for reading fluency.

How Do We Use Tests with English Learners to Determine Disorders of Reading Fluency?

In Table 6.2, we list published tests with fluency and vocabulary components that can be used with English learners. These tests include diagnostic reading tests and mental ability tests, as well as tests used for screening and progress monitoring.

Test Highlight: The Bilingual Verbal Ability Tests-Normative Update (BVAT-NU)

A test that is specifically designed to assess cognitive academic language proficiency (CALP) in English and 17 other languages is the Bilingual Verbal Ability Tests-Normative Update (BVAT-NU; Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 2005). The idea behind the BVAT-NU is that students who are bilingual know some academic vocabulary in the first language, some in the second language, and some in both languages. The test consists of three subtests: picture vocabulary, oral vocabulary, and verbal analogies. The subtests are first administered in English. Then the examiner goes back and re-administers the items that were missed in English in the student's first language. The BVAT-NU can be administered in 17 languages in addition to English and it can be administered by an ancillary examiner. It is a measure of cognitive academic language proficiency (CALP) for ages 5 through adult. The BVAT-NU yields an overall bilingual verbal ability score and a score of the student's proficiency in academic language in English.

Test-Teach-Test Assessments

Test-teach-test assessments can be created by the school psychologist or by the teacher in order to assess word reading fluency. When assessing reading, a series of grade-level reading passages and word lists are created which typically range from a

Table 6.2 Formal Assessments Related to Reading Fluency and Vocabulary

Reading tests with fluency and/or vocabulary measures	For any English learner	For Spanish speakers*
	• *Diagnostic Assessments of Reading-Second Edition* (Roswell, Chall, Curtis, & Kearns, 2005) • *Gray Oral Reading Test-Fifth Edition* (Wiederholt & Bryant, 2012) • *Kaufman Test of Educational Achievement-Third Edition* (Kaufman & Kaufman, 2014) • *Bilingual Verbal Ability Test Normative Update* (Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 2005)	• *Logramos-Tercera Edición* (Aparicio & Nikolov, 2014) • *Aprenda: La Prueba de Logros en Español, Tercera Edición* (Aprenda, 2005) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Aprovechamiento* (Woodcock, Muñoz-Sandoval, McGrew, & Mather, 2004, 2007) • *Prueba de Habilidades Académicas Iniciales* (Ramos, Hresko & Ramos, 2006) • *Test de Vocabulario en Imágenes Peabody* (Dunn, Lugo, Padilla, & Dunn, 1986) • *Spanish Reading Inventory: Pre-Primer through Grade Eight-Second Edition* (Johns & Daniel, 2010).
Mental ability tests	*For any English learner*	*For Spanish speakers**
	• *Wechsler Intelligence Scale for Children-Fifth Edition Nonverbal Index* (Wechsler, 2014) • *Differential Ability Scales-Second Edition Special Nonverbal Composite* (Elliott, 2007) • *Universal Nonverbal Intelligence Test-Second Edition* (Bracken & McCallum, 2016) • *Developmental Profile-Third Edition* (Alpern, 2007)	• *The Wechsler Intelligence Scale for Children-Fourth Edition-Spanish* (Wechsler, 2004). Note: According to the publisher, the WISC-V-Spanish is in development. • *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004, 2007)
Screeners and progress monitors	• AIMSweb (2014) • DIBELS-Sixth Edition (DIBELS, 2016)	• AIMSweb Spanish (2014) • DIBELS in Spanish: *Indicadores Dinámicos del Éxito en la Lectura* (Good, Baker, Knutson & Watson, 2006)
Processing speed	• *Woodcock-Johnson Tests of Cognitive Abilities-IV* (Schrank, McGrew & Mather, 2014)	• *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004, 2007)

Additional information about these tests is available in Chapter 11.

year or so below the student's current grade level through a year or so above the current grade level. For English learners, the range of the passages may have to go lower.

Test-teach-test method	Definition	Example
Curriculum-based dynamic assessment (CDA)	Teaching a specific authentic task and collecting progress and procedural data as students acquire the task (Barrera, 2006)	The student orally reads a 1-minute passage which is rated for fluency. A fluency intervention (such as repeated readings) is implemented for 2 weeks. The student is retested to see whether typical progress has been made.

The objective of the probes is to find the learner's independent, instructional, and frustration levels in reading fluency. Examinees start out with the easiest word lists and continue until they can fluently read ≤85% of the words. That is the frustration level. The instructional level is when they can fluently read 85–95% of the list or passage and, at the independent level, they can fluently read at least 95% of the list or passage (Salvia et al., 2017). These same levels apply to the examinee's knowledge of vocabulary words.

Passages can be taken from texts that are in the actual curriculum being used by the school but it is advisable to check the readability statistics of passages that you take from textbooks. Avoid selecting passages other than narratives, such as plays or poetry. The Intervention Central website (http://www.interventioncentral.org/) has a number of helpful programs that can be used to generate words lists and passages (Letter Name Fluency Generator, Dolch Wordlist Fluency Generator, Reading Fluency Passage Generator). These are easy ways to determine the readability level of lists and passages. Microsoft Word can be set to "Show Readability Statistics" (first go to Languages and then Proofing). Whenever you use the Spelling and Grammar check, you can also get the Flesch-Kincaid reading level.

Teaching and Intervening

What Are Characteristics of Good Classroom Instruction for English Learners?

During the early grades of kindergarten through third grade, students need to develop phonological processing skills. Gunn, Biglan, Smolkowski, and Ary (2000) demonstrated the effectiveness of sustained supplemental instruction in phonemic awareness and decoding skills for both native English speakers and English learners in these primary grades whose phonological awareness skills and oral reading fluency were low. The supplemental instruction program was characterized by immediate feedback, skills taught to mastery, frequent teacher monitoring, and practice opportunities. After the first year of this program, improvement was evident in students' word attack skills. After the second year, both native English speakers and English learners improved their skills in word attack, word identification, and oral reading fluency.

Which Words Should Be the Focus of Instruction in Vocabulary?

Children enter school having heard some words many times because they are used frequently in conversation (Beck, McKeown, & Omanson, 1987). The meanings of words like *eat*, *no*, and *look* don't have to be taught because children come to school having heard and used them many times in conversation. These Tier 1 vocabulary words (Beck et al., 1987) would be part of basic interpersonal communicative skills (BICS; Cummins, 1984) for English learners. (The term *tier* as used here should not be confused with *tiers* in response-to-intervention models.) To the extent that the Tier 1 vocabulary in the English learner's first language aligns with the Tier 1 vocabulary of native English speakers, the only instruction that is needed is to teach the child the English word (e.g., *house*) for the word that the child already knows (e.g., *casa*). (Please note, however, that vocabulary words can have somewhat different connotations in different languages.)

There are other words that are not used often in conversation but which are very important to understanding written text. These Tier 2 vocabulary words (Beck et al., 1987) would be part of cognitive academic language proficiency (CALP; Cummins, 1984) for English learners. Examples include *reciprocal*, *resident*, and *voluntarily*. Teaching Tier 2 words requires instruction in both the English word and the concept represented by that word. Some words are Tier 1 words in English but not in the English learner's first language. In these cases, the English learner will need instruction in the concept as well as the vocabulary.

Beck, McKeown, and Kucan (2013) provide a detailed example of how a vocabulary lesson in teaching the concept of *expose* could be modified for English learners. The scaffolding that is used includes:

- More extensive background information about the concept, as well as the contexts in which the word is used
- Directing the learners' attention to the important information
- Explaining the meanings of words that are important to comprehension of the concept
- Identifying any cognates of the English vocabulary used in the lesson

What Are Interventions to Improve English Learners' Reading Fluency?

Paired Reading Strategy

In the paired reading strategy (Li & Nes, 2001), a skilled reader acts as a role model of fluent reading for a less skilled reader. First, the skilled reader reads aloud a passage that is at the reading level of the less skilled reader. Then the less skilled reader reads the same passage aloud. Errors are noted but the less skilled reader is not interrupted by correction. However, if the less skilled reader hesitates for 3 seconds, then the skilled reader pronounces the word (and records this as an error). Each session lasts about 20 minutes and the passages gradually become longer.

Li and Nes (2001) demonstrated the effectiveness of the paired reading strategy with four Chinese-speaking children who had been in the USA either less than a month (two third graders) or about 3 months (a first grader and a second grader). The skilled reader acting as the role model was a doctoral student who spoke both Chinese and English. Children's storybooks were read by the pairs. Effectiveness of the strategy was demonstrated with a single-subject A-B research design. Decoding skill was measured by accuracy of word recognition and fluency was measured by rate of oral reading. Comprehension was not addressed by this intervention.

Here's how the Paired Reading Strategy could be used to help an English learner:

1. Select children's books at the English learner's reading level.
2. Make copies of the stories that the skilled reader (i.e., tutor) can use to record reading errors.
3. The tutor reads a sentence, demonstrating appropriate rate, inflection, and pauses for the English learner.
4. The English learner reads the same sentence aloud.
5. Steps 2 and 3 are repeated for about 20 minute.
6. The tutor reads passages longer than a sentence as the English learner becomes more proficient as evidenced by accuracy and rate of reading.

Reference for Interventions Necessitating the Use of Spanish

Jimenez, R. T. (1997). The strategic reading abilities and potential of five low-literacy Latina/o readers in middle school. *Reading Research Quarterly, 32,* 224–243.

References

AIMSweb. (2014). Retrieved from http://www.aimsweb.com/.

AIMSweb in Spanish. (2014). Retrieved from http://www.aimsweb.com/assessments/features/assessments/features/assessments/spanish-reading.

Alpern, G. D. (2007). *Developmental Profile-Third Edition*. Retrieved from http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders-Fifth edition*. Washington, DC: Author.

Aparicio, E., & Nikolov, S. (2014). *Logramos-Tercera Edición (Logramos-3)*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/logramos-3.

Aprenda: La Prueba de Logros en Español, Tercera Edición. (2005). Retrieved from http://www.pearsonassessments.com/learningassessments/products/100000585/aprenda-3-aprenda-la-prueba-de-logros-en-espanol-tercera-edicion.html.

Barrera, M. (2006). Roles of definitional and assessment models in the identification of new or second language learners of English for special education. *Journal of Learning Disabilities*, *39*, 142–156. doi:10.1177/00222194060390020301.

Beck, I. L., McKeown, M. G., & Kucan, L. (2013). *Bringing words to life: Robust vocabulary instruction*. New York, NY: The Guilford Press.

Beck, I. L., McKeown, M. G., & Omanson, R. C. (1987). The effects and uses of diverse vocabulary instructional techniques. In M. G. McKeown & M. E. Curtis (Eds.), *The nature of vocabulary acquisition* (pp. 147–163). Hillsdale, N.J: Erlbaum.

Bracken, B. A., & McCallum, R. S. (2016). *Universal Nonverbal Intelligence Test-Second Edition*. Austin, TX: PRO-ED, Inc.

Carlo, M. S., August, D., McLaughlin, B., Snow, C., Dressler, C., Lippman, D., … White, C. E. (2008/2009). Closing the gap: Addressing the vocabulary needs of English-language learners in bilingual and mainstream classrooms. *Journal of Education*, *189*(1/2), 57–76.

Carlo, M., August, D., McLaughlin, B., Snow, C., Dressler, C., & Lippman, D. (2004). Closing the gap: Addressing the vocabulary needs of English-language learners in bilingual and mainstream classrooms. *Reading Research Quarterly*, *39*, 188–215.

Cummins, J. (1984). *Bilingualism and special education: Issues in assessment and pedagogy*. San Diego, CA: College Hill Press.

Cummins, J. (1989). A theoretical framework for bilingual special education. *Exceptional Children*, *56*, 111–119.

Deeney, T. A. (2010). One-minute fluency measures: Mixed messages in assessment and instruction. *The Reading Teacher*, *63*(6), 440–450. doi:10.1598/RT.63.6.1.

Dehaene, S. (2009). *Reading in the brain: The science and evolution of a human invention*. New York, NY: Viking.

DIBELS-Sixth Edition. (2016). Retrieved from https://dibels.uoregon.edu/assessment/dibels/index.

Dunn, L. M., Lugo, D. E., Padilla, R., & Dunn, L. M. (1986). *Test de Vocabulario en Imágenes Peabody*. Retrieved from http://www.pearsonclinical.com/language/products/100000487/test-de-vocabulario-en-imagenes-peabody-tvip.html.

Elliott, C. D. (2007). *Differential ability scales* (2nd ed.). San Antonio, TX: Harcourt Assessment.

Farnia, F., & Geva, E. (2011). Cognitive correlates of vocabulary growth in English language learners. *Applied PsychoLinguistics*, *32*, 711–738. doi:10.1017/S0142716411000038.

Frey, N., & Fisher, D. (2010). Reading and the brain: What early childhood educators need to know. *Early Childhood Education Journal*, *38*, 103–110.

Fuchs, L., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading*, *5*, 239–256.

Georgiou, G. K., Parrila, R., & Papadopoulos, T. C. (2008). Predictors of word decoding and reading fluency across languages varying in orthographic consistency. *Journal of Educational Psychology*, *100*(3), 566–580. doi:10.1037/0022-0663.100.3.566.

Good, R. H., Baker, D. L., Knutson, N., & Watson, J. M. (2006). *Indicadores Dinámicos del Éxito en la Lectura*. Retrieved from https://dibels.org/idel.htm.

Gunn, B., Biglan, A., Smolkowski, K., & Ary, D. (2000). The efficacy of supplemental instruction in decoding skills for Hispanic and Non-Hispanic students in early elementary school. *The Journal of Special Education*, *34*(2), 90–103.

Jackson, C. W., Schatschneider, C., & Leacox, L. (2014). Longitudinal analysis of receptive vocabulary growth in young Spanish English-speaking children from migrant families. *Language, Speech, and Hearing Services in Schools*, *45*, 40–51.

Johns, J., & Daniel, M. C. (2010). *Spanish Reading Inventory: Pre-Primer Through Grade Eight* (2nd ed.). Dubuque, IO: Kendall Hunt Publishing Company.

Kaufman, A. S., & Kaufman, N. L. (2014). *Kaufman Test of Educational Achievement* (3rd ed.). Bloomington, MN: Pearson.

Krashen, S. (1989). We acquire vocabulary and spelling by reading: Additional evidence for the input hypothesis. *The Modern Language Journal*, *73*(4), 440–464.

LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology*, *6*(2), 293–323. doi:10.1016/0010-0285(74)90015-2.

Li, D., & Nes, S. (2001). Using paired reading to help ESL students become fluent and accurate readers. *Reading Improvement*, *38*, 50–61.

McCloskey, D., & Athanasiou, M. S. (2000). Assessment and intervention practices with second-language learners among school psychologists. *Psychology in the Schools*, *37*(3), 209–225.

Muñoz-Sandoval, A. F., Cummins, J., Alvarado, C. G. & Ruef, M. L. (2005). *Bilingual Verbal Abilities Test Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/bvat.

Nicolay, A., & Poncelet, M. (2013). Cognitive abilities underlying second-language vocabulary acquisition in an early second-language immersion education context: A longitudinal study. *Journal of Experimental Child Psychology*, *115*(4), 655–671. doi:10.1016/j.jecp.2013.04.002.

O'Grady, W. (2005). *How children learn language*. Cambridge: Press Syndicate of the University of Cambridge.

Ovando, C., & Collier, V. (1985). *Bilingual and ESL classrooms: Teaching in a multicultural context*. New York, NY: McGraw Hill.

Pennington, B. F., Santerre-Lemmon, L., Rosenberg, J., MacDonald, B., Boada, R., Friend, A., … Olson, R. K. (2012). Individual prediction of dyslexia by single versus multiple deficit models. *Journal of Abnormal Psychology*, *121*(1), 212–224. doi: 10.1037/a0025823.

Pikulski, J. J., & Chard, D. J. (2005). Fluency: Bridge between decoding and reading comprehension. *The Reading Teacher*, *58*(6), 510–519. doi:10.1598/rt.58.6.2.

Pilgreen, J., & Krashen, S. (1993). Sustained silent reading with English as a second language high school students: Impact on reading comprehension, reading frequency, and reading enjoyment. *School Library Media Quarterly*, *22*, 21–23.

Public Broadcasting System Child Development Tracker. (2016). Retrieved from http://www.pbs.org/parents/childdevelopmenttracker/one/language.html.

Ramos, J., Hresko, W., & Ramos, M. (2006). *Prueba de Habilidades Académicas Iniciales (PHAI)*. Retrieved from http://www.proedinc.com/customer/productView.aspx?ID=3717.

Rayner, K. (2009). Eye movements and attention in reading, scene perception, and visual search. *Journal of Experimental Psychology*, *62*(8), 1457–1506. doi:10.1080/17470210902816461.

Roswell, F. G., Chall, J. S., Curtis, M. E., & Kearns, G. (2005). *Diagnostic Assessments of Reading-Second edition*. Austin, TX: PRO-ED, Inc.

Salvia, J., Ysseldyke, J. E., & Witmer, S. (2017). *Assessment in special and inclusive education-Thirteenth edition*. Boston, MA: Cengage Learning.

Schrank, F.A., McGrew, K.S., & Mather, N. (2014). *Woodcock-Johnson tests of cognitive abilities-Fourth edition*. Rolling Meadows, IL: Riverside.

Schwanenflugel, C., Hamilton, A., Kuhn, M., Wisenbaker, J., & Stahl, S. (2004). Becoming a fluent reader: Reading skill and prosodic features in the oral reading of young readers. *Journal of Educational Psychology*, *96*, 119–129.

Shaywitz, S. E., & Shaywitz, B. A. (2004). Reading disability and the brain. *Educational Leadership*, *61*(6), 6–11.

Snell, E. K., Hindman, A. H., & Wasik, B. A. (2015). How can book reading close the word gap? Five key practices from research. *The Reading Teacher*, *68*(7), 560–571. doi:10.1002/5454.1347.

Stahl, S., & Kuhn, M. (2002). Making it sound like language: Developing fluency. *The Reading Teacher*, *55*(6), 582–584.

Vaessen, A., & Blomert, L. (2010). Long-term cognitive dynamics of fluent reading development. *Journal of Experimental Child Psychology*, *105*(3), 213–231. doi:10.1016/j.jecp.2009.11.005.

Wechsler, D. (2004). *Wechsler Intelligence Scale for Children—Fourth Edition—Spanish*. San Antonio, TX: Harcourt Assessment.

Wechsler, D. (2014). *Wechsler Intelligence Scale for Children–Fifth Edition*. Bloomington, MN: Pearson.

Wiederholt, J. L., & Bryant, B. R. (2012). *Gray Oral Reading Tests, Fifth Edition (GORT-5)*. Austin, TX: Pro-Ed.

Willis, J. (2009). What brain research suggests for teaching reading strategies. *The Educational Forum*, *73*, 333–346.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de aprovechamiento Normative Update*. Retrieved from http:// www.hmhco.com/hmh-assessments/achievement/bateria-iii-wm#sthash.QpZ1UuKz.dpuf.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Habilidades Cognitivas Normative Update*. Boston, MA: Houghton, Mifflin, Harcourt.

Chapter 7
Reading Comprehension

Introduction

Reading comprehension is the ability to derive meaning from text (Reynolds & Turek, 2012). It is dependent upon a student's proficiency in successfully decoding words, knowing the meanings of those words, and reading fluently enough so that the meaning is not lost during the process of reading. More than that, the reader must extract and construct meaning through involvement and interaction with the text (Lipka & Siegel, 2012).

A breakdown in any of these subskills—decoding, vocabulary, and/or fluency—can result in difficulties with comprehension. Chapters 5 and 6 explored issues related to the development of decoding, vocabulary, and fluency skills, as well as ways to assess and intervene with English learners in these areas. In Chapter 7, we discuss other relevant requirements for comprehension, including background knowledge, verbal comprehension, and higher level thinking skills. Before zeroing in on the special characteristics and needs of English learners, we present foundational information that is essential to understand the basic elements of reading comprehension.

What to Know Before Reading Comprehension Assessment and Intervention

What Is Happening in the Brain During Reading Comprehension?

Reading comprehension calls upon a broad range of cognitive and academic abilities: attention, memory, critical analytical skills, inference, motivation, knowing the purpose for reading, background knowledge, linguistic knowledge, fluency, and

specific comprehension strategies (Abadiano & Turner, 2003). It is difficult enough for neuroscientists to specify areas of the brain that are activated when it processes individual words and sounds. It is even more complex to map the activity that takes place during a multifaceted process such as reading comprehension.

Semantics refers to the meaning or interpretation of words within phrases, clauses, or sentences. The brain must be able to distinguish between sentences such as "Will I eat some dessert?" and "I will eat some dessert." In reading, an area of the brain is activated when letters are converted into sounds. Distinctly different wide-spread regions are activated when semantics are involved (Dehaene, 2009). These areas that are triggered for comprehension are activated not only by the written word but also when we hear the words and when we just think about the concepts that the words convey. We have already learned about the close relationship between auditory and visual input when the brain learns to decode words. Besides working memory, other cognitive abilities are essential for reading comprehension: phono-logical, syntactic, and morphological awareness (Lipka & Siegel, 2012). There is also an inextricable relationship in the brain between meaningful sounds, words, and concepts, that is, between oral and written language (Biemiller, 2003). Semantics are so important that one area in the brain—the left anterior temporal cortex—responds more strongly to sentences than to unconnected words (Vandenberghe, Nobre, & Price, 2002). Making sense of what is heard and what is read is not limited to one section of the brain; vast ranges of neurons throughout the brain are active in comprehension.

What Role Does Background Knowledge Play in Reading?

Background knowledge plays an enormous role in reading comprehension (Carretti, Motta, & Re, 2016; Neuman, Kaefer, & Pinkham, 2014). A child who has grown up on a farm that produces maple syrup will have a greater understanding of what it means to *tap trees*, and *collect and boil sap* than most other children. An individual who has never lived by the sea or visited an ocean will need to be specifically taught the meanings of terms such as *ebb tide, seawall*, and *currents*. The more we know about a topic, the easier it is to read, to understand, and to remember what is read. This is true for both monolingual learners and English learners. Sequential bilin-guals—children who first learn their native language and then learn a second lan-guage—have an extra step in comprehension. A monolingual child who grows up on the Pacific coastal waters will more easily understand a text about the ocean than a child who grew up in a plains state and who lacks that daily, close knowledge about the sea. English learners who grow up on the coast of Honduras will need to learn the English words for ocean terms. But they will have the background knowl-edge to map the English words onto the Spanish words for the same terms. A child who has neither the background knowledge nor the English terms has to be taught both explicitly.

Background knowledge includes lexical knowledge. The knowledge of phonology, morphology, semantics, and pragmatics can be seen as having breadth and depth (Schwartz & Katzir, 2012). Breadth refers to how many words and their meanings are known; depth refers to how deeply an individual understands the words. For example, a reader may encounter a term such as *sauté* in text and have knowledge that this is something that relates to cooking but, if pressed to describe what it means, would be unable to do so. A chef would not only know what the term means but would be able to demonstrate sautéing and tell how different foods should be sautéed in butter or oils. The chef has greater depth—and breadth—of knowledge about cooking terms than does the lay person. Research has shown that there is a gap in the lexical knowledge of English between native English speakers and English learners; however, that gap decreases as English learners spend time in school (Schwartz & Katzir, 2012). Literature-rich classroom instruction and environments are necessary to help bridge that gap.

What Is Verbal Intelligence and How Does It Affect Reading Comprehension?

Assessments of verbal intelligence correlate positively with reading comprehension (Niedo, Abbott, & Berninger, 2014; Reynolds & Turek, 2012). This makes sense because verbal intelligence is simply the ability to understand and use language. Most intelligence tests assess both breadth and depth of verbal knowledge. These tests typically have a subtest that requires the examinee to verbally explain the meaning of given words; this tests the examinee's breadth of word knowledge but it also tests depth of knowledge. An individual may have heard of the word *sauté* but is only able to say, "It has to do with cooking." As mentioned in the chapter on fluency, vocabulary knowledge is a critical component of comprehension. A person's knowledge of a given word has many layers, including the word's definitions, related multiple meanings and meanings in different contexts, and semantic and morphological associations (Kieffer & Lesaux, 2012).

Intelligence tests also typically have a subtest that requires the examinee to identify the common underlying concepts for two or three words in a particular category. This is at least partially a measure for the examinee's depth and breadth of knowledge, in addition to measuring verbal reasoning. When asked how two terms are alike, such as *hide-and-seek* and *hopscotch*, the child must know both what they refer to and that they share a common characteristic; they are both games. In this case, these terms are culture specific. Although a majority of examinees in an English-speaking country at a certain age will know what they are and how they are alike, an English learner may not. On subtests of verbal intelligence, English learners are at a disadvantage while they are learning the language.

What Are Higher Level Thinking Skills and How Do They Affect Reading Comprehension?

Most educators are familiar with Bloom's taxonomy (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956), in which the cognitive domain is categorized into different levels of mental tasks. From lower to highest, they are:

- Knowledge (remembering)
- Comprehension (understanding)
- Application
- Analysis
- Synthesis
- Evaluation

All of these cognitive skills are essential. It is important for the brain to be able to remember, including both short-term and long-term memories. The brain also needs to be able to understand and apply what is remembered. Knowledge, comprehension, and application are considered as lower order cognitive skills. A child with low verbal intelligence can remember, understand at a certain level, and apply skills. For instance, a child with mild intellectual ability can be taught to read at a second- or third-grade level but will have much greater difficulty when asked to infer meaning and independently analyze, synthesize, and make evaluations from the text. Analysis, synthesis, and evaluation are higher order cognitive skills that allow the reader to process visual and auditory input at a deep level. These higher level skills help the reader make integrative and inferential links to the text (Cain & Oakhill, 2006).

Comprehension may be either explicit or inferred (Sousa, 2011). Explicit comprehension occurs when the meaning of a sentence is clear and unambiguous, such as "You look good in that skirt." Inferred comprehension occurs when the reader must go beyond what the text explicitly says. An example would be "You're wearing *that*?" The reader may infer that a judgment is being made about the appropriateness or attractiveness of an apparel choice. Inferred comprehension is more abstract than explicit comprehension. Analysis, synthesis, and evaluation are required. Teachers must be aware that, because English learners may initially lack depth and breadth of lexical knowledge, they need their teachers to explicitly teach what is to be comprehended. Given sufficient verbal intelligence, typical English learners will eventually be able to comprehend material that must be inferred but they may not be able to do so when first learning English.

Monolingual English-speaking students with average verbal intelligence should be able to comprehend texts that are designed for their grade level. Students with above average to high verbal intelligence will normally be able to comprehend texts at a higher grade level than their own. Students with below average to low verbal intelligence will struggle with understanding explicit and implicit meaning in their own grade-level texts.

English learners who lack breadth and depth of lexical knowledge of English vocabulary will typically score in the below average to very low ranges when

assessed on intelligence tests that were normed on monolingual English speakers. This is why school psychologists who administer and interpret such tests should not use the verbal components to assess children who are not represented in the norming sample. By the same token, when using intelligence tests that were normed in Spanish-speaking countries, school psychologists should be very cautious about using and interpreting scores on the verbal components of the tests after the child has been in an English-speaking educational system for a year or more because the English learner has not been continuously exposed to academic language in the first language. The verbal subtests of these measures reflect the examinee's exposure to vocabulary that may only be encountered in academic language settings.

Language minority students in the USA disproportionately demonstrate difficulties with reading comprehension (Kieffer, 2008, 2010). If we are fortunate enough to have a standardized test of reading comprehension in the child's native language and we use it before first language attrition occurs, we can fairly easily determine if there are reading comprehension problems that are independent of the child's fluency in English. The best time to assess children in their native language is as soon as possible after they have entered our school system (Geva & Wiener, 2015). Most children are not evaluated that early, though, because educators want to make sure that these students have had sufficient time to learn English before considering a special education placement (Wagner, Francis, & Morris, 2005). There is evidence that there is an increase in the placement of English learners in the learning disabilities program in grades four through six, which is about 2–3 years later than native English speakers are identified (Rivera, Moughamian, Lesaux, & Francis, 2008). Morgan et al. (2015) reported a longitudinal study that shows language minority children are disproportionately underrepresented in learning disabilities and speech-language impairment programs.

Does Reading Comprehension Differ Based on Orthography?

The regularity or transparency of the orthography of a language influences the reader's ability to decode and read words, which sets up a stumbling block for English learners during early reading development. A meta-analysis by Florit and Cain (2011) showed that for children with 1–2 years of schooling who learn to read a transparent orthography, such as Spanish, fluency is a more powerful predictor of reading comprehension than is decoding accuracy. Once again, we refer to this statement in the DSM-5 (American Psychiatric Association, 2013):

> In the English language, the observable hallmark clinical symptom of difficulties learning to read is inaccurate and slow reading of single words; in other alphabetic languages that have more direct mapping between sounds and letters (e.g., Spanish, German) and in non-alphabetic languages (e.g., Chinese, Japanese), the hallmark feature is slow but accurate reading (pp. 72–73).

Orthography affects reading comprehension to the degree that word reading affects access to the text. For English and French learners, word reading must be surmounted, and then vocabulary and fluency, in order to comprehend what is read. In transparent languages, word reading is necessary but much less difficult, so reading problems begin to be seen when the student lacks vocabulary knowledge and reading fluency.

Multiple Indicators of a Disorder of Reading Comprehension

Observations of Clinical Signs

As mentioned in the introduction to this chapter, some struggling readers cannot access comprehension of the text because they have problems with word recognition and decoding (Shankweiler, 1989). In making a determination as to whether or not comprehension deficits are the result of limited English proficiency versus a comprehension reading disorder, it is absolutely essential to determine the student's instructional levels in decoding, word recognition, and vocabulary. But there are some children who can decode, recognize sight words, and read fluently but have specific problems with comprehension (Lipka & Siegel, 2012; Siegel & Ryan, 1989).

Everyone has had the experience of struggling to grasp what a book is about. Adults may start to read a book and, even though they understand all of the words, quickly abandon it because they cannot follow the plot or they get confused about the characters. Students normally do not have a choice about whether or not they continue to read assigned texts that they cannot understand.

There are certain symptoms that are often present when children have a disorder of reading comprehension. Children who have difficulty comprehending texts often indicate through their speech or through their behaviors that they don't like to read (Comprehension, 2016). Besides saying something like, "I hate reading," they may say:

- "I don't get what that book is about."
- "We have to read this book for class but it doesn't make any sense to me. I can't follow what's going on."
- "We're going to be tested over this chapter but I'm not sure what's important to remember."

Teachers will see behaviors in the classroom that suggest that a student may have a problem with reading comprehension. A student with a reading comprehension disorder may:

- Be unable to summarize what was read.
- Tell the outcome of a story but be unable to explain what led to it.
- Recount details of the story or reading passage but be unable to summarize the main idea or give a clear sequence of events in the story.
- Be unable to predict what might happen next in a story or explain why characters acted in certain ways.

School psychologists and teachers should be alert to signs of reading comprehension difficulty, especially when they know that students are reading passages at their instructional or independent level in terms of word recognition, vocabulary, and fluency in reading. These children are confused about the meaning of words and sentences, have difficulty connecting ideas in a passage, omit or gloss over details, have a hard time distinguishing important information from minor details, and may lack concentration during reading (PBS Parents, 2016). Another important way to differentiate readers who comprehend well from those who do not is the ability to make inferences (Cain & Oakhill, 2007).

We would expect English learners to show these behaviors when reading a text that is at their frustration reading level. We would also anticipate that English learners will need more pre-teaching of vocabulary and concepts at their instructional reading level than monolingual children need. However, if English learners continue to show signs of a reading comprehension disorder when taught at their instructional level given sufficient scaffolding, we need to consider the possibility that they may have a reading comprehension disorder.

Table 7.1 presents a list of clinical signs of disorders in reading comprehension. Be sure to note whether the student has adequate decoding, fluency, vocabulary skills, and background knowledge. If any of these are below the instructional level of the passage or book, the student's comprehension will be poor. Remember, also, that students must have the expressive oral and/or written English skills to be able to communicate what they comprehend.

Many of these clinical signs will characterize the reading comprehension of English learners while they are acquiring cognitive academic language proficiency in English. That is why it is important to ascertain English learners' proficiency in word reading, fluency, and vocabulary before asking them to comprehend a passage that may be their frustration level, as opposed to their instructional or independent levels. As with reading fluency, we can get a good idea about whether or not English learners have disorders of reading comprehension by testing them in their native language before language loss has occurred.

Table 7.1 Clinical Signs of a Reading Comprehension Disorder

Clinical signs of a reading comprehension disorder
• Child makes statements such as the following: I hate reading. I don't get what that book is about. This book doesn't make any sense. I can't follow what's going on. I don't know what's important to remember for the test
• Unable to summarize what was read
• Unable to explain what led up to the outcome of a story
• Unable to summarize the main idea or give a clear sequence of events in a story
• Unable to predict what might happen next in a story or explain why characters acted in certain ways
• Is confused about the meaning of words and sentences
• Has difficulty connecting ideas in a passage
• Omits or glosses over details
• Has a hard time distinguishing important information from minor details
• May lack concentration during reading
• Has trouble understanding the sequence, relationships, inferences, or deeper meanings of what is read

Record Review

Chapter 11 provides a guide for questions that can be answered when doing a record review. Also, please see Chapter 3 for detailed information on the data that can be gleaned through record review.

Interviews

Chapter 11 presents the questions that can be answered based on interviews with caregivers and teachers. Be sure to get relevant health information from the school nurse and have vision and hearing checked. Also, please see Chapter 3 for more extensive information regarding data that can be gathered from interviews.

Tests

When Is It Appropriate to Test English Learners' Reading Comprehension in Their Native Language?

The best time to test English learners on reading comprehension in their native language is as soon as possible after they enter the English-speaking school system. If a Spanish-speaking child enters an English-speaking school at the beginning of second grade, for example, that child will have missed a year of instruction in Spanish by grade three. Although the child may continue using basic interpersonal communication skills (BICS) in Spanish at home and on the playground, he or she will have missed out on a year's worth of cognitive academic language proficiency skills (CALP) in Spanish throughout second grade. By that time, for the purposes of cognitive academic language, it is unlikely the child will be represented in the norming sample of the native-language test. It is important to check the test manual to ascertain whether or not the child you are working with conforms to the group that the test was normed on (Ortiz, 2014).

How Do We Use Tests with English Learners to Determine Reading Comprehension Disorders?

We first have to rule out deficits in word reading, decoding, fluency, and vocabulary before we can determine that there is a comprehension disorder. Chapters 5 and 6 give guidance in assessing and intervening in those prerequisites for reading comprehension.

Table 7.2 Formal Assessments Related to Reading Comprehension

	For any English learner	For Spanish speakers
Reading tests	• *Diagnostic Assessments of Reading-Second Edition* (Roswell, Chall, Curtis & Kearns, 2005) • *Gray Oral Reading Test-Fifth Edition* (Wiederholt & Bryant, 2012) • *Kaufman Test of Educational Achievement-Third Edition* (Kaufman & Kaufman, 2014)	• *Logramos-Tercera Edición* (Aparicio & Nikolov, 2014) • *Aprenda*: *La Prueba de Logros en Español, Tercera Edición* (Aprenda-3, 2005) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Aprovechamiento* (Woodcock, Muñoz-Sandoval, McGrew, & Mather, 2004, 2007) • Prueba de Habilidades Académicas Iniciales (Ramos, Hresko & Ramos, 2006) • *Spanish Reading Inventory: Pre-Primer Through Grade Eight-Second Edition* (Johns & Daniel, 2010)
Mental ability tests	• *Universal Nonverbal Intelligence Test-Second Edition* (Bracken & McCallum, 2016) • *Developmental Profile-Third Edition* (Alpern, 2007) • *Wechsler Intelligence Scale for Children-Fifth Edition Nonverbal Index* (Wechsler, 2014) • *Differential Ability Scales-Second Edition Special Nonverbal Composite* (Elliott, 2007)	• *The Wechsler Intelligence Scale for Children-Fourth Edition-Spanish* (Wechsler, 2004) 2010 (The WISC-V-Spanish is in development.) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004, 2007) • *Developmental Profile-Third Edition* (Alpern, 2007)
Screeners and progress monitors	• AIMSweb (2014) • DIBELS-Sixth Edition (2016)	• AIMSweb Spanish (2014) • DIBELS in Spanish: *Indicadores Dinámicos del Éxito en la Lectura* (Good, Baker, Knutson & Watson, 2006)

Additional information about these tests is available in Chapter 11

In languages with transparent orthographies, such as Spanish, we can test word reading, fluency, and vocabulary in that language. If there are not deficits in those areas and the examinee still has problems understanding what is read, we may be looking at a specific learning disability in reading comprehension.

Table 7.2 lists published tests that can be used with English learners to assess reading comprehension. This is not an exhaustive list but shows examples of tests that can help isolate the various components of reading.

Test Highlight: Cloze and Maze Procedures

Some standardized tests make use of cloze and/or maze procedures to test reading comprehension. In a cloze procedure, a reading passage is selected and certain words are omitted from the passage. Usually the first sentence is given in its entirety

and then every *n*th word is left out, such as every fifth word or every seventh word. The examinee must supply the missing word. Here is an example:

The sunshine was bright. I wanted to be outside so__decided to take my dog out for__walk.

A maze procedure is different in that the examinee is given multiple choices for words that could be appropriately used and must make a selection between the words that are supplied:

The sunshine was bright. I wanted to be outside so__(be, I, its) decided to take my dog out for__(a, to, ask) walk.

According to the *Standards for Educational and Psychological Testing* (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014), one of the most fundamental criteria needed in a test is evidence of validity. The *Standards* describe validity as "the degree to which evidence and theory support the interpretation of test scores for proposed uses of tests" (p. 11). At times we may just want to compare an examinee's score on a test of reading comprehension with the national norm of other examinees of a particular age or grade. In this case, a maze or cloze procedure can be an efficient and valid way to go about it. With maze or cloze procedures, we may also be able to predict with a fairly high degree of certainty how an examinee may score on other tests of reading comprehension. *The Woodcock-Johnson Tests of Achievement-IV* (Schrank, McGrew, & Mather, 2014), *Batería III Woodcock-Muñoz Pruebas de aprovechamiento Normative Update* (Woodcock, Muñoz-Sandoval, McGrew, & Mather, 2004, 2007a), and *Woodcock-Muñoz Language Survey-Revised Normative Update* (Schrank, Wendling, Alvarado, & Woodcock, 2010) all make use of the cloze procedure in testing reading comprehension.

However, in addition to just knowing a child's score or normative standing on a test of reading comprehension, we ideally want to find important clues to the nature of the reading problem. Maze or cloze procedures are effective for screening but, for diagnostic purposes, we want ideas about possible interventions to remedy problems. This can be done by presenting the examinee with longer passages and asking additional questions that allow us to analyze the errors that the child makes. Although cloze and maze procedures provide an efficient way to assess reading comprehension, they are of limited use in specifying the nature of the errors that a child is making. Consider the example of this cloze item: *The__of the birds woke me up in the morning.* If the examinee answers *sing*, we may infer that he or she understands the sentence and can supply the correct verb but does not yet know the correct form of the verb. However, if the examinee answers *big*, we can safely assume that he or she does not comprehend the meaning of the sentence but we know little else about the nature of the comprehension problem. We cannot tell if the examinee has problems making inferences, connecting ideas, omitting or glossing over details, or distinguishing main ideas from minor details.

Another disadvantage of cloze and maze procedures is that they do not necessarily conform closely to formative or summative reading comprehension measures that are typically used in classrooms or that will be used in high-stakes tests such as state assessments or college entrance examinations. The upshot of this is that the school psychologist should consider the purpose of testing when choosing a reading

comprehension measure. If the purpose is to screen and monitor progress, maze and cloze procedures can be efficient and effective. If the purpose is to collect data that can lead to interventions, there are more useful measures.

Test-Teach-Test Assessments

Test-teach-test method	Definition	Example
Curriculum-based dynamic assessment (CDA)	Teaching a specific authentic task and collecting progress and procedural data as students acquire the task (Barrera, 2006)	The student takes a maze test on a reading passage at his or her instructional level. A comprehension strategy is taught. After 2 weeks, the student is given another maze test at the same level as the first passage to determine if the rate of progress is adequate

Test-teach-test assessments can be created by the school psychologist or by the teacher in order to assess word reading comprehension. When assessing reading comprehension, a series of grade-level reading passages are created which typically range from a year or so below the student's current grade level through a year or so above the current grade level. For English learners, the range of the passages may have to go lower. Maze probes can be generated on the interventioncentral.org website.

The objective of the probes is to find the learners' independent, instructional, and frustration levels in reading fluency. Examinees who get less than 85% of the answers correct are at the frustration level. If they answer 85–95% of the items correct they are at the instructional level and, at the independent level, they should get at least 95% of the items correct.

Passages can be taken from texts that are in the actual curriculum being used by the school but it is advisable to check the readability statistics of passages that you take from textbooks. There are easy ways to determine the readability level of lists and passages. One is through the Intervention Central website (http://www.interventioncentral.org/). Also, Microsoft Word can be set to "Show Readability Statistics" (first go to Languages and then Proofing). Whenever you use the Spelling and Grammar check, you will also get the Flesch-Kincaid reading level.

Other forms of dynamic assessment are Question Schemes and Story Retelling, as detailed below.

Question Schemes

Tests of reading comprehension can yield rich information about possible interventions for struggling comprehenders. One such format includes *question schemes* which ask about main ideas, details, descriptions, sequences, cause and effect, vocabulary, and comparisons. Here is an example of a passage and follow-up questions:

Joanne and Jon are twins. They like to go camping with their mother and father. The whole family sleeps in one tent. When they close the flap on the tent and lie down to go to sleep they hear the sounds of the forest. They hear owls hooting and the scampering of squirrels. Once they heard the snuffling and growing of a bear. Joanne and Jon snuggled closer to their parents. Their mother said, "Don't worry. The bear is just looking for food. We didn't leave anything out for a bear to eat." After a few minutes, they heard the bear go away. The twins went to sleep and both of them dreamed about bears.

A cloze procedure item might be: *The bear is just looking for__We didn't leave anything out for bears to eat.* However, a question scheme might include the following items, which elicit more diagnostic information about the reader's comprehension skills:

1. (Inference) Why did Joanne and Jon snuggle closer to their parents when they heard the bear?
2. (Details) Besides hearing the bear, what other animal sounds did the twins hear?
3. (Main idea) Which is a better title for this story?

    a. The Twins Have a Forest Adventure
    b. An Owl Hoots in the Forest

4. (Comparison) Who was scared—the twins or their parents?

Obviously, the question scheme items provide a clearer and richer picture regarding which specific reading comprehension skills require interventions and which do not than do cloze or maze items.

Story Retelling

One way to assess reading comprehension is through story retelling. Examinees are asked to read a passage either aloud or silently and then retell what they remember about it. After this is done, the examiner may ask probing questions, such as asking for additional details and clarifications (Kucer, 2008; Morrow, 1985). Probes can be asked about the

• Setting, including the time and place the story took place and the characters
• Theme of the story
• Episodes in the plot (events or situations in which characters try to attain a goal or solve a problem)
• Resolution (a description of the ending which is related to the attainment of the goal or solution to the problem)

The school psychologist can create informal authentic assessments using passages from the classroom texts that students are currently required to read. They can

then develop comprehension questions based on the passages to see whether the student can discern the main idea of the passage, provide details, make inferences, et cetera. In creating such informal assessments or in using informal reading inventories, the examiner should realize that there is a difference between passage genres (Nilsson, 2008). For example, children may find it easier to comprehend narrative than expository text or vice versa.

Teaching and Intervening

What Are Characteristics of Good Classroom Instruction for English Learners?

In a very real sense, reading comprehension is the gateway for English learners to understand and benefit from instruction in content areas such as social studies, science, and mathematics. Textbooks at the secondary level are inaccessible to the student whose understanding of academic language is insufficient.

The increase of English learners in schools across the USA varies greatly by state (National Center for Education Statistics, 2016). The likelihood of a teacher having extensive experience with English learners is related to both grade level and size of the community. The most frequent first languages of English learners also differ across the USA and Canada. Thus, the need for a given teacher to know how to adjust classroom instruction to promote the understanding of English learners can vary widely.

The importance of effective classroom instruction for English learners cannot be overstated (Calderón, Slavin, & Sánchez, 2011). School psychologists need to be able to recognize quality instruction for several reasons: When English learners are not making expected achievement gains, the reason may be that the English learner has a disability, and/or that appropriate instruction has not been provided. Also, if an intervention is planned for the English learner, the school psychologist needs to select an evidence-based intervention. Finally, suggestions can be given to general education teachers on how to modify classroom instruction so that it is more beneficial for English learners.

Reading comprehension is crucial for students to succeed in academic subjects, such as social studies and the sciences. The Indiana Department of Education (Ritz, n.d.) has prepared an excellent resource for classroom teachers to help English learners understand texts in the various content areas, in spite of the lag in the student's proficiency in English. General instructional principles for helping English learners understand their texts include:

- Teach vocabulary: Provide easily understood definitions for both the academic subject as well as instructional directions, such as *describe* or *use your glossary*.
- Use visual representations to supplement verbal instruction.
- Use questions and discussions to be sure that the English learners understand.

- Strive to relate material to English learners' lives.
- Teach and model learning strategies.
- Use graphic organizers and scaffolding.
- Create learning pairs and cooperative groups in which English learners work with fluent readers.

What Are Interventions to Improve English Learners' Reading Comprehension Skills?

Enhanced Reciprocal Teaching with Small Groups

Reciprocal teaching begins with the teacher leading some groups of students in using explicit comprehension strategies (Palincsar & Brown, 1984). As the students learn the strategies, they take turns acting as the teacher for the other students. The teacher is available to provide guidance if necessary for the group to use the strategies.

Klingner and Vaughn (1996) enhanced the reciprocal teaching technique by adding two strategies to the four used by Palincsar and Brown (1984). To the strategies of summarizing, questioning, clarifying, and predicting, they added brainstorming and highlighting the main idea. Then they combined use of the enhanced reciprocal teaching technique with either cross-age tutoring or cooperative learning. Klingner and Vaughn (1996) demonstrated the effectiveness of their strategy with seventh- and eighth-grade English learners who had learning disabilities. The passage comprehension scores of students in both groups improved in the first phase, in which the enhanced reciprocal teaching strategies were taught to them. Both groups showed additional improvement in the second phase in which the English learners tutored sixth-grade students in the comprehension strategies or worked in cooperative learning groups of three to five students.

Students are able to explain difficult passages and confusing procedures to each other in their native language. Thus, this strategy provides a potential means for English learners to receive help with reading comprehension even when the school psychologist and teacher are not fluent in the first language(s) of the English learners.

Here's how the Enhanced Reciprocal Teaching with Small Groups Strategy could be used to help English learners:

1. Select a passage from the instructional materials used in the general education classroom of the English learners. Klingner and Vaughn (1996) used social studies passages.
2. Provide English learners with sheets describing the six strategies.
3. Model the process of reading the selected passage and applying the six strategies:

   a. Have the students predict what the passage will be about (from the title and any illustrations).
   b. Lead the students in brainstorming what they know about the topic.

   c. Ask the students to read the passage silently.
   d. Read the passage aloud.
   e. Clarify any words or phrases that the students do not understand.
   f. Ask students to identify the main idea of the passage.
   g. Summarize the main idea and important details of the passage.
   h. Ask students what questions they have about the passage. Answer their questions.

4. Repeat the process (in #3) with other passages on the next 14 intervention days. Beginning with the third intervention session, have English learners take turns leading the discussions. Gradually decrease support as the students become more proficient in using the strategies.
5. The intervention can be concluded at this point, if desired.
6. Select either cross-age tutoring or cooperative learning groups. Have the pairs or groups meet regularly to implement the strategies learned in the reciprocal teaching phase. (The interventionist does not meet with the tutoring or cooperative learning groups.)

Self-Questioning Strategy

Textbooks in secondary content areas contain various text structures as well as many unfamiliar concepts and technical words. The self-questioning strategy can be used to supplement, not replace, the classroom teacher's explicit direct instruction of critical content (Berkeley, Marshak, Mastropieri, & Scruggs, 2011).

The strategy steps (Berkeley et al., 2011) are as follows:

1. Turn headings and subheadings into questions.
2. Read the section.
3. Stop! Try to answer your question.
4. If you can't answer your question, use a fix-up strategy:

   a. Reread the section.
   b. Check that you understand the vocabulary.
   c. Look for pictures, graphs, and maps that can help you understand better.
   d. Write down questions to ask the teacher.

   Students are taught to use strategy-monitoring sheets that consist of a row for each heading and subheading in the assigned reading passage. In the first column of each row, the student writes the heading or subheading in the assigned text and the student's question for that section. The second column of each row contains the question, "Can you answer your question?" followed by the options of "yes" and "no" for the student to select. These sheets structure the reading comprehension task for the student while reducing the writing demands.

Here is how the Self-Questioning Strategy could be used to help English learners:

1. Prepare strategy-monitoring sheets headed with the name of the textbook section to be read and the directions, "Write down questions that you will try to answer

while reading." There should be a row for each heading and subheading in the reading selection.

2. Model the use of the strategy steps and the monitoring sheet steps by reading a selection and thinking aloud.

3. Provide guided practice until the students are able to use the strategy independently.

References

Abadiano, H. R., & Turner, J. (2003). The Rand Report: Reading for understanding: Toward an R&D program in reading comprehension. *The New England Reading Association Journal*, *39*(2), 74–79.

AIMSweb. (2014). Retrieved from http://www.aimsweb.com/

AIMSweb in Spanish. (2014). Retrieved from http://www.aimsweb.com/assessments/features/assessments/features/assessments/spanish-reading

Alpern, G. D. (2007). *Developmental Profile-Third Edition*. Retrieved from http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3

American Educational Research Association (AERA), American Psychological Association, & National Council on Measurement in Education. (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders-5* (5th ed.). Washington, DC: Author.

Aparicio, E., & Nikolov, S. (2014). *Logramos-Tercera Edición* (Logramos-3). Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/logramos-3

Aprenda: La Prueba de Logros en Español, Tercera Edición (2005). Retrieved from http://www.pearsonassessments.com/learningassessments/products/100000585/aprenda-3-aprenda-la-prueba-de-logros-en-espanol-terceraedicion.html.

Barrera, M. (2006). Roles of definitional and assessment models in the identification of new or second language learners of English for special education. *Journal of Learning Disabilities*, *39*, 142–156. doi:10.1177/00222194060390020301.

Berkeley, S., Marshak, L., Mastropieri, M. A., & Scruggs, T. E. (2011). Improving student comprehension of social studies text: A self-questioning strategy for inclusive middle school classes. *Remedial and Special Education*, *32*, 105–113.

Biemiller, A. (2003). Oral comprehension sets the ceiling on reading comprehension. *American Educator*, *27*, 23–44.

Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. New York: David McKay Company.

Bracken, B. A., & McCallum, R. S. (2016). *Universal Nonverbal Intelligence Test-Second Edition*. Austin, TX: PRO-ED, Inc.

Cain, K., & Oakhill, J. (2006). Profiles of children with specific reading comprehension difficulties. *British Journal of Educational Psychology*, *76*, 683–696.

Cain, K., & Oakhill, J. V. (2007). Reading comprehension difficulties: Correlates, causes, and consequences. In K. Cain & J. Oakhill (Eds.), *Children's comprehension problems in oral and written language: A cognitive perspective* (pp. 41–76). New York, NY: Guilford.

Calderón, M., Slavin, R., & Sánchez, M. (2011). Effective instruction for English learners. *Future of Children*, *21*, 103–127.

Carretti, B., Motta, E., & Re, A. M. (2016). Oral and written expression in children with reading comprehension difficulties. *Journal of Learning Disabilities*, *49*(1), 65–76.

Comprehension. (2016). Retrieved from http://www.readingrockets.org/helping/target/comprehension

Dehaene, S. (2009). *Reading in the brain: The science and evolution of a human invention*. New York, NY: Viking.

DIBELS-Sixth Edition. (2016). Retrieved from https://dibels.uoregon.edu/assessment/dibels/index

Elliott, C. D. (2007). *Differential ability scales* (2nd ed.). San Antonio, TX: Harcourt Assessment.

Florit, E., & Cain, K. (2011). The simple view of reading: Is it valid for different types of alphabetic orthographies? *Educational Psychology Review*, *23*, 553–576. doi:10.1007/s10648-011-9175-6.

Geva, E., & Wiener, J. (2015). *Psychological assessment of culturally and linguistically diverse children and adolescents: A practitioner's guide*. New York, NY: Springer Publishing Company.

Good, R. H., Baker, D. L., Knutson, N., & Watson, J. M. (2006). *Indicadores Dinámicos del Éxito en la Lectura*. Retrieved from https://dibels.org/idel.htm

Johns, J., & Daniel, M. C. (2010). *Spanish Reading Inventory: Pre-Primer through Grade Eight-Second Edition*. Dubuque, IO: Kendall Hunt Publishing Company.

Kaufman, A. S., & Kaufman, N. L. (2014). *Kaufman Test of Educational Achievement* (3rd ed.). Bloomington, MN: Pearson.

Kieffer, M. J. (2008). Catching up or falling behind? Initial English proficiency, concentrated poverty, and the reading growth of language minority learners in the United States. *Journal of Educational Psychology*, *100*, 851–868.

Kieffer, M. J. (2010). English proficiency, socioeconomic status, and late-emerging reading difficulties. *Educational Researcher*, *39*, 484–486.

Kieffer, M. J., & Lesaux, N. K. (2012). Knowledge of words, knowledge about words: Dimensions of vocabulary in first and second language learners in sixth grade. *Reading and Writing*, *25*, 347–373. doi:10.1007/s11145-010-9272-9.

Klingner, J. K., & Vaughn, S. (1996). Reciprocal teaching of reading comprehension strategies for students with learning disabilities who use English as a second language. *The Elementary School Journal*, *96*, 275–293.

Kucer, S. B. (2008). Speed, accuracy, and comprehension in the reading of elementary students. *Journal of Reading Education*, *34*(1), 33–38.

Lipka, O., & Siegel, L. S. (2012). The development of reading comprehension skills in children learning English as a second language. *Reading and Writing*, *25*, 1873–1898. doi:10.1007/s11145-011-9309-8.

Morgan, P. L., Farkas, G., Hillemeier, M. M., Mattison, R., Maczugal, S., Li, H., & Cook, M. (2015). Minorities are disproportionately underrepresented in special education: Longitudinal evidence across five disability conditions. *Educational Researcher*, *44*(5), 278–292. doi:10.3102/0013189X1559115.

Morrow, L. M. (1985). Retelling stories: A strategy for improving young children's comprehension, concept of story structure, and oral language complexity. *The Elementary School Journal*, *85*(5), 646–661.

National Center for Education Statistics. (2016, May). *The condition of education: English learners in public schools*. Institute of Education Sciences, U.S. Department of Education. Retrieved from http://nces.ed.gov/programs/coe/indicator_cgf.asp

Neuman, S. B., Kaefer, T., & Pinkham, A. (2014). Building background knowledge. *The Reading Teacher*, *68*(2), 145–148k. doi:10.1002/trtr.1314.

Niedo, J., Abbott, R. D., & Berninger, V. W. (2014). Predicting levels of reading and writing achievement in typically developing, English-speaking 2nd and 5th graders. *Learning and Individual Differences*, *32*(5), 54–68.

Nilsson, N. L. (2008). A critical analysis of eight informal reading inventories. *The Reading Teacher*, *61*(7), 526–536.

Ortiz, S. O. (2014). Best practices in nondiscriminatory assessment. In P. L. Harrison & A. Thomas (Eds.), *Best practices in school psychology: Foundations* (pp. 61–74). Bethesda, MD: National Association of School Psychologists.

Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, *1*, 117–175.

PBS Parents. (2016). *Signs of a reading disability*. Retrieved from http://www.pbs.org/parents/education/learning-disabilities/types/reading/signs-of-a-reading-disability

Ramos, J., Hresko, W., & Ramos, M. (2006). *Prueba de Habilidades Académicas Iniciales (PHAI)*. Retrieved from http://www.proedinc.com/customer/productView.aspx?ID=3717

Reynolds, M. R., & Turek, J. J. (2012). A dynamic developmental link between verbal comprehension-knowledge (Gc) and reading comprehension: Verbal comprehension-knowledge drives positive change in reading comprehension. *Journal of School Psychology*, *50*(6), 841–863. doi:10.1016/j.jsp.2012.07.002.

Ritz, G. (n.d.). *Resource guide for the content area teacher*. Office of English Language Learning and Migrant Education, Indiana Department of Education. Retrieved from http://www.doe.in.gov/elme/english-learner-resources

Rivera, M. O., Moughamian, A. C., Lesaux, N. K., & Francis, D. J. (2008). *Language and reading interventions for English language learners and English language learners with disabilities*. Portsmouth, NH: RMC Research Corporation, Center on Instruction.

Roswell, F. G., Chall, J. S., Curtis, M. E., & Kearns, G. (2005). *Diagnostic Assessments of Reading-Second Edition*. Austin, TX: PRO-ED, Inc.

Schrank, F.A., Wendling, B.J., Alvarado, C.G., & Woodcock, R.W. (2010). *Woodcock-Muñoz Language Survey-Revised Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/woodcock-munoz

Schrank, F., McGrew, K., & Mather, N. (2014). *Woodcock-Johnson IV Tests of Achievement* (4th ed.). Boston, MA: Houghton, Mifflin, Harcourt.

Schwartz, M., & Katzir, T. (2012). Depth of lexical knowledge among bilingual children: The impact of schooling. *Reading and Writing*, *25*, 1947–1971. doi:10.1007/s11145-011-9308-9.

Shankweiler, D. (1989). How problems of comprehension are related to difficulties decoding. In D. Shankweiler & I. Y. Liberman (Eds.), *Phonology and reading disabilities: Solving the reading puzzle* (pp. 35–68). Ann Arbor: University of Michigan Press.

Siegel, L. S., & Ryan, E. B. (1989). Subtypes of developmental dyslexia: The influence of definitional variables. *Reading and Writing: An Interdisciplinary Journal*, *1*, 257–287.

Sousa, D. A. (2011). *How the ELL brain learns*. Thousand Oaks, CA: Corwin.

Vandenberghe, R., Nobre, A. C., & Price, C. J. (2002). The response of left temporal cortex to sentences. *Journal of Cognitive Neuroscience*, *14*(4), 550–560.

Wagner, R. K., Francis, D. J., & Morris, R. D. (2005). Identifying English language learners with disabilities: Key challenges and possible approaches. *Learning Disabilities Research & Practice*, *20*, 6–15.

Wechsler, D. (2004). *Wechsler Intelligence Acale for Children—Fourth Edition—Spanish*. San Antonio, TX: Harcourt Assessment.

Wechsler, D. (2014). *Wechsler Intelligence Scale for Children–Fifth Edition*. Bloomington, MN: Pearson.

Wiederholt, J. L., & Bryant, B. R. (2012). *Gray Oral Reading Tests, Fifth Edition (GORT-5)*. Austin, TX: Pro-Ed.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/achievement/bateria-iii-wm#sthash.QpZ1UuKz.dpuf

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Habilidades Cognitivas Normative Update*. Boston, MA: Houghton, Mifflin, Harcourt.

Chapter 8
Math Calculation

Introduction

Why Should Math Calculation Be of Concern to Educators of English Learners? Isn't It Essentially the Same in All Languages?

Mathematics skills are important to English learners. Although reading often gets more attention than math, English learners are likely to have their career and future earnings prospects markedly reduced if their opportunities to learn math are curtailed. According to the US Census Bureau, the highest paid careers are those that require math (Julian, 2012).

Educators may believe that English proficiency is not important in order for their students to perform well in mathematics (Janzen, 2008); however, a strong correlation exists between students' math performance and their level of English proficiency when English is the language of instruction (Lee, Lee, & Amaro-Jiménez, 2011). This includes learning and performing calculations as well as solving word problems. This in no way implies that individuals throughout the world need to learn English in order to perform adequately—or even brilliantly—in mathematics. Evidence of mathematical problem-solving and structuring using counting and tallying dates back to 35,000–20,000 BCE (Marshack, 1991). The history of modern mathematics begins about 2000 BCE in Babylonia (O'Connor & Robertson, 1997). Modern English only dates from the fifteenth century (Fisher, 1996). Clearly, learning math is not dependent on proficiency in English in countries where English is not the language of instruction. Learning math is, however, dependent upon the ability of the brain to process language (Dehaene, 2011).

When researchers started to investigate the relationship between English proficiency and math performance, the focus was on reading vocabulary and comprehension. Deficits in these skills were seen as barriers for English learners in performing word problems. There has been a shift in how math is taught in schools, with a focus

on how students "construct knowledge, negotiate meanings, and participate in mathematical communication" (Moschkovich, 2002, p. 190), which includes learning and communicating about calculations. While teachers are instructing them in learning their math facts and in how to perform math operations, students must have sufficient receptive English skills to understand the instruction. They must also have sufficient expressive skills to form questions about what they do not understand and to explain their work to their teachers. Thus, primary recommendations for increasing access of English learners to math instruction are based on increasing the use of visual representations to convey math concepts, modifying the English used in math instruction, and providing students with alternate options for responding (Kersaint, Thompson, & Petkova, 2013).

What to Know Before Calculation Assessment and Intervention

What Is Happening in the Brain of a Child Who Struggles with Math Calculation

There are cerebral circuits scattered throughout the brain that deal with calculations, approximations, counting, spatial relations, and other tasks related to mathematics. In studying the brains and behaviors of people with brain lesions, neuroscientists have learned that very specific areas of the brain can have lesions which interrupt their ability to perform math functions but nearby areas, which are also devoted to different kinds of math, continue to function correctly. This has also been borne out by brain imaging. Experiments done using functional magnetic resonance imaging (fMRI) show that there is a region deep in a furrow in the back of the brain between the right and left parietal lobes which consistently activates when research participants are asked to think of quantities or numbers, whether written or spoken (Dehaene, 2011). Making comparisons and approximations of quantity activates an area in the right of the brain. When we make calculations, such as during multiplication, the language abilities of the left hemisphere are brought into play.

Developmental dyscalculia is due to problems with neural organization in the brain. For example, fMRI evidence shows that adolescents who have normal abilities to perform calculations have more grey matter in an area of the left parietal lobe than do adolescents with dyscalculia (Isaacs, Edmonds, Lucas, & Gadian, 2001). This neural organization can be due to various causes.

- Genetics: Family studies have shown that if one child in the family has dyscalculia, his or her siblings are over ten times more likely to have it compared with the general population (Shalev et al., 2001).
- Functional and structural alterations in regions of the brain that have to do with processing numbers and quantities: These alterations can be due to brain development during pregnancy, low birth weight (Isaacs et al., 2001), or insults to the brain that occur at birth or after birth (Dehaene, 2011).

- Environmental influences: Socioeconomic status and the home learning environment have been shown to impact the development of math skills (Anders et al., 2012).
- Cognitive profiles: Developmental dyscalculia often co-occurs with other neurodevelopmental disorders, such as dyslexia and attention-deficit disorder (see, for example, Kuhn, 2015; Vukovic, Lesaux, & Siegel, 2010). When we test cognitive skills and processes, we often find that some of the same deficits show up in different disabilities. In keeping with this, neuroscientists have found that the cognitive skills needed for oral language, math, reading, writing, attention, and executive functioning have some areas of common processing in the brain. But even though there is overlap between some of these areas, there are cognitive distinctions. For example, in dyslexia there is a phonological deficit and in dyscalculia there is a number-processing deficit (Landerl, Fussenegger, Moll, & Willburger, 2009). Neuroimaging evidence has shown that exact calculations take place in one part of the brain and estimations of quantity take place in another (Venkatraman, Siong, Chee, & Ansari, 2006). Exact calculations are dependent upon areas of the brain that are associated with language.

What Special Considerations Relate to the Education of English Learners in Math?

Mathematics Is a Language

Mathematics has been described as a language in the same sense as Spanish or English are languages (Usiskin, 1996). It is used to communicate concepts, both orally and in writing, as well as formally and informally. Importantly, language not only describes concepts, but it also shapes concepts. For example, consider the difference in the concepts represented by the word *improper* when followed by *behavior* versus *fraction.* Also, just as learning a second language is easier before adolescence (Phillips, 2002), research suggests that learning the language of mathematics earlier in life is correlated with higher achievement (e.g., Roberts & Bryant, 2011).

There are three important implications of conceptualizing mathematics as a language. First, mathematics needs to be emphasized in the primary grades. Second, the struggles of English learners in mathematics may be due to problems with mathematics concepts, the English language, and/or the language of mathematics. Third, languages are learned when the learners use the language for communication with one another. Thus, discussions using the language of mathematics rather than silent seatwork should characterize the math classroom. As Usiskin (1996) says, "… we should teach mathematics as we do living foreign languages—in context, starting as early as we can and immersing students in the language" (p. 242).

Math achievement of English learners is not correlated with the similarity between English and the learner's native language. Analyses of the data from the Early Childhood Longitudinal Survey revealed that Spanish-speaking English learners do not have an advantage over Asian-language-speaking English learners in

mathematics achievement during the elementary school years (Roberts & Bryant, 2011). Instead, high parental expectations were found to be associated with higher math achievement, and low socioeconomic status (SES) portended higher risk for lower math achievement, particularly for Spanish-speaking English learners (Roberts & Bryant, 2011).

For students who have not received education in another country prior to entering the USA, the challenges in learning mathematics may be similar to those of learning other academic subjects. These students may have acquired English as it is used in social interactions, but have yet to learn English used in the more abstract academic language used in instruction. If the student only has social language, then the teacher saying "$y = 2$" may be misinterpreted by the student as the nonsensical phrase "Why is too." These students must learn academic vocabulary, including words and phrases that are specific to math, such as *regrouping*, *90-degree angle*, and *lower left quadrant*. There are words, such as *combine* and *left,* that have multiple meanings in English. Also, two or more English terms, such as *plus* and *added to*, are sometimes used for the same math operation. Gottlieb (2006) listed 11 English words associated with addition and another 11 English words associated with subtraction.

Code Switching

In carrying out calculations, English learners will sometimes switch languages. This is called code switching, which is defined as using more than one language in the same conversation or communicative episode (Moschkovich, 2005). Adult bilinguals tend to prefer doing arithmetic calculations in the language in which they were instructed when they first learned how to do the calculations (Moschkovich, 2005). English learners who take longer to do calculations may be doing so because they need to translate what they are learning in English into their native language. This has implications for assessments and instruction. English learners can be given more time to complete assignments and tests in the classroom. School psychologists should also be aware that subtests of math fluency may be biased due to their time limits, as well as the bias that exists in word problems because of the examinee's limited English proficiency. Because of code switching, timed test scores are likely to underestimate an English learner's skills (Geva & Wiener, 2015).

Nonlanguage Math Differences Around the World

For students who have received some formal instruction in another country, the challenges go beyond learning academic English vocabulary. Numerals are written differently in different languages and cultures. Math calculations are completed differently in some cultures with different languages, an example being the step-by-step set of rules, that is, the algorithm, for long division. There is no uniformity across countries in how math symbols are used. Whole numbers are separated by a

period in the USA, Canada, Great Britain, and Australia (e.g., 582.71) but by a comma in some other countries (e.g., 582,71). Since the metric system is used throughout the world—with the exception of the USA, Liberia, and Burma/Myanmar—measurement and estimation are almost certain to be a challenge to English learners in the USA who have begun their education in another country. These differences between mathematics in the USA and other cultures indicate that English learners who have received formal education before entering educational programs in the USA and Canada will experience cognitive intrusions as they attempt to continue their learning of mathematics. Mathematics involving money, measurement, and fractions are particularly challenging to English learners who have received formal instruction before coming to the USA (Kersaint et al., 2013). Also, parents of English learners, who were educated in other countries, may find it difficult to assist their children with homework.

Math is taught differently in different countries. In the USA and other English-speaking countries, the trend in math instruction has been to learn the conventions, language, and logic of math and to actively construct math meaning by trying a variety of strategies to solve a problem. In other countries, such as Saudi Arabia, the method of teaching is memorization, drill, and practice (Unruh & Obeidat, 2015). Educators need to be aware that English learners may be learning not only academic skills in a new language but also a new method of acquiring math skills in the classroom and of the way they study math.

Learning and Reviewing Prerequisite Skills

Having prerequisite skills is important in learning math. There should be a developmental progression in teaching numbers and operations (Frye et al., 2013). Teachers usually begin teaching mathematical concepts to young children using concrete objects, and then they move to symbols, numbers, addition, and subtraction before multiplication and division, and on from there. Immigrant children, especially those whose parents are migrants, face a number of challenges in education, such as high mobility, poverty, limited English proficiency, and interrupted school attendance (Reyes & Fletcher, 2003; Suárez-Orozco et al., 2010). Learning and reviewing prerequisite skills in math are particularly challenging for students with high mobility and frequent absences.

What Is Number Sense and Why Is It Important?

Some children lack a basic element for math, which is *number sense*. Number sense has been called the phonemic awareness of math. Children who have number sense have an implicit ability to tell the exact quantity of small collections of objects and of symbols, as well as the approximate magnitude of larger quantities (Geary, 2010). They are able to work fluidly and flexibly with numbers, perform mental math, and

make numeric comparisons in the world around them. At a certain age, a child should be able to *subitize*, or apprehend without counting the quantity of groups of three to four objects, and estimate the magnitude of sets of objects. This sensitivity to differences in the quantity of small sets of objects is evident in 6-month-olds and the speed of subitizing gradually increases as children move through the primary grades.

Number sense is hypothesized to have an underlying relationship to math disorders, that is, developmental dyscalculia. In an interesting study involving the ability to discriminate differences in quantities represented by sets of dots rather than numerals, Piazza et al. (2010) found that 10-year-old Italian dyscalculic children scored at the level of 5-year-old typically developing children. Thus, even though English learners may have been acquainted with different notations and algorithms, the underlying learning disability is thought to be present before children learn the specific procedures and symbols associated with math calculation in their first language and culture.

What Can We Learn from Students' Mistakes?

Primary-aged children who are native English speakers learn the symbols and notation for math operations sequentially. For example, if the child has learned to add single-digit numbers when the numerals are presented vertically, that same child does not necessarily know what to do to solve the same problem when it is presented horizontally (e.g., $6 + 3 =$ ___). The problem is not that the child does not know how to add 6 and 3, but that the child does not know the notation used to represent addition when the numerals are shown horizontally. Another example would be the understanding that $2 \times 4 =$ ___ is the same problem and requires the same mathematical computation as $2 \cdot 4 =$ ___.

The math calculation errors that students make can be categorized in different ways (Engelhardt, 1982; Geary, Hoard & Bailey, 2012a). Students can make the following kinds of errors:

- Procedural errors can be **algorithm** errors, in which the student performs steps out of sequence, or follows his or her own pattern of solving problems, such as subtracting smaller from larger numbers regardless of their positions, disregarding the positions of the numbers in the subtrahend (the number being subtracted) versus minuend (the number it is subtracted from). Various algorithms for procedures such as long division are used in different cultures (Kersaint et al., 2013), making it important not to confuse these alternate procedures with procedural errors. Procedural errors can also be **regrouping** errors, as when the student multiplies correctly but does not put the digits in the correct place.
- Conceptual errors can be **math fact** errors, as when the student has not learned the math facts or does not automatically retrieve them from long-term memory. They can be **operand** errors, such as performing one operation rather than another (e.g., adding instead of multiplying). They can also be **place value** errors. Conceptual errors reflect the student's lack of a concept or an incorrect concept, such as the meaning of zero or the understanding of place values.

- Mechanical errors result when the student misforms or misaligns numerals or symbols. These errors should not be confused with differences in how numerals are written in different cultures. An example that may be familiar to those who have traveled in Europe is the difference in how the numerals for one and seven are written in some of those countries and in the USA.
- Careless errors may be accidental or due to a lack of effort and can be investigated using can't do–won't do assessment. (Please see Chap. 11 for an explanation of "can't do–won't do" assessment.)

When any student starts to struggle in math, an error analysis can be done to determine the area that needs to be addressed. Error analysis and diagnostic interviewing (Rosenfield, 1987) are useful in determining the type of math calculation errors made by the English learner on an achievement test. Begin with the assumption that the errors are not random. Note whether the student left blank or missed all the problems using the same notation. This suggests that the English learner lacks knowledge of specific math notation, rather than math calculation skills. Next, look for patterns in the errors. When you think that you see how the student arrived at the wrong answer, check whether your supposition explains errors on similar problems. For example, did he or she always use the same faulty algorithm for addition of two- and three-digit numbers? Finally, create sample calculation problems similar to the ones that the English learner missed on the achievement test and watch as the student completes the problems.

Multiple Indicators of a Disorder of Math Calculation

Observations of Clinical Signs

Clinical signs of disorders in math calculation are shown in Table 8.1.

Keep in mind that English learners who were first exposed to math in a language other than English may

- Be confused and make erasures because they are having to code switch
- Have learned different conventions for using commas and periods in numbers or may lack understanding of math symbols used in English
- Have had decimals emphasized rather than fractions in the first language
- Lack automaticity of numbers in English

Record Review

Chapter 11 provides a guide for questions that can be answered when doing a record review. Also, please see Chapter 3 for detailed information on the data that can be gleaned through record review.

Table 8.1 Clinical Signs of Math Calculation Disorders

Clinical signs of a calculation disorder
• Inability to rapidly identify numbers
• Difficulty counting forwards and backwards
• Numerous erasures
• Misaligned place values
• Difficulty making comparisons between magnitude of numbers
• Poor ability to select math processes
• Inconsistency in lining up equations
• Unawareness of reasonableness of answer
• Poor number sense
• Difficulty in memorizing math facts

Source: Feifer, 2014

Interviews

Chapter 11 presents the questions that can be answered based on interviews with caregivers and teachers. Be sure to get relevant health information from the school nurse and have vision and hearing checked. Also, please see Chapter 3 for more extensive information on data that can be gathered from interviews.

Tests

When Is It Appropriate to Test an English Learner's Math Calculation Skills in His or Her Native Language?

As mentioned earlier, educators who are assessing the math calculation skills of English learners need to be attentive to various ways that number and symbol systems vary between the ones used in English and the ones prevalent in the child's native language. If number and symbol systems are the same, it should not be a problem to assess an English learner with calculation tests that we typically use. Otherwise, the number and symbol systems that were originally learned by English learners may interfere with their performance, especially in timed tests where fluency is a component that is being measured.

As always, check to see whether your examinee is represented in the norming sample of the test that is being considered. As with reading, an English learner's scores on tests of rapid automatic naming (RAN) will be compromised if the student first learned number and calculation skills in a different language. These students will not have the same automaticity in naming numbers or in tests of working memory as monolingual English speakers do.

How Do We Use Tests with English Learners to Determine Math Calculation Disorders?

With math calculation, as with all of the academic skills that can be subject to testing, we want to check the demographics of the norming sample of the test under consideration to make sure that the student we are assessing is represented. We want to use tests that provide us with diagnostic information and the ability to do error analyses. We want to be able to find the student's instructional level for the purpose of making intervention placement decisions.

Table 8.2 lists tests that can be helpful in assessing English learners' math calculation skills, processing skills, and mental ability. There is also a list of Spanish tests that can be considered if the English learner's first language is Spanish and he or she fits the test's norms.

More specific information about these tests can be found in Chapter 11

Table 8.2 Formal Assessments Related to Math Calculation

	For any English learner	For Spanish speakers
Math tests	• *KeyMath-3 Diagnostic Assessment* (Connolly, 2007) • *Test of Early Mathematics Ability-Third Edition* (TEMA-3; Ginsburg & Baroody, 2011) • *Kaufman Tests of Educational Achievement-Third Edition* (Kaufman & Kaufman, 2014)	• *Logramos-Tercera Edición* (Aparicio & Nikolov, 2014) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Aprovechamiento* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007) • *Prueba de Habilidades Académicas Iniciales* (Ramos, Hresko & Ramos, 2006) • *Aprenda: La Prueba de Logros en Español, Tercera Edición* (Aprenda-3, 2005)
Mental ability tests	• *Universal Nonverbal Intelligence Test-Second Edition* (Bracken & McCallum, 2016) • *Developmental Profile-Third Edition* (Alpern, 2007) • *Wechsler Intelligence Scale for Children-Fifth Edition Nonverbal Index* (Wechsler, 2014) • *Differential Ability Scales-Second Edition Special Nonverbal Composite* (Elliott, 2007)	• *The Wechsler Intelligence Scale for Children-Fourth Edition-Spanish* (Wechsler, 2004). (The WISC-V-Spanish is in development.) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007)
Processing tests	• *Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition* (Beery, Buktenica & Beery, 2010) • *Woodcock-Johnson Tests of Cognitive Abilities-IV* (Schrank, McGrew & Mather, 2014)	• *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007)
Screeners and progress monitors	• AIMSweb (2014) • DIBELS-Sixth Edition (2016)	• AIMSweb in Spanish (2014)

Table 8.3   Test-Teach-Test Assessment

Test-teach-test method	Definition	Example
Curriculum-based dynamic assessment (CDA)	Teaching a specific authentic task and collecting progress and procedural data as students acquire the task (Barrera, 2006)	Students are tested on addition skills involving the numbers 1–10. They then receive 2 weeks of direct instruction and they are tested again to see whether or not they have made adequate progress

Test Highlight: *The Kaufman Test of Educational Achievement-Third Edition* **(KTEA-3)**

One of the tests listed is the *Kaufman Test of Educational Achievement-Third Edition* (Kaufman & Kaufman, 2014). In addition to measuring calculation skills, it measures math concepts and applications, and math fluency. It will be used as an example of how to use data from the test if your student does not match the norming sample. You can administer the calculation subtest without reporting the score but, instead, use the test to show which math facts and computations that the student has mastered and not mastered. The math fluency subtest should also be administered and interpreted with caution, depending on the similarity or dissimilarity between the child's prior learning of math symbols and English symbols.

Test-Teach-Test Assessments

Test-teach-test assessments can be created by the school psychologist or by the teacher in order to assess calculation skills. The objective of the probes is to determine the specific skills that must be taught in the intervention. The Intervention Central website (http://www.interventioncentral.org/) can be used to generate calculation problems (Table 8.3).

Teaching and Intervening

What Interventions Should Be Considered to Improve Math Calculation Skills of English Learners?

General Interventions Recommended for English Learners

Learning occurs when new knowledge and skills are connected to what the individual already knows. Scaffolding is used to bridge the difference between what students have learned and what they are expected to know and be able to do. There is a sparsity of math interventions that have been demonstrated to be evidence based for English learners. However, guidance in planning interventions for these students

can be gleaned from the fundamentals of learning math, as well as recommended practices in the fields of mathematics education (Leith, Rose, & King, 2016) and ESL instruction (Kersaint et al., 2013).

Some problems can be addressed with sound teaching techniques. For example, the regular use of advance organizers orients all students, including English learners, to the topic of the lesson. Also, to help the student who has difficulty aligning numerals correctly, ordinary lined paper can be turned so that the lines are vertical and serve as column markers (Engelhardt, 1982).

The level of math instruction for English learners should be commensurate with their math achievement, not English acquisition. Nevertheless, language is an important medium through which these students learn mathematics. Kersaint et al. (2013) recommend that teachers modify their language in mathematics instruction to increase the success of English learners as follows: (a) enunciate clearly; (b) write math words on the board; (c) simplify language; (d) elaborate as well as paraphrase; (e) use advance organizers; and (e) pause frequently and increase wait time. Conversely, math teachers should limit (a) the number of new words introduced in a lesson; (b) idiomatic expressions; (c) culturally based terms; and (d) off-topic discussions. These authors also provide lists of children's picture books to introduce English learners to basic math concepts in numbers, fractions, shapes, and measurement.

Interventions for Algorithm Errors

When a student is using an inappropriate calculation algorithm, it is important that the teacher intervene to prevent the student from becoming very skilled at using an incorrect procedure (Cawley & Parmar, 1991). First, the problem solution would be demonstrated with manipulatives. Then, the teacher should complete a calculation problem as the student watches. Finally, the teacher should present another similar problem. The teacher should watch the student solve the problem and provide the least possible correction. All of this can be done with manipulatives, paper, pencil, and gestures. The correct algorithm should be considered a new skill for the student, thus needing to be practiced. English learners who have limited, interrupted, or no formal education may need to be taught correct algorithms that are typically presented in earlier grades (DeCapua & Marshall, 2011). Only when the student has more difficulty than native English speakers have in learning this new skill would the English learner's difficulty be considered a clinical sign of a possible learning disability in math calculation.

Use of Visual Representations

The importance of visual representations to enhance mathematics instruction for English learners is stressed by both What Works Clearinghouse (Gersten et al., 2009) and ESL materials (e.g., Coggins, 2014). Number lines and Venn diagrams

can be used routinely to accompany math calculation instruction. The visual representation should be explicitly aligned with its symbolic representation.

Visual representations can be created by students and the teacher during the math instruction. For example, dots can be arranged in rows to represent "7 times 4." The teacher can demonstrate how to represent multiplication facts in this way and then encourage English learners to create similar illustrations.

Teachers should be encouraged to write math terms and phrases on the board as well as illustrations and the math calculation example. Arrows can then be used to connect the language, pictures, and math problem. For example,

*Elena has **3** balls. Cam has **4** balls. How many balls do they have **all together***?
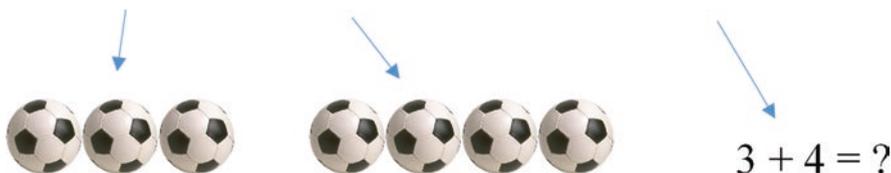
Several examples are provided in ESOL materials (Coggins, 2014; Kersaint et al., 2013).

Visual representations can be two or three dimensional. Students with learning disabilities have improved their procedural fluency and conceptual understanding with the concreterepresentation-abstract method (Maccini & Gagnon, 2000). Zannou, Ketterlin-Geller, and Shivraj (2014) provided an example of this method that would be particularly helpful for English learners whose previous math instruction emphasized decimals over fractions, as is the case in many other countries (Kersaint et al. 2013). A figure showing multiple representations of the value of 0.4 contained (a) the concrete representation as four dimes; (b) the model representation as a pie divided into five pieces with two pieces shaded; and (c) three symbolic representations (2/5, 0.4, 40%).

References

AIMSweb. (2014). Retrieved from http://www.aimsweb.com/

AIMSweb in Spanish. (2014). Retrieved from http://www.aimsweb.com/assessments/features/assessments/features/assessments/spanish-reading

Alpern, G. D. (2007). *Developmental Profile-Third Edition*. Retrieved from http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3

Anders, Y., Rossbach, H., Weinert, S., Ebert, S., Kuger, S., Lehrl, S., & von Maurice, J. (2012). Home and preschool learning environments and their relations to the development of early numeracy skills. *Early Childhood Research Quarterly*, *27*, 231–244. doi:10.1016/j.ecresq.2011.08.003.

Aparicio, E., & Nikolov, S. (2014). *Logramos-Tercera Edición (Logramos-3)*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/logramos-3

Aprenda: La Prueba de Logros en Español, Tercera Edición. (2005). Retrieved from http://www.pearsonassessments.com/learningassessments/products/100000585/aprenda-3-aprenda-la-prueba-de-logros-en-espanol-tercera-edicion.html

Barrera, M. (2006). Roles of definitional and assessment models in the identification of new or second language learners of English for special education. *Journal of Learning Disabilities*, *39*, 142–156. doi:10.1177/00222194060390020301.

Beery, K. E., Buktenica, N. A., & Beery, N. A. (2010). *Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition*. Retrieved from http://www.pearsonclinical.com/therapy/products/100000663/the-beery-buktenica-developmental-test-of-visual-motor-integration-6th-edition-beery-vmi.html

Bracken, B. A., & McCallum, R. S. (2016). *Universal Nonverbal Intelligence Test-Second Edition*. Austin, TX: Pro-Ed, Inc.

Cawley, J. F., & Parmar, R. S. (1991). Maximizing mathematics success in the regular classroom. In G. Stoner, M. R. Shinn, & H. M. Walker (Eds.), *Interventions for achievement and behavior problems* (pp. 415–438). Silver Spring, MD: National Association of School Psychologists.

Coggins, D. (2014). *English learners in the mathematics classroom* (2nd ed.). Thousand Oaks, CA: Corwin.

Connolly, A. J. (2007). *KeyMath-3*. Bloomington, MN: Pearson Assessment.

DeCapua, A., & Marshall, H. W. (2011). *Breaking new ground: Teaching students with limited or interrupted formal education in U.S. secondary schools*. Ann Arbor, MI: University of Michigan Press.

Dehaene, S. (2011). *The number sense: How the mind creates mathematics*. New York, NY: Oxford University Press.

DIBELS-Sixth Edition. (2016). Retrieved from https://dibels.uoregon.edu/assessment/dibels/index

Elliott, C. D. (2007). *Differential Ability Scales—Second Edition (DAS-II)*. San Antonio, TX: Harcourt Assessment.

Engelhardt, J. M. (1982). Using computational errors in diagnostic teaching. *The Arithmetic Teacher*, *29*(8), 16–19.

Feifer, S. (2014). *The neuropsychology of mathematics*. Retrieved from https://www.mspaonline.net/wp-content/uploads/2014/01/Thurs-Feifer-90-Minute-Mathematics-2014.pdf

Fisher, J. H. (1996). *The emergence of standard written English*. Lexington, KY: University Press of Kentucky.

Frye, D., Baroody, A. J., Burchinal, M., Carver, S. M., Jordan, N. C., & McDowell, J. (2013). *Teaching math to young children: A practice guide (NCEE 2014-4005)*. Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website http://whatworks.ed.gov

Geary, D. C., Hoard, M. K., & Bailey, D. H. (2012). Fact retrieval deficits in low achieving children and children with mathematical learning disability. *Journal of Learning Disabilities*, *45*(4), 291–307 http://doi.org/10.1177/0022219410392046.

Geary, D. C. (2010). Mathematical disabilities: Reflections on cognitive, neuropsychological, and genetic components. *Learning and Individual Differences*, *20*(2), 130–133. doi:10.1016/j.lindif.2009.10.008.

Gersten, R., Beckmann, S., Clarke, B., Foegen, A., Marsh, L., Star, J. R., & Witzel, B. (2009). *Assisting students struggling with mathematics: Response to Intervention (RtI) for elementary and middle schools (NCEE 2009-4060)*. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/publications/practiceguides/

Geva, E., & Wiener, J. (2015). *Psychological assessment of culturally and linguistically diverse children and adolescents: A practitioner's guide*. New York, NY: Springer Publishing Company.

Ginsburg, H., & Baroody, A. (2003/2011). *Test of Early Mathematics Ability–Third Edition*. Austin, TX: Pro-Ed.

Gottlieb, M. (2006). *Assessing English language learners: Bridging from language proficiency to academic achievement*. Thousand Oaks, CA: Corwin Press.

Isaacs, E. B., Edmonds, C. J., Lucas, A., & Gadian, D. G. (2001). Calculation difficulties in children of very low birthweight: A neural correlate. *Brain*, *124*(Pt 9), 1701–1707.

Janzen, J. (2008). Teaching English language learners in the content areas. *Review of Educational Research*, *78*(4), 1010–1038. doi:10.3102/0034654308325580.

Julian, T. (2012). *Work-life earnings by field of degree and occupation for people with a Bachelor's degree: 2011 American Community Survey Briefs*. US Census Bureau. Retrieved from http://files.eric.ed.gov/fulltext/ED537269.pdf

Kaufman, A. S., & Kaufman, N. L. (2014). *Kaufman Test of Educational Achievement* (3rd ed.). Bloomington, MN: Pearson.

Kersaint, G., Thompson, D. R., & Petkova, M. (2013). *Teaching mathematics to English language learners* (2nd ed.). New York: Routledge.

Kuhn, J.-T. (2015). Developmental dyscalculia: Neurobiological, cognitive, and developmental perspectives. *Zeitschrift für Psychologie*, *223*(2), 69–82. doi:10.1027/2151-2604/a000205.

Landerl, K., Fussenegger, B., Moll, K., & Willburger, E. (2009). Dyslexia and dyscalculia: Two learning disorders with different cognitive profiles. *Journal of Experimental Child Psychology*, *103*, 309–324. doi:10.1016/j.jecp.2009.03.006.

Lee, J., Lee, Y. A., & Amaro-Jiménez, C. (2011). Teaching English language learners (ELLs) mathematics in early childhood. *Childhood Education*, *87*(4), 253–260. doi:10.1080/00094056.2011.10523187.

Leith, C., Rose, E., & King, T. (2016, May). Teaching mathematics and language to English learners. *The Mathematics Teacher*, *109*(9), 670–678.

Maccini, P., & Gagnon, J. C. (2000). Best practices for teaching mathematics to secondary students with special needs. *Focus on Exceptional Children*, *32*(5), 1–22.

Marshack, A. (1991). Taï plaque and calendrical notation in the upper palaeolithic. *Cambridge Archaeological Journal*, *1*(1), 25–61.

Moschkovich, J. (2002). A situated and sociocultural perspective on bilingual mathematics learners. *Mathematical Thinking and Learning*, *4*(2–3), 189–212. doi:10.1207/S15327833MTL04023_5.

Moschkovich, J. (2005). Using two languages when learning mathematics. *Educational Studies in Mathematics*, *64*, 121–144. doi:10.1007/210649-005-9005-1.

O'Connor, J. J., & Robertson, E. F. (1997, February). *History topic: An overview of the history of mathematics*. Retrieved from http://www-history.mcs.st-andrews.ac.uk/HistTopics/History_overview.html

Phillips, M. L. (2002). *Second language learning*. Retrieved from https://faculty.washington.edu/chudler/second.html

Piazza, M., Facoetti, A., Trussardi, A. N., Berteletti, I., Conte, S., Lucangeli, D., … Zorzi, M. (2010). Developmental trajectory of number acuity reveals a severe impairment in developmental dyscalculia. *Cognition*, *116*, 33–41. doi:10.1016/j.cognition.2010.03.012.

Ramos, J., Hresko, W., & Ramos, M. (2006) *Prueba de Habilidades Académicas Iniciales (PHAI)*. Retrieved from http://www.proedinc.com/customer/productView.aspx?ID=3717

Reyes, P., & Fletcher, C. (2003). Successful migrant students: The case of mathematics. *Journal of Curriculum and Supervision*, *18*(4), 306–333.

Roberts, G., & Bryant, D. (2011). Early mathematics achievement trajectories: English-language learner and native English-speaker estimates, using the early childhood longitudinal survey. *Developmental Psychology*, *47*, 916–930.

Rosenfield, S. A. (1987). *Instructional consultation*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Schrank, F., McGrew, K., & Mather, N. (2014). *Woodcock-Johnson IV Tests of Achievement* (4th ed.). Boston, MA: Houghton, Mifflin, Harcourt.

Shalev, R. S., Manor, O., Kerem, B., Ayali, M., Badichi, N., Friedlander, Y., & Gross-Tsur, V. (2001). Developmental dyscalculia is a familial learning disability. *Journal of Learning Disabilities*, *34*, 59–65. doi:10.1177/ 002221940103400105.

Suárez-Orozco, C., Gaytán, F. X., Bang, H. J., Pakes, J., O'Connor, E., & Rhodes, J. (2010). Academic trajectories of newcomer immigrant youth. *Developmental Psychology*, *46*(3), 602–618. doi:10.1037/a0018201.

Test of Early Mathematics Ability-Third Edition. (2011). PRO-ED, Inc. Retrieved from http://www.proedinc.com/customer/ProductView.aspx?ID=2891

Unruh, S., & Obeidat, B. F. (2015). Adjusting to learning in the US: Saudi students speak out. *Journal of Higher Education Theory and Practice, 15*(4). Retrieved from http://www.na-businesspress.com/JHETP/UnruhS_Web15_4_pdf.

Usiskin, Z. (1996). Mathematics as a language. In P. C. Elliott & M. J. Kenny (Eds.), *1996 Yearbook: Communication in mathematics, K-12 and beyond* (pp. 231–243). Reston, VA: The National Council of Teachers of Mathematics, Inc.

Venkatraman, V., Siong, S. C., Chee, M. W. L., & Ansari, D. (2006). Effect of language switching on arithmetic: A bilingual fMRI study. *Journal of Cognitive Neuroscience*, *18*(1), 64–74.

Vukovic, R. K., Lesaux, N. K., & Siegel, L. S. (2010). The mathematics skills of children with reading difficulties. *Learning and Individual Differences*, *20*, 639–643. doi:10.1016/j.lindif.2010.08.004.

Wechsler, D. (2004). *Wechsler Intelligence Scale for Children—Fourth Edition—Spanish*. San Antonio, TX: Harcourt Assessment.

Wechsler, D. (2014). *Wechsler Intelligence Scale for Children–Fifth Edition*. Bloomington, MN: Pearson.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Habilidades Cognitivas Normative Update*. Boston, MA: Houghton, Mifflin, Harcourt.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/achievement/bateria-iii-wm#sthash.QpZ1UuKz.dpuf

Zannou, Y., Ketterlin-Geller, L. R., & Shivraj, P. (2014). Best practices in mathematics instruction and assessment in secondary settings. In P. L. Harrison & A. Thomas (Eds.), *Best practices in school psychology: Data-based and collaborative decision making* (pp. 233–246). Bethesda, MD: National Association of School Psychologists.

Chapter 9
Math Problem-Solving

What to Know Before Math Problem-Solving Assessment and Intervention

When students struggle with math, we must separate math calculation skills from math problem-solving skills to learn the appropriate areas to target for interventions. And for English learners, English language fluency and cultural considerations must also be extricated in order to determine whether or not there is a disability. If the school psychologist is uncertain whether or not the student has solid calculation skills, Chapter 8 on Math Calculation should be consulted prior to reading this chapter. Some of the information in Chapter 8 will be summarized here as it relates to math problem-solving:

- As with all students, mathematics skills are important to English learners. Future career and earnings opportunities may well be dependent upon math proficiency (Julian, 2012).
- When English is the language of instruction, proficiency in English is strongly correlated with math performance (Lee, Lee, & Amaro-Jiménez, 2011). Students must have the oral language skills to understand instruction and to convey questions to the teacher, as well as the reading skills to understand word problems and the writing skills to respond to them.
- Approximations, counting, spatial relations, and other math tasks are not isolated in one part of the brain but, rather, the neuronal circuits that process them are sprinkled throughout the brain. An area in the right hemisphere is activated when we make comparisons and approximations of quantities; language abilities of the left hemisphere are involved when we make calculations (Dehaene, 2011).
- Developmental dyscalculia is a result of problems with neural organization in the brain, which can be due to various causes.

- Genetics: If one child in the family has dyscalculia, his or her siblings are over ten times more likely to have it compared with the general population (Shalev et al., 2001).
- Brain development during pregnancy, low birth weight, and postnatal insults to the brain can result in functional and structural alterations in regions of the brain that have to do with processing numbers and quantities (Dehaene, 2011; Isaacs, Edmonds, Lucas, & Gadian, 2001).
- Environmental influences such as socioeconomic status and the home learning environment have been shown to correlate with the development of math skills (Anders et al., 2012).
- Developmental dyscalculia is often comorbid with other neurodevelopmental disorders such as dyslexia and attention-deficit disorder (see, for example, Kuhn, 2015; Vukovic, Lesaux, & Siegel, 2010). Cognitive skills needed for a variety of academic skills (oral language, math, reading, writing, attention, and executive functioning) have some areas of common ground in the brain.

How Can Language Proficiency Be Disentangled from Math Problem-Solving Skills?

When an English learner has difficulty with word problems, it is important to determine whether the difficulty is due to the words used in the problems or the math reasoning and problem-solving skills used by the student. One of the challenges of teaching mathematics to English learners is to remember that using multiple terms for the same operation is confusing rather than helpful to the student. English learners must learn the multiple English words and expressions used in mathematics separately. A teacher might be used to saying, "If I have 8 pieces of candy and give 6 to my friend, how many do I *have left*? How many *remain*?" The teacher may assume that it is helpful to the student to ask the question using several terms to signal to the student to use subtraction. However, for the English learner, the various terms are not necessarily understood as synonymous. The teacher should teach and reinforce each term independently for the English learner student (Gottlieb, 2006).

English learners may understand mathematics concepts and language, but lack the spoken English language proficiency to demonstrate their competence. For example, the student may understand the concept of fractions, as needed to solve the story problem, "Lakota made 27 cookies. She put 1/3 of the cookies onto the plate. How many cookies did she put on the plate?" To ascertain whether the student understands the fraction concept in this problem, the student can be prompted to show the answer by drawing figures or by manipulating small objects. Additionally, the difficulty of reading the English used in the problem can be reduced by putting key words in bold font. These techniques help the school psychologist to ascertain the English learner's math skills separately from the student's proficiency in reading and speaking English.

What Is Number Sense and Why Is It Important?

Number sense is hypothesized to have an underlying relationship to math disorders, that is, developmental dyscalculia. Number sense, which has been called the phonemic awareness of math, is the implicit ability to tell the exact quantity of small collections of objects and symbols, and the ability to estimate the magnitude of larger quantities (Geary, 2011). At a fairly young age, children should be able to *subitize*, or apprehend the quantity of groups of three or four objects without counting, and they should be able to estimate the magnitude of larger sets of objects. This sensitivity to differences in the quantity of small sets of objects is evident in 6-month-olds and the speed of subitizing gradually increases as children move through the primary grades. Individuals who do not have number sense experience difficulties working fluidly and flexibly with numbers, performing mental math, and making numeric comparisons in the world around them.

Multiple Indicators of a Disorder of Mathematics Problem-Solving

Observations of Clinical Signs

Table 9.1 presents clinical signs that may indicate a math problem-solving disorder.

Please consider that English learners who were first exposed to math in a language other than English may be confused and make erasures because they are having to code switch. They also may have learned different conventions for using commas and periods in numbers or may lack understanding of math symbols used in English. They may lack automaticity for numbers in English and may have had decimals emphasized rather than fractions in their first language.

Record Review

Chapter 11 provides a guide for questions that can be answered when doing a record review. Also, please see Chapter 3 for detailed information on the data that can be gleaned through record review.

Interviews

Chapter 11 presents the questions that can be answered based on interviews with caregivers and teachers. Be sure to get relevant health information from the school nurse and have vision and hearing checked. Also, please see Chapter 3 for data that can be gathered from interviews.

Table 9.1 Clinical Signs of a Math Problem-Solving Disorder

Clinical signs of a math problem-solving disorder
• Misaligned place values
• Difficulty making comparisons between magnitude of numbers
• Poor ability to select math processes
• Inconsistency in lining up equations
• Unawareness of reasonableness of answers
• Poor number sense
• Difficulty in memorizing math facts
• Numerous erasures*
• Inability to rapidly identify numbers*
• Difficulty counting forward and backward*

Source: Feifer, 2014
*These behaviors may also occur when English learners are in the process of learning mathematics skills in English

Tests

When Is It Appropriate to Test an English Learner's Math Problem-Solving Skills in His or Her Native Language?

It is always appropriate to test academic skills in English learners' native language if the student is represented in the norming sample. If the test has been normed on monolingual speakers in the student's native country, be aware that the longer the student is gone from that country and has had instruction in English, the more language loss will have occurred. Imagine that Gabriela, a fifth grader from Honduras, has moved to the USA in December with no prior instruction in English. She will almost certainly score higher on a problem-solving test in Spanish during the next few months—and possibly longer—than she will in English. But as soon as she is no longer receiving instruction in Spanish, she starts to lose her math cognitive academic language proficiency (CALP) skills in that language. Be aware, too, that if you plan to use standard scores from a test in another language and compare them with a test in English, make sure that the content of the tests is similar. However, it is also crucial to examine the correlation coefficients to determine the concurrent reliability of the two tests.

Various cognitive correlates of math problem-solving have been found to include:

- Working memory (Bull, Espy, & Wiebe, 2008; Geary, 2011)
- Phonological working memory and rehearsal (Fuchs et al., 2006; Krajewski & Schneider, 2009)

- Processing speed (Bull & Johnston, 1997; Geary, 2011)
- Visual-motor integration (Barnhardt, Borsting, Deland, Pham, & Vu, 2005)
- Visuospatial reasoning (Fuchs et al., 2010a, 2010b; Fuchs, Geary, Fuchs, Compton, & Hamlett, 2014)
- Visual-spatial working memory (De Smedt et al., 2009; Swanson, Jerman, & Zheng, 2008)
- Attention (Geary, Hoard, & Nugent, 2012)
- Intelligence (Geary, 2011).

For at least the first year after the student has immigrated, and possibly much longer, these are all skills that can best be measured by a processing test or a mental ability test in the student's native language. The exception to that would be immigrants who did not begin their formal education until they entered the English-speaking country in kindergarten or first grade. If tests in the student's native language are not available, use nonverbal tests or rating scales and interviews.

There are several tests that are published in English but have instructions with limited verbal content. An example is the *Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition* (VMI; Beery, Buktenica, & Beery, 2010). This test measures visual-motor integration, visual perception, and fine motor coordination. Although instructions are in English, while giving instructions the examiner models what the examinee should do. The same advantages of modeling the task by the examiner and limited or lack of verbal instructional content are available in various subtests of other instruments, such as Nonsymbolic Quantity, Spatial Memory, and Numerical Series on the *Universal Nonverbal Intelligence Test-Second Edition* (UNIT-2; Bracken & McCallum, 2016).

Testing the limits can be used with English tests of math concepts and applications. Depending upon the student's level of English proficiency, the subtest can be administered first in English. Then the examiner can go back, with an interpreter, and have the items that the student missed re-administered in his or her native language. Again, standard scores should not be reported; the focus should be on diagnosis and mastery of skills which can lead to appropriate interventions and placement in learning settings.

How Do We Use Tests with English Learners to Determine Math Problem-Solving Disorders?

When we test math skills using word problems, we are assessing proficiency in math problem-solving *only if* the examinee can read and understand the problem; otherwise, we are not assessing math so much as reading. This is not only a concern for English learners; it can also be a problem for any student whose reading level is lower than that of the test items. In a study of the language demands in math problems, Abedi and Lord (2010) found that students performed better when the linguistic demands of the items were simplified. They reported that this simplification

resulted in higher scores for all students but especially for English learners, low SES students, and students in low- and average-level math classes. What did they do to lower the linguistic demand of word problems?

- Changed unfamiliar or infrequent vocabulary to words that were more familiar and frequent
- Exchanged passive verb forms with active verb forms
- Shortened the noun phrases
- Replaced conditional clauses with separate sentences
- Removed or recast relative clauses
- Simplified question phrases
- Made abstractions more concrete

In addition to simplification of the vocabulary and grammar of the items, English learners can also benefit from explicit instruction in math vocabulary and in strategies to use in responding to questions on standardized tests (DiGisi & Fleming, 2005).

If school psychologists want to report standard scores when testing math problem-solving, they should make sure that the student is represented in the norming sample of the test. Using standard scores to make decisions for English learners is fraught with difficulties. It is typically safer and more valid to use tests to provide diagnostic data that can be linked to instructional interventions and/or can help make decisions about placing students in settings where they will be taught at their instructional level. Choose tests of math problem-solving that have a sufficient number of items so you can do error analyses on the student's responses.

Table 9.2 lists tests that can be helpful in assessing English learners' achievement and mental ability. There is also a list of Spanish tests that can be considered if English learners' first language is Spanish and they fit the test's norms.

Test Highlight: *The Test of Early Mathematics Ability-Third Edition (TEMA-3)*

The Test of Early Mathematics Ability-Third Edition (TEMA-3; Ginsburg & Baroody, 2003) can be very helpful in pinpointing problems with basic components of math, such as number sense. The TEMA-3 was published with updated norms in 2011 by Pro-Ed, Inc. The 1219 norming sample was based on the demographics of the 2001 Census. It is intended for children aged 3–0 through 8–11 but the publishers say that it can also be used as a diagnostic (criterion-referenced) tool for older students who are experiencing mathematics delays. In addition to measuring calculation skills and mastery of number facts, the TEMA-3 measures numbering skills, number-comparison facility, numeral literacy, and understanding of concepts. Along with the test, assessment probes and remedial instructional activities are provided (*Test of Early Mathematics Ability-Third Edition*, 2011).

Table 9.2 Formal Assessments Related to Math Problem-Solving

	For any English learner	For Spanish speakers*
Math tests	• *Test of Early Mathematics Ability-Third Edition* (Ginsburg & Baroody, 2003) • *Kaufman Tests of Educational Achievement-Third Edition* (Kaufman & Kaufman, 2014) • *KeyMath-3 Diagnostic Assessment* (Connolly, 2007)	• *Logramos-Tercera Edición* (Aparicio & Nikolov, 2014) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Aprovechamiento* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007) • *Prueba de Habilidades Académicas Iniciales* (Ramos, Hresko & Ramos, 2006)
Processing tests	• *Beery-Buktenica Test of Visual-Motor Integration* (Beery, Buktenica & Beery, 2010) • *Woodcock-Johnson Tests of Cognitive Abilities-Fourth Edition* (Schrank, McGrew & Mather, 2014)	• *Batería III Woodcock-Muñoz Normative Update Pruebas de habilidades cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007)
Mental ability tests	• *Universal Nonverbal Intelligence Test-Second Edition* (Bracken & McCallum, 2016) • *Developmental Profile-Third Edition* (Alpern, 2007) • *Wechsler Intelligence Scale for Children-Fifth Edition Nonverbal Index* (Wechsler, 2014) • *Differential Ability Scales-Second Edition Special Nonverbal Composite* (Elliott, 2007)	• *The Wechsler Intelligence Scale for Children-Fourth Edition-Spanish* (Wechsler, 2004). (The WISC-V-Spanish is in development.) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007)
Screeners and progress monitors	• AIMSweb (2014) • DIBELS-Sixth Edition (2016)	• AIMSweb Spanish (2014)

More specific information about these tests can be found in Chapter 11

Test-Teach-Test Assessments

Test-teach-test method	Definition	Example
Curriculum-based dynamic assessment (CDA)	Teaching a specific authentic task and collecting progress and procedural data as students acquire the task (Barrera, 2006)	Students are tested on problem-solving skills related to figuring the circumference of a circle. They then receive 2 weeks of direct instruction and they are tested again to see whether or not they have made adequate progress

Test-teach-test assessments can be created by the school psychologist or by the teacher in order to assess problem-solving skills. The objective of the probes is to determine the specific skills that must be taught in the intervention. Probes can be

created based on the math curriculum that is currently being used in the school. Remember to lower the linguistic demands and pre-teach the vocabulary that is being used in the problems.

Teaching and Intervening

What Are Characteristics of Good Classroom Instruction for English Learners?

Effective mathematics instruction for all students, including English learners, needs to actively engage students in multiple ways; include strategies that are culturally relevant to learners; include classroom discussions to facilitate acquisition of both mathematics and language; and assess progress in ways that reduce the language complexity required for students to demonstrate their math knowledge and skills (National Council of Teachers of Mathematics, 2013).

Learning math skills is not dependent on learning a specific language. However, language is the conduit for learning mathematics. Mathematics educators (e.g., Driscoll, Nikula, & DePiper, 2016) advise that English learners should increase their proficiency in using English concurrently with increasing their mathematics reasoning skills. Although the English language used in math instruction may need to be simplified for English learners, the complexity of the mathematical reasoning expected of these students should not be reduced. Speaking and writing prompts, as well as visual representations, can facilitate English learners' opportunities to communicate their problem-solving skills.

English learners benefit from an emphasis on discussions of the reasoning used to solve math problems rather than a heavy emphasis on computational skills (Driscoll et al., 2016). Geometric reasoning tasks and visual representations reduce the language demands for students whose first language is not English. These are practices that are recommended by What Works Clearinghouse (Woodward et al., 2012) for all students in grades 4–8.

Discussions in math classes can provide additional opportunities for the student to learn English. Students can be formed into small groups in which students explain how they understood and solved problems. If possible, put students with little fluency in English in groups with other students who speak their first language and are more fluent in English. Other suggestions include having students diagram their problem solutions and having many math-related objects, such as scales, abacuses, and number lines, in the classroom.

What Are Mistakes to Avoid?

Avoid Stressing Quantity Over Quality

The cognitive demands on English learners when they solve word problems include the math reasoning required of native English speakers plus the translation of the problem into the English learner's first language and the translation of the problem solution into English (Kersaint, Thompson, & Petkova, 2013). Teachers should reduce the number of word problems assigned and/or increase the amount of time allowed for work completion.

Avoid Ignoring the Language Demands and Cultural Context of the Word Problem

Both social language and academic mathematics language are typically used in word problems, which may be particularly confusing to the English learner (Kersaint et al., 2013). Also, the context of the problem may be unfamiliar to English learners, making it extremely difficult for them to understand which operation to use. For example, imagine the confusion of an English learner trying to solve a problem about "ears of corn." Teachers should routinely review word problems for language and cultural context. Brief discussions about the problem can help English learners make sense of unfamiliar contexts.

Avoid Asking "Do You Understand?" and Taking "Yes" for an Answer

When the teacher asks the English learner, "Do you understand?", the student may respond "yes" to please the teacher and/or to avoid embarrassment (Kersaint et al., 2013). In checking for English learners' understanding, it is preferable to ask students to restate the problem in their own words or ask them to draw a picture or diagram of what is happening in the problem.

Avoid Teaching Strategies for Key Words

Teaching English learners to associate key words in math problems with specific operations is not advisable because the meaning of a word is dependent upon the context of the problem (Kersaint et al., 2013). For example, an English learner might be taught that the key word *left* means that you should subtract. However, this strategy would only be useful in the first of these two word problems:

- "Vikram bought 8 cookies and ate 5 of them. How many cookies were left?"
- "Vikram ate 5 cookies and only had 3 cookies left. How many cookies did Vikram have to begin with?"

What Are Evidence-Based Interventions to Improve English Learners' Math Problem-Solving?

Worked Example Strategy

The Worked Example strategy has been shown to be an effective instructional strategy to teach beginning algebra (Booth, Lange, Koedinger, & Newton, 2013). The student is presented with both correct and incorrect solutions to linear equations to draw the student's attention to common errors and misconceptions. Driscoll et al. (2016) describe a variation on this intervention using visual representations of each step in the problem solution. Students work in pairs to write answers to questions about what changed from each step to the next in the problem solution completed by a fictional student. Their adaptation is an example of how visual representations and opportunities to use limited language to explain mathematical reasoning can be used to reduce cognitive overload for all students, including English learners.

Here's how the Worked Example Strategy could be used to help an English learner:

Word problem: "Vikram really likes cookies. One day he opened a new bag and ate 5 cookies. There were only 3 cookies left. How many cookies were in the bag to begin with?"

The student would then be shown a visual representation of how a fictional student, Sarai, solved the problem:

Step 1: (Insert picture of a bag of cookies here.)
Step 2: (Insert picture of 5 cookies.)
Step 3: (Insert pictures of 5 cookies with bites out of each beside 3 whole cookies.)
Step 4: (Insert outline of a bag containing 5 partially eaten cookies and 3 whole cookies.)

The English learner would be asked to answer, verbally or in writing, questions for each step:

Step 1: What was in this bag?
Step 2: How many cookies are here? What happened to these cookies?
Step 3: What changed from Step 2 to Step 3?
Step 4: How many cookies did Vikram discover were in the bag to begin with?

Three Reads Strategy

The language in word problems needs to be revised to remove confusing English language terms and unfamiliar contexts, such as *barn* is for Native Alaskan children. The "Three Reads" strategy (Driscoll et al., 2016) can be used to reduce the risk of cognitive overload when English learners attempt to solve word problems. Students read the problem three times, answering a question after each reading:

1. Context: What is the problem about?
2. Purpose: What is the problem asking you to find?
3. Information: What is some important information given?

   Here's how the Three Reads Strategy could be used to help an English learner:
   Word Problem: "Vikram really likes cookies. He bought 8 cookies and ate 5 of them. How many cookies were left?"

1. The English learner, Taj, would be asked to read the problem aloud. (first read)
2. Taj would complete this statement in writing, "The problem is about _____"
3. Taj would read his answer about context. The interventionist would provide clarifications and alternate words to help Taj understand what the word problem is about.
4. Taj would read the problem aloud again. (second read)
5. Taj would complete this statement in writing, "I need to _____."
6. Taj would read his answer about purpose. The interventionist would provide clarifications and alternate words to help Taj understand what needs to be done to solve the word problem.
7. Taj would read the problem aloud again. (third read)
8. Taj would write a list of important information given in the problem.
9. Taj would read his answer about information. The interventionist would provide clarifications and alternate words to help Taj understand what information had been given in the word problem.

Dynamic Strategic Math

Several strategies are combined systematically to improve and maintain the problem-solving skills of English learners in the "dynamic strategic math" strategy. Orosco (2014) was successful in using the dynamic strategic math procedure with third-grade Latino students at risk for math disabilities, as documented using a multiple baseline design. The intervention includes opportunities for English learners to practice language skills with their teacher as well as other students as they develop their math reasoning skills (Driscoll et al., 2016; What Works Clearinghouse, 2007). Although this intervention is described as a means of helping English learners to increase their math problem-solving skills, all participants began the intervention with the computational skills required to solve the problems. Improvement that English learners demonstrated in this intervention was in terms of success in solving word problems that varied in complexity of vocabulary, not the complexity of the math skills.

Math word problems are grouped by four levels of complexity of English vocabulary. The basic level included math terms that are used in everyday conversation (e.g., *more*). The intermediate level consisted of math terms that are not directly associated with a specific math content area (e.g., *digits*). The advanced intermediate level included math terms directly associated with a specific math content area (e.g., *divisor*). The technical vocabulary level included terms associated with a

specific math terminology (e.g., *perimeter*). Dynamic assessment begins with the determination of the level at which the student can solve problems accurately without assistance. This represents the baseline phase.

The intervention begins with the teacher/interventionist teaching concepts and vocabulary associated with the student's vocabulary level that was established in the baseline phase. The teacher defines a math term associated with that vocabulary level, then contextualizes the vocabulary term, and demonstrates how to solve the example word problem. In the second intervention phase, the English learners are taught a set of problem-solving strategies (know, find, setup, solve, and check understanding). In the third intervention phase, students work in pairs to practice the problem-solving strategies. The teacher monitors the student pairs and reteaches strategies as needed.

Orosco's (2014) description of the dynamic strategic math strategy contains a detailed description of the intervention process in the appendix. The problem-solving strategies taught in the second intervention phase are familiar. However, the example of how the teacher contextualizes a vocabulary term in the first intervention phase is problematic because it represents the mistake described earlier in this chapter as teaching strategies for key words, in this case, the word *sum*. The important distinction between the dynamic strategic math strategy and the first two interventions—the Worked Example Strategy and the Three Reads Strategy—is that dynamic strategic math is designed to increase the level of English language complexity in word problems that the English learner understands. The other two strategies focus on development of student's math reasoning skills. Please see the Worked Example Strategy in action in Chapter 11.

References

Abedi, J., & Lord, C. (2010). The language factor in mathematics tests. *Applied Measurement in Education*, *14*(3), 219–223.

AIMSweb. (2014). Retrieved from http://www.aimsweb.com/

AIMSweb in Spanish. (2014). Retrieved from http://www.aimsweb.com/assessments/features/assessments/features/assessments/spanish-reading

Alpern, G. D. (2007). *Developmental Profile-Third Edition*. Retrieved from http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3

Anders, Y., Rossbach, H., Weinert, S., Ebert, S., Kuger, S., Lehrl, S., & von Maurice, J. (2012). Home and preschool learning environments and their relations to the development of early numeracy skills. *Early Childhood Research Quarterly*, *27*, 231–244. doi:10.1016/j.ecresq.2011.08.003.

Aparicio, E., & Nikolov, S. (2014). *Logramos-Tercera Edición (Logramos-3)*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/logramos-3

Barnhardt, C., Borsting, E., Deland, P., Pham, N., & Vu, T. (2005). Relationship between visual-motor integration and spatial organization of written language and math. *Optometry and Vision Science*, *82*(2), 138–143.

Barrera, M. (2006). Roles of definitional and assessment models in the identification of new or second language learners of English for special education. *Journal of Learning Disabilities*, *39*, 142–156. doi:10.1177/00222194060390020301.

Beery, K. E., Buktenica, N. A., & Beery, N. A. (2010). *Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition*. Retrieved from http://www.pearsonclinical.com/therapy/products/100000663/the-beery-buktenica-developmental-test-of-visual-motor-integration-6th-edition-beery-vmi.html

Booth, J. L., Lange, K. E., Koedinger, K. R., & Newton, K. J. (2013). Example problems that improve student learning in algebra: Differentiating between correct and incorrect examples. *Learning and Instruction*, *25*, 24–34.

Bracken, B. A., & McCallum, R. S. (2016). *Universal Nonverbal Intelligence Test-Second Edition*. Austin, TX: Pro-Ed, Inc.

Bull, R., & Johnston, R. S. (1997). Children's arithmetical difficulties: Contributions from processing speed, item identification, and short-term memory. *Journal of Experimental Child Psychology*, *65*, 1–24. doi:10.1006/jecp.1996.235.

Bull, R., Espy, K. A., & Wiebe, S. A. (2008). Short-term memory, working memory, and executive functions in preschoolers: Longitudinal predictors of mathematical achievement at age 7 years. *Developmental Neuropsychology*, *33*, 205–228. doi:10.1080/8756564080198231.

Connolly, A. J. (2007). *KeyMath-3*. Bloomington, MN: Pearson Assessment.

De Smedt, B., Janssen, R., Bouwens, K., Verschaffel, L., Boets, B., & Ghesquie're, P. (2009). Working memory and individual differences in mathematics achievement: A longitudinal study from first grade to second grade. *Journal of Experimental Child Psychology*, *103*, 186–201. doi:10.1016/j.jecp.2009.01.004.

Dehaene, S. (2011). *The number sense: How the mind creates mathematics*. New York, NY: Oxford University Press.

DIBELS-Sixth Edition. (2016). Retrieved from https://dibels.uoregon.edu/assessment/dibels/index

DiGisi, L. L., & Fleming, D. (2005). Literacy specialists in math class! Closing the achievement gap on state math assessments. *Voices from the Middle*, *13*(1), 48–52.

Driscoll, M., Nikula, J., & DePiper, J. D. (2016). *Mathematical thinking and communication: Access for English learners*. Portsmouth, NH: Heinemann.

Elliott, C. D. (2007). *Differential ability scales* (2nd ed.). San Antonio, TX: Harcourt Assessment.

Feifer, S. (2014). *The neuropsychology of mathematics*. Retrieved from https://www.mspaonline.net/wp-content/uploads/2014/01/Thurs-Feifer-90-Minute-Mathematics-2014.pdf

Fuchs, L. S., Fuchs, D., Compton, D. L., Powell, S. R., Seethaler, P. M., Capizzi, A. M., … Fletcher, J. M. (2006). The cognitive correlates of third-grade skill in arithmetic, algorithmic computation, and arithmetic word problems. *Journal of Educational Psychology*, *98*, 29–43. doi:10.1037/0022-0663.98.1.29.

Fuchs, L. S., Geary, D. C., Compton, D. L., Fuchs, D., Hamlett, C. L., & Bryant, J. V. (2010a). The contributions of numerosity and domain general abilities to school readiness. *Child Development*, *81*, 1520–1533. doi:10.1111/j.1467-8624.2010.01489.x.

Fuchs, L. S., Geary, D. C., Compton, D. L., Fuchs, D., Hamlett, C. L., Seethaler, P. M., … Schatschneider, C. (2010b). Do different types of school mathematics development depend on different constellations of numerical and general cognitive abilities? *Developmental Psychology*, *46*, 1731–1746. doi:10.1037/a0020662.

Fuchs, L. S., Geary, D. C., Fuchs, D., Compton, D. L., & Hamlett, C. L. (2014). Sources of individual differences in emerging competence with numeration understanding versus multidigit calculation skill. *Journal of Educational Psychology*, *106*(2), 482–498.

Geary, D. C., Hoard, M. K., & Nugent, L. (2012). Independent contributions of the central executive, intelligence, and in-class attentive behavior to developmental change in the strategies used to solve addition problems. *Journal of Experimental Child Psychology*, *113*, 49–65. doi:10.1016/j.jecp.2012.03.003.

Geary, D. C. (2011). Cognitive predictors of achievement growth in mathematics: A 5-year longitudinal study. *Developmental Psychology*, *47*(6), 1539–1552. doi:10.1037/a0025510.

Ginsburg, H., & Baroody, A. (2003). *Test of Early Mathematics Ability--Third Edition*. Austin, TX: Pro-Ed.

Gottlieb, M. (2006). *Assessing English language learners: Bridges from language proficiency to academic achievement*. Thousand Oaks, CA: Corwin Press.

Isaacs, E. B., Edmonds, C. J., Lucas, A., & Gadian, D. G. (2001). Calculation difficulties in children of very low birthweight: A neural correlate. *Brain*, *124*(Pt 9), 1701–1707.

Julian, T. (2012). *Work-life earnings by field of degree and occupation for people with a Bachelor's degree: 2011 American Community Survey Briefs*. US Census Bureau. Retrieved from http://files.eric.ed.gov/fulltext/ED537269.pdf

Kaufman, A. S., & Kaufman, N. L. (2014). *Kaufman Test of Educational Achievement* (3rd ed.). Bloomington, MN: Pearson.

Kersaint, G., Thompson, D. R., & Petkova, M. (2013). *Teaching mathematics to English language learners* (2nd ed.). New York: Routledge.

Krajewski, K., & Schneider, W. (2009). Exploring the impact of phonological awareness, visual-spatial working memory, and preschool quantity-number competencies on mathematics achievement in elementary school: Findings from a 3-year longitudinal study. *Journal of Experimental Child Psychology*, *103*, 516–531. doi:10.1016/j.jecp.2009.03.009.

Kuhn, J.-T. (2015). Developmental dyscalculia: Neurobiological, cognitive, and developmental perspectives. *Zeitschrift für Psychologie*, *223*(2), 69–82. doi:10.1027/2151-2604/a000205.

Lee, J., Lee, Y. A., & Amaro-Jiménez, C. (2011). Teaching English language learners (ELLs) mathematics in early childhood. *Childhood Education*, *87*(4), 253–260. doi:10.1080/00094056.2011.10523187.

National Council of Teachers of Mathematics. (2013). *Teaching mathematics to English language learners: A position statement of the National Council of Teachers of Mathematics*. Retrieved from http://www.nctm.org/Standards-and-Positions/Position-Statements/Teaching-Mathematics-to-English-Language-Learners/

Orosco, M. J. (2014). Word problem strategy for Latino learners at risk for math disabilities. *Learning Disabilities Quarterly*, *37*(1), 45–53.

Ramos, J., Hresko, W., & Ramos, M. (2006). *Prueba de Habilidades Académicas Iniciales (PHAI)*. Retrieved from http://www.proedinc.com/customer/productView.aspx?ID=3717

Schrank, F., McGrew, K., & Mather, N. (2014). *Woodcock-Johnson IV Tests of Achievement* (4th ed.). Boston, MA: Houghton, Mifflin, Harcourt.

Shalev, R. S., Manor, O., Kerem, B., Ayali, M., Badichi, N., Friedlander, Y., & Gross-Tsur, V. (2001). Developmental dyscalculia is a familial learning disability. *Journal of Learning Disabilities*, *34*, 59–65. doi:10.1177/ 002221940103400105.

Swanson, H. L., Jerman, O., & Zheng, X. (2008). Growth in working memory and mathematical problem solving in children at risk and not at risk for serious math difficulties. *Journal of Educational Psychology*, *100*, 343–379. doi:10.1037/0022-0663.100.2.343.

Vukovic, R. K., Lesaux, N. K., & Siegel, L. S. (2010). The mathematics skills of children with reading difficulties. *Learning and Individual Differences*, *20*, 639–643. doi:10.1016/j.lindif.2010.08.004.

Wechsler, D. (2004). *Wechsler Intelligence Scale for Children—Fourth Edition—Spanish*. San Antonio, TX: Harcourt Assessment.

Wechsler, D. (2014). *Wechsler Intelligence Scale for Children–Fifth Edition*. Bloomington, MN: Pearson.

What Works Clearinghouse. (2007). *Peer tutoring and response groups*. WWC Intervention Report. Retrieved from http://ies.ed.gov/ncee/wwc/interventionreport.aspx?sid=363

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/achievement/bateria-iii-wm#sthash.QpZ1UuKz.dpuf

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Habilidades Cognitivas Normative Update*. Boston, MA: Houghton, Mifflin, Harcourt.

Woodward, S., Beckmann, M., Driscoll, M., Franke, P., Herzig, A., Jitendra, K. R., …, Ogbuehi, P. (2012). *Improving mathematics problem solving in grades 4 through 8: Practice guide (NCEE 2012-4055)*. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Educational Sciences, U. S. Department of Education. Retrieved from http://ies.ed.gov/ncee/wwc/practiceguide.aspx?sid=16

Chapter 10
Written Expression

Introduction

Written expression is perhaps one of the most complex academic tasks for all children, and especially so for English learners. Before children begin to read—even before they can read a single letter—they have heard the phoneme (or sound) that the letter makes. This is *language by ear* or aural language (Berninger, Abbott, Abbott, Graham, & Richards, 2002). The child is also learning to say the sounds, which is *language by mouth* (oral). Aural and oral languages precede *language by eye*, or reading. And language by eye precedes *language by hand*, or writing (Berninger et al., 2002). As each of these sensory and motor elements is added, the coordinating and integrating tasks for the brain and the muscles become more complex. Each of these language systems follows its own trajectory and has its own internal organization in the brain; each of the language systems must also interact with all of the others (Berninger et al., 2002). Because the systems must all interact and work together, when we begin to have concerns about a child's progress in reading and/or writing, we can gain helpful insights about both by looking at the child's written products. For example, there is a close give-and-take relationship between word reading and word spelling (Babayiğit, 2014).

What to Know Before Writing Disorder Assessment and Intervention

Just as assessments of verbal intelligence correlate positively with reading comprehension, assessments of verbal intelligence correlate positively with writing (Niedo, Abbott, & Berninger, 2014). Written text production is dependent upon verbal skills. Research shows that individuals with oral language problems also have problems with written expression (Babayiğit, 2014).

When children put pencil to paper in order to write, they must find the letter forms they need in long-term memory. They must also plan to form the letters before they employ their motor system to write the letters. Incoming visual and tactile data are being received as the hands and fingers move. The temporary storage and processing system that is working memory has to be in place when the eyes see and the brain analyzes a written letter or word. Writers have to form letters legibly and be attentive to the spatial arrangement of the letters on, below, and above the lines on paper. Letters need to be formed easily and quickly so the working memory and cognitive energies can focus on creating ideas, selecting words, and building sentences that are appropriate to the audience. The writer must attend sufficiently to the details of forming the letters so the audience can distinguish, for example, an *n* from an *m* (Berninger, 2012).

What Is Happening in the Brain and the Muscles During Writing?

There are a variety of executive functions that must work together when students write (Hooper, Swartz, Wakely, de Kruif, & Montgomery, 2002). Good writers are able to organize, plan, strategize, problem-solve, and self-monitor. Their working memory is effective, and they have cognitive flexibility, fluency, and efficiency (Hooper et al., 2002). Short-term memory, long-term memory, and fine motor skills are also operative during writing, as well as focusing, dividing, and shifting attention (Hooper et al., 2011). Language functions are important in writing. Assessments of verbal intelligence correlate positively with spelling and composition (Niedo et al., 2014).

When language by hand or writing takes place, the brain must coordinate the muscles that allow transcription of ideas into handwriting. When assessing writing, we should be clear that handwriting and composition are two different things. Some brilliant writers and editors—notably Horace Greeley, the founder of *The New Yorker*—have been known for their poor penmanship (Graham, Berninger, & Weintraub, 1998). In a study of legibility and speed in first through ninth graders, these researchers found that girls' handwriting was more legible than boys' and that, although left-handers wrote more slowly than right-handers, there was not a difference between the legibility of the two groups' handwriting. Several studies have found that when teachers grade two or more versions of a paper which differ only in the legibility of the written product, papers that are written more neatly tend to be assigned higher grades (Briggs, 1980; Chase, 1986; Hughes, Keeling, & Tuck, 1983). Speed of handwriting can affect how quickly students can complete assignments and the ease with which they take notes during lectures (Graham, 1992; Graham & Weintraub, 1996).

The writer must also be interested and motivated (Richards et al., 2009). Functional magnetic resonance imaging (fMRI) has shown that, when learning to write new letters, the brain activation of poor writers is spatially more extensive throughout the brain than is the brain activation of good writers. The surplus regions

of activation in the brain of poor writers are theorized to reflect some inefficiency in initially learning how to form letters (Richards et al., 2009).

Working memory is one example of a neurocognitive function that plays an important role in writing and is typically assessed during psychoeducational evaluations. Working memory, or the "cognitive workspace," helps writers actively maintain multiple ideas, retrieve semantic rules from long-term memory, and self-monitor during the act of putting pen to paper (Hooper et al., 2002). But there are many other executive functions at work during writing. Four major executive function domains, according to Denckla (1996), are:

- Initiating—organization, planning, strategy, fluency, efficiency, and working memory
- Sustaining—attention-driven behaviors
- Inhibiting/stopping—inhibiting inappropriate responses
- Set shifting—problem-solving efficiency, cognitive flexibility, and self-monitoring

The initiation and set shifting executive functions have been shown to separate good from poor writers (Hooper et al., 2002). We often see writing problems in children with attention-deficit hyperactivity disorder (ADHD; Mayes & Calhoun, 2007). Several of the executive functions listed above also are problematic for individuals with ADHD (Denckla et al., 2013).

How Does Normal Spelling Develop?

When children begin school in kindergarten, they start off on a journey of learning to match phonemes to graphemes. (As a reminder, graphemes are the letter or letter combinations that represent phonemes.) In some English words the phoneme maps directly onto a single grapheme. The letter that makes the /d/ sound in *dad* is d. In many other words in English, the grapheme must be remembered according to how it sounds in that particular word. For example, in the word *cough*, the grapheme that makes the /f/ sound is *gh*. When children first begin to learn to spell, they may use invented spelling (Bahr, Silliman, Berninger, & Dow, 2012). Their spellings are "invented" because they are using the letters they have learned make certain sounds to write words. The invented spelling for *little* might be *lidl*. This is a developmentally normal phonologically based spelling pattern for writing words in English. In the early grades, regularly spelled words are typically taught first and unusual spellings are taught later.

When English learners begin learning the spelling for English words, they may also go through the invented spelling stage before they have learned all of the irregular orthography in English. But they may also "invent" spellings based on the ways sounds are spelled in their first language. For example, in some areas where Spanish is spoken the sounds of the letters *b* and *v* are virtually indistinguishable. The *ll* letter combination is pronounced with a /y/ sound as in the word *you*, whereas the

single *l* is the same as in English. So in spelling the word *vanilla*, an English learner whose first language is Spanish may spell it *banila*. This spelling of the word *vanilla* is not a sign of dyslexia or dysgraphia; it is a normal developmental stage of spelling for an English learner whose first language is Spanish. This poses a quandary for examiners who are not well acquainted with the child's first language. However, if there is a trusted adult who is a speaker and reader of the child's first language, that person can be consulted as to whether or not the student's spelling, grammar, and punctuation errors make sense given the orthography of the native language.

Just as monolingual English-speaking children spend their first 3 years "learning to read" and then switch over to "reading to learn" (Chall, 1983), there is a transition from third to fourth grade when instruction shifts from "learning to write" to "writing to learn" (Berninger, Garcia, & Abbott, 2009). This can become a problem instructionally for English learners who enter the English-speaking school after third grade. They still need explicit instruction in basic spelling, punctuation, grammar, and other aspects of writing that are taught in the early grades, even though teachers are no longer focusing on that instruction in the classroom.

Multiple Indicators of a Writing Disorder

Observations of Clinical Signs

The focus of writing instruction and writing assessment changes as the elementary grades progress. In kindergarten and first grade, children are learning to copy words and short sentences and they are encouraged to begin generating text (Dombek & Al Otaiba, 2016). A writing test for a kindergartner or first or second grader might involve writing the alphabet and spelling such commonly occurring words as *can, not*, *bike*, or *want*. A test might also include capitalization and punctuation items. By the end of second grade, writers need to have mastery of basic transcription and text generation because, in the ensuing grades, they must move on to storing and processing multiple words and sentences, maintaining attention, engaging short- and long-term memory, and using metacognitive and metalinguistic strategies (Berninger et al., 2009). Berninger and Winn (2006) state that the processes in the brain must work in concert and must operate fluently; rapid automatized naming has been shown to correlate positively with writing. (Rapid automatized naming is the ability to name a series of continuously presented well-known symbols as quickly as possible; stimuli are typically from the same category, such as numbers, letters, colors, or objects, as defined by Shaul and Nevo in 2015.) Assessments might include task prompts such as giving students a picture or a story starter and asking them to write for a certain amount of time. The examinee's written product might be scored on a variety of dimensions, such as the focus and details of the content, voice, organization, word choice, sentence structure, grammar, mechanics, and spelling (ReadWriteThink, 2016).

According to the *Diagnostic and Statistical Manual of Mental Disorders-Fifth Edition* (*DSM–5*; American Psychiatric Association, 2013), individuals with writing disorders may make multiple errors of grammar and punctuation within sentences, they may use poor paragraph organization, and the ideas in their writing may lack clarity. Writers with dysgraphia may tend to reverse, omit, and/or add letters and sounds in their spelling of words.

The clinical signs of a disorder of written expression are different than what is seen in invented spelling, as mentioned above. Take the word *blue* as an example. An individual who is just beginning to learn to spell in English might initially spell it *blu*. Although the spelling is incorrect, all three phonemes are in the right places, they are all represented, and no extra phonemes have been inserted. A student who writes *bul* has the graphemes that represent the phonemes in the wrong places. A student who writes *bu* has omitted one of the phonemes. And a student who writes *blbu* has added a letter (and sound) where it does not belong.

Educators need to be cautious about placing young children in special education unnecessarily, especially young English learners. We want to have multiple data points that indicate specific learning disabilities. Analyzing the errors that children make in their spelling gives the educator a little window into the brain. We can see through these clinical signs that the child is not mapping the phonemes onto the graphemes where they belong.

Clinical signs of disorders in writing are listed in Table 10.1. Writing skills are built upon the components of reading—decoding, fluency, vocabulary, background knowledge, and comprehension. Much can be learned about students' writing skills by investigating their reading and vice versa. When analyzing a student's writing, please remember that some of the signs in Table 10.1 are developmentally appropriate

Table 10.1 Clinical Signs of a Disorder of Written Expression

Clinical signs of a disorder of written language
• Letter omissions
• Letters added where they do not belong
• Letter reversals
• Misshapen letters and erratic legibility
• Words or letters that float above the lines or dip below them
• Irregular spacing; letters and/or words are crowded together or spaced too far apart   • Poor margination   • Lines of the letters are especially heavy and overworked and/or light and feathery   • Inconsistent spelling   • Simplistic sentence structure*
• Multiple grammatical errors within sentences*
• Multiple punctuation errors*
• Poor paragraph organization*
• Ideas in writing lack clarity*
• Slow and labored writing; limited content*

*These behaviors may also occur when English learners are in the process of learning to write in English

for young children, such as kindergartners and first graders. When children first learn to write, they may reverse letters, and their letters may be misshapen, irregularly spaced, and not exactly on the lines.

Record Review

Chapter 11 provides a guide for questions that can be answered when doing a record review. Also, please see Chapter 3 for detailed information on the data that can be gleaned through record review.

Interviews

Chapter 11 presents the questions that can be answered based on interview with caregivers and teachers. Be sure to get relevant health information from the school nurse and have vision and hearing checked. Also, please see Chapter 3 for detailed information about data that can be gathered from interviews.

Tests

When the writing of monolingual English speakers is assessed in a comprehensive evaluation, the school psychologist characteristically administers a standardized achievement test battery which assesses reading and math as well as writing. The writing portion of the battery may include a subtest which measures writing fluency, a spelling subtest, and a subtest that requires the examinee to write a short essay based on a prompt which assesses, for example, content, organization, word choice, and sentence fluency. Capitalization, punctuation, and other conventions are also sometimes addressed in these short essays. There are dangers, however, in using a single composition, a spelling test, and a test of writing fluency to determine if a child has a writing disorder. Research has shown that a single composition does not provide a reliable estimate of a student's need for special writing instruction; multiple samples of writing are needed (Graham, Hebert, Sandbank, & Harris, 2016). The same study found that assessing a student's writing in one genre only weakly predicted how well the child writes in other genres (e.g., story, personal narrative, opinion essay, informative text). It is worthwhile to look at samples of the student's written classroom products in addition to administering written expression subtests that are a part of an achievement test battery.

How Do We Use Tests with English Learners to Determine Writing Disorders?

Writing is a complex skill. Formation of letters, spacing of letters and words, handwriting, spelling, editing, planning, translating, reading, attentional control, integration of information, idea generation, topic knowledge, understanding of audience, retrieval of grammatical rules from long-term memory, and maintenance of multiple ideas are all components of writing. The cognitive correlates of these skills include long-term memory, short-term memory, working memory, verbal memory, rapid automatized naming, visual-motor integration, as well as attention and other executive functions.

Consider Maxim who immigrates to Canada when he is ready to start fourth grade. He has to learn receptive and expressive oral language in English. He begins to learn to read and write the English alphabet. It is awkward for him to form English letters. He learns the spelling of high-frequency words and he starts to learn regular and irregular spelling patterns both in reading and writing. He learns how to construct sentences grammatically and struggles as the rules of sentence construction in Russian interfere with the sentence construction rules in English. He is asked by his teachers to journal on different topics so he must incorporate his ideas and thoughts while attending to all of these other components of writing. His attention and memory are on overload. There are too many cognitive tasks that are demanding attention.

This is a time when school psychologists want to look closely for clinical signs of a writing disorder and see if there are multiple indicators that support such a diagnosis. Does Maxim have misshapen letters? Words or letters that float above the lines or dip below them? Irregular spacing of letters and words? Does he perform poorly on tests of visual perception, fine motor coordination, and visual-motor integration, such as the *Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition* (Beery, Buktenica, & Beery, 2010)? Are there problems with rapid automatized naming? Long-term, short-term, and/or working memory? Attention and/or other executive functions?

The most helpful information will come from diagnostic instruments and instruments that provide data that can be linked to interventions. When choosing standardized tests and using scores, make sure that the examinee is represented in the norming sample. Remember that it can take 5–7 years for English learners *without* disabilities to achieve cognitive academic language proficiency skills. Tests which require fluency in writing can be especially problematic when administered to English learners. The writing of English learners is likely to be slow and labored before they achieve cognitive academic language proficiency in English.

Keep in mind that some of the clinical signs of a writing disorder are shared by attention-deficit hyperactive disorder (see, for example, Åsberg Johnels, Kopp, & Gillberg, 2014). Writing difficulties are common in children with ADHD, a finding that crosses countries and orthographies, including Spanish (Åsberg Johnels et al., 2014; Casas, Ferrer, & Fortea, 2013). Consequently, there should be some measure of attention included in the evaluation. This can be done with interviews, record review, and rating scales if standardized tests are not appropriate for the child. Be sure to include information and rating scales completed by the parent(s) and the child's ESL teacher.

Table 10.2 Formal Assessments Related to Disorders of Written Expression

	For any English learner	For Spanish speakers
Writing tests	• *Diagnostic Assessments of Reading-Second Edition* (Roswell, Chall, Curtis, & Kearns, 2005) • *Kaufman Tests of Educational Achievement-Third Edition* (Kaufman & Kaufman, 2014) • *Test of Early Written Language-Third Edition* (Hresko, Herron, Peak & Hicks, 2012)	• *Batería III Woodcock-Muñoz Normative Update Pruebas de Aprovechamiento* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007) • *Aprenda: La Prueba de Logros en Español, Tercera Edición* (Aprenda-3, 2005) • *Logramos-Tercera Edición* (Aparicio & Nikolov, 2014)
Mental ability tests	• *Universal Nonverbal Intelligence Test-Second Edition* (Bracken & McCallum, 2016) • *Developmental Profile-Third Edition* (Alpern, 2007) • *Wechsler Intelligence Scale for Children-Fifth Edition Nonverbal Index* (Wechsler, 2014) • *Differential Ability Scales-Second Edition Special Nonverbal Composite* (Elliott, 2007)	• *The Wechsler Intelligence Scale for Children-Fourth Edition-Spanish* (Wechsler, 2004) (The WISC-V-Spanish is in development.) • *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007) • *Developmental Profile-Third Edition* (Alpern, 2007)
Processing tests	• *Beery-Buktenica Test of Visual-Motor Integration* (Beery, Buktenica & Beery, 2010) • *Woodcock-Johnson Tests of Cognitive Abilities-Fourth Edition* (Schrank, McGrew & Mather, 2014)	• *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas* (Woodcock, Muñoz-Sandoval, McGrew & Mather, 2004/2007)
Screeners and progress monitors	• AIMSweb (2014) • DIBELS-Sixth Edition (2016)	• AIMSweb Spanish (2014)

More information about these tests is included in Chap. 11

Table 10.2 lists tests that can be helpful in assessing English learners' achievement and mental ability. There is also a list of Spanish tests that can be considered if the English learners' first language is Spanish and they fit the test's norms. More specific information about these tests can be found in Chap. 11.

Test Highlight: *The Test of Early Written Language-Third Edition* (TEWL-3).

One writing test that gives extensive diagnostic information is the *Test of Early Written Language-Third Edition* (TEWL-3; Hresko, Herron, Peak, & Hicks, 2012). It has both age and grade norms. If you want to find out the approximate grade level

of your English learner's writing skills, this instrument would be helpful in terms of making decisions about the level of intervention needed. With the TEWL-3, you can find out whether students have mastered a broad range of basic writing skills (meta-linguistic knowledge, directionality, organizational structure, awareness of letter features, spelling, capitalization, punctuation, proofing, sentence combining, and ability to write logical sentences). The TEWL-3 also measures contextual writing skills, such as story format, cohesion, thematic maturity, ideation, and story structure. An overall writing score reflects student skills in composition, syntax, mechanics, fluency, cohesion, and text structure. This is a test that can be given to older English learners who may still be learning writing skills that are taught at younger ages, bearing in mind that it should be used for diagnostic information and that standard scores should not be reported.

Test-Teach-Test Assessments

Test-teach-test method	Definition	Example
Curriculum-based dynamic assessment (CDA)	Teaching a specific authentic task and collecting progress and procedural data as students acquire the task (Barrera, 2006)	The student must write for 4 minutes based on a short stem or "story starter." Based on the student's written product, interventions can target writing mechanics, conventions, or other aspects of written language. After 2 weeks, the student is given another probe to see the rate of improvement

Test-teach-test assessments can be created by the school psychologist or by the teacher in order to assess spelling and/or writing. The Intervention Central website has detailed instructions for generating and scoring writing probes (http://www.jim-wrightonline.com/pdfdocs/cbmresources/cbmdirections/cbmwrit.pdf). The objective of the probes is to find the specific writing, spelling, grammatical, or mechanics skills that the student has mastered.

Written expression is likely to be one of the greatest challenges for adolescent newcomers, those English learners in grades 6–12 who have only been in an English-speaking school for a year or two. They typically have limited skills in spoken English and may not have been exposed to secondary-level English textbooks (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006). If these English learners do not have the background knowledge for the topics in their textbooks, they are very limited in their understanding of what they read. Thus, written expression at the level expected in the middle and high school grades will be extremely difficult for these English learners. Because reading comprehension and written expression are interrelated, instruction in writing can improve English learners' reading comprehension skills (Francis et al., 2006).

Teaching and Intervening

What Are Characteristics of Good Classroom Instruction for English Learners?

Good instruction for English learners involves regular classroom routines "that progressively model, scaffold, engage students in, and practice multiple drafts of writing" (Cumming, 2016, p. 366). Concurrent with writing routines, English learners need to engage in reading extensively.

Native English speakers approach the task of written expression with extensive background knowledge of English grammar and syntax. They "think" in English and can often self-correct their written work by simply reading it aloud slowly. For English learners, written expression in English is much more challenging. They need explicit instruction in English grammar so that they can develop the academic vocabulary needed for written expression (Cumming, 2016; Panofsky et al., 2005).

Teacher feedback on the written work of English learners is more effective when it is specific rather than general, when examples from the student's writing are identified, and when the identified errors must be corrected by the student (Panofsky et al., 2005). As English learners become more skilled in writing, it is typical that they may strategically switch between their first language and English as they search for appropriate words (Cumming, 2016).

Recommendations for helping English learners' written expression of academic English (Office of English Language Learning and Migrant Education, Indiana Department of Education, n.d.) include the following:

- Provide students with a graphic organizer to complete before beginning writing.
- Have students write short summaries of what they read.
- Show students a sample of what is expected for completion of the writing assignment.
- Have English learners work with other students to complete writing activities (e.g., partner work, cooperative learning teams).
- Focus on the content of English learners' writing; don't grade their work down for grammar and spelling mistakes.

What Are Interventions to Improve English Learners' Written Expression?

Explicit Instruction in Revision Strategies

Written expression takes practice as any skill does. Teachers can provide extensive feedback on student papers, but if the feedback is not used by students, then they are likely to continue to make the same mistakes. Sengupta (2000) showed that

secondary students in Hong Kong improved their writing in English when they were given explicit instruction in revision strategies and were required to use those strategies to revise six of their papers. These students were compared to their peers whose papers were corrected and returned by their teacher, but instead of revising their work, these students completed new writing tasks. They completed a total of 12 compositions in the same period of time that the first group wrote, revised, and resubmitted six compositions. (For these students in Hong Kong, English was the academic language used at the school, but Cantonese was the social language of the students.)

This intervention included teaching the students the revision process as well as having them work within small groups of peers. Specifically, students learned to analyze and evaluate revisions, as well as generate alternatives and/or elaboration of their written compositions. This approach contrasts with the practice of the student submitting a composition, the teacher evaluating via suggested revisions and/or grading of the composition, and then another writing assignment being given. Instead students are guided through the iterative process of revision that is fundamental to good written composition.

Here's how *Explicit Instruction in Revision Strategies* could be used to help an English learner:

1. Have two English learners each complete a written composition. The interventionist or teacher makes comments and corrections on the compositions. The English learners make the revisions and resubmit their compositions.
2. Prepare a worksheet consisting of a text segment from one of the compositions showing two versions of the text segment: the initial submission with teacher corrections and comments and the segment as revised by the student.
3. Using the worksheet, have the students discuss what problems the teacher found with the text segment, the comments made by the teacher, the meaning of any symbols used by the teacher, how the writer dealt with these identified problems, and alternative solutions that the writer could have used.
4. Have students prepare and submit second revisions of their compositions.
5. Select a few compositions to use for a discussion of the writer's intentions.
6. Have student pairs respond to specific questions about their compositions: What is the writer's intention? How do I know the writer's intention? Am I confused as to the writer's intention? If so, why? What suggestions can I give to the writer?
7. Have students prepare another revision of their written compositions.

(This explanation assumes that the interventionist is working with at least one pair of English learners. The same procedure could be used with only one English learner, if necessary.)

References

AIMSweb. (2014). Retrieved from http://www.aimsweb.com/
AIMSweb in Spanish. (2014). Retrieved from http://www.aimsweb.com/assessments/features/assessments/features/assessments/spanish-reading

Alpern, G. D. (2007). *Developmental Profile-Third Edition*. Retrieved from http://www.wpspub-lish.com/store/p/2743/developmental-profile-3-dp-3

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.

Aparicio, E., & Nikolov, S. (2014). *Logramos-Tercera Edición (Logramos-3)*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/logramos-3

Aprenda: La Prueba de Logros en Español, Tercera Edición. (2005). Retrieved from http://www.pearsonassessments.com/learningassessments/products/100000585/aprenda-3-aprenda-la-prueba-de-logros-en-espanol-tercera-edicion.html

Åsberg Johnels, J., Kopp, S., & Gillberg, C. (2014). Spelling difficulties in school-age girls with attention-deficit/hyperactivity disorder: Behavioral, psycholinguistic, cognitive, and graphomotor correlates. *Journal of Learning Disabilities*, *47*(5), 424–434. doi:10.1177/0022219412467058.

Babayiğit, S. (2014). Contributions of word-level and verbal skills to written expression: Comparison of learners who speak English as a first (L1) and second language (L2). *Reading and Writing*, *27*, 1207–1229. doi:10.1007/s11145-013-9482-z.

Bahr, R. H., Silliman, E. R., Berninger, V. W., & Dow, M. (2012). Linguistic pattern analysis of misspellings of typically developing writers in grades 1–9. *Journal of Speech, Language, and Hearing Research*, *55*, 1587–1599. doi:10.1044/1092-4388(2012/10-0335).

Barrera, M. (2006). Roles of definitional and assessment models in the identification of new or second language learners of English for special education. *Journal of Learning Disabilities*, *39*, 142–156. doi:10.1177/00222194060390020301.

Beery, K. E., Buktenica, N. A., & Beery, N. A. (2010). *Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition*. Retrieved from http://www.pearsonclinical.com/therapy/products/100000663/the-beery-buktenica-developmental-test-of-visual-motor-integration-6th-edition-beery-vmi.html

Berninger, V. W., & Winn, W. D. (2006). Implications of advancements in brain research and technology for writing development, writing instruction, and educational evolution. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *The handbook of writing research* (pp. 96–114). New York: Guilford.

Berninger, V. W., Garcia, N. P., & Abbott, R. D. (2009). Multiple processes that matter in writing instruction and assessment. In G. A. Troia (Ed.), *Instruction and assessment for struggling writers: Evidence-based practices* (pp. 15–51). New York, NY: Guilford.

Berninger, V. W. (2012). Strengthening the mind's eye: The case for continued handwriting instruction in the 21st century. *Principal*, *91*(5), 28–31.

Berninger, V. W., Abbott, R. D., Abbott, S. P., Graham, S., & Richards, T. (2002). Writing and reading: Connections between language by hand and language by eye. *Journal of Learning Disabilities*, *35*(1), 39–56.

Bracken, B. A., & McCallum, R. S. (2016). *Universal Nonverbal Intelligence Test-Second Edition*. Austin, TX: Pro-Ed, Inc

Briggs, D. (1980). A study of the influence of handwriting upon grades using examination scripts. *Educational Review*, *32*, 185–193.

Casas, A. M., Ferrer, M. S., & Fortea, I. B. (2013). Written composition performance of students with attention-deficit/hyperactivity disorder. *Applied Psycholinguistics*, *34*(3), 443–446. doi:10.1017/S0142716411000828.

Chall, J. (1983). *Stages of reading development*. New York: McGraw-Hill.

Chase, C. (1986). Essay test scoring: Interaction of relevant variables. *Journal of Educational Measurement*, *23*, 33–41.

Cumming, A. (2016). Writing development and instruction for English language learners. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (2nd ed., pp. 364–371). New York, NY: Guilford Press.

Denckla, M. B. (1996). A theory and model of executive function. In G. R. Lyon & N. A. Krasnegor (Eds.), *Attention, memory, and executive function* (pp. 263–278). Baltimore: Brookes.

Denckla, M. B., Barquero, L. A., Lindström, E. R., Benedict, S. L., Wilson, L. M., & Cutting, L. E. (2013). Attention-deficit/hyperactivity disorder, executive function, and reading comprehen-

sion: Different but related. In H. L. Swanson, K. R. Harris & S. Graham (Eds.), *Handbook of learning disabilities* (2nd ed., pp. 155–168). New York, NY: The Guilford Press.

DIBELS-Sixth Edition. (2016). Retrieved from https://dibels.uoregon.edu/assessment/dibels/index

Dombek, J. L., & Al Otaiba, S. (2016). Curriculum-based measurement for beginning writers (K-2). *Intervention in School and Clinic*, *51*(5), 276–283. doi:10.1177/1053451215606691.

Elliott, C. D. (2007). *Differential ability scales* (2nd ed.). San Antonio, TX: Harcourt Assessment.

Francis, D. J., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2006). *Practical guidelines for the education of English language learners: Research-based recommendations for serving adolescent newcomers*. Portsmouth, NH: Center on Instruction, RMC Research Corporation. Retrieved from www.centeroninstruction.org

Good, R. H., Baker, D. L., Knutson, N., & Watson, J. M. (2006). *Indicadores Dinámicos del Éxito en la Lectura*. Retrieved from https://dibels.org/idel.htm

Graham, S. (1992). Issues in handwriting instruction. *Focus on Exceptional Children*, *25*, 1–14.

Graham, S., & Weintraub, N. (1996). A review of handwriting research: Progress and prospects from 1980 to 1994. *Educational Psychology Review*, *8*, 781–791.

Graham, S., Berninger, V. W., & Weintraub, N. (1998). Development of handwriting speed and legibility in grades 1–9. *Journal of Educational Research*, *92*(1), 42–52.

Graham, S., Hebert, M., Sandbank, M. P., & Harris, K. R. (2016). Assessing the writing achievement of young struggling writers: Application of generalizability theory. *Learning Disability Quarterly*, *39*(2), 72–82. doi:10.1177/0731948714555019.

Hooper, S. R., Costa, L., McBee, M., Anderson, K. L., Yerby, D. C., Knuth, S. B., & Childress, A. (2011). Concurrent and longitudinal neuropsychological contributors to written language expression in first and second grade students. *Reading and Writing*, *24*, 221–252. doi:10.1007/s11145-010-9263-x.

Hooper, S. R., Swartz, C. W., Wakely, M. B., de Kruif, R. E. L., & Montgomery, J. W. (2002). Executive functioning in elementary school children with and without problems in written expression. *Journal of Learning Disabilities*, *35*(1), 57–68.

Hresko, W. P., Herron, S. R., Peak, P. R., & Hicks, D. L. (2012). *Test of Early Written Language-Third Edition*. Retrieved from http://www.pearsonclinical.com/language/products/100000086/test-of-early-written-language-third-edition-tewl-3.html#tab-details

Hughes, D. C., Keeling, B., & Tuck, B. F. (1983). Effects of achievement expectations and handwriting quality on scoring essays. *Journal of Educational Measurement*, *20*, 65–70.

Kaufman, A. S., & Kaufman, N. L. (2014). *Kaufman Test of Educational Achievement* (3rd ed.). Bloomington, MN: Pearson.

Mayes, S. D., & Calhoun, S. L. (2007). Learning, attention, writing, and processing speed in typical children and children with ADHD, autism, anxiety, depression, and oppositional-defiant disorder. *Child Neuropsychology*, *13*, 469–493.

Niedo, J., Abbott, R. D., & Berninger, V. W. (2014). Predicting levels of reading and writing achievement in typically developing, English-speaking 2nd and 5th graders. *Learning and Individual Differences*, *32*(5), 54–68.

Office of English Language Learning and Migrant Education, Indiana Department of Education. (n.d.). *Helping English language learners understand content area texts*. Retrieved from www.doe.in.gov/englishlanguagelearning

Panofsky, C., Pacheco, M., Smith, S., Santos, J., Fogelman, C., Harrington, M., & Kenney, E. (2005). *Approaches to writing instruction for adolescent English language learners: A discussion of recent research and practice literature in relation to nationwide standards on writing*. Providence, RI: Brown University. Retrieved from http://www.alliance.brown.edu

ReadWriteThink. (2016). Retrieved from http://www.readwritethink.org/classroom-resources/printouts/essay-rubric-30230.html

Richards, T. L., Berninger, V. W., Stock, P., Altemeier, L., Trivedi, P., & Maravilla, K. R. (2009). Differences between good and poor child writers on fMRI contrasts for writing newly taught and highly practiced letter forms. *Reading and Writing*, *24*, 493–516. doi:10.1007/s11145-009-9217-3.

Roswell, F. G., Chall, J. S., Curtis, M. E., & Kearns, G. (2005). *Diagnostic Assessments of Reading-Aecond Edition*. Austin, TX: Pro-Ed, Inc.

Schrank, F. A., McGrew, K. S., & Mather, N. (2014). *Woodcock-Johnson Tests of Cognitive Abilities* (4th ed.). Rolling Meadows, IL: Riverside.

Sengupta, S. (2000). An investigation into the effects of revision strategy instruction on L2 secondary school learners. *System*, *28*, 97–113.

Shaul, S., & Nevo, E. (2015). Different speed of processing levels in childhood and their contribution to early literacy and reading abilities. *Early Childhood Research Quarterly*, *32*(3), 193–203. doi:10.1016/j.ecresq.2015.03.006.

Wechsler, D. (2004). *Wechsler Intelligence Scale for Children—Fourth Edition—Spanish*. San Antonio, TX: Harcourt Assessment.

Wechsler, D. (2014). *Wechsler Intelligence Scale for Children–Fifth Edition*. Bloomington, MN: Pearson.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/achievement/bateria-iii-wm#sthash.QpZ1UuKz.dpuf

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Normative Update Pruebas de Habilidades Cognitivas*. Retrieved from http://www.hmhco.com/hmh-assessments/achievement/bateria-iii-wm

Chapter 11
Assessment and Intervention Tools

Introduction

Chapter 11 includes several tools that can be helpful to school psychologists when assessing and intervening with English learners. It includes eight tables:

- Table 11.1: SLD validation for English learners
- Table 11.2: Data that can be gathered through record review
- Table 11.3: Data that can be gathered through interviews
- Table 11.4: What to do and what not to do when testing English learners
- Table 11.5: Tests in English for use with English learners
- Table 11.6: Other tests for use with English learners
- Table 11.7: Screeners and progress monitors
- Table 11.8: Steps in the intervention process

    We also include "how-to" sections on the following:

- Dynamic assessment or test-teach-test
- Can't do–won't do assessment
- Figuring effect sizes

    Finally, we suggest an instructional program that may be useful when you consult with educators who request resources for teaching English learners (Instructional Resources).

Tests for Use with English Learners

Please note that exhaustive lists of tests that may be appropriate for use with English learners would fill several books. Tables 11.5 and 11.6 contain a sampling.

Table 11.1 SLD validation indicators for English learners

Student's name:_____ Date:_____	Yes	Source of documentation **R**-record review **I**-name of interviewee **O**-observation **T**-test(s)
Indicators		
Poor communicative proficiency in the home as compared to siblings and age peers in a bilingual environment, especially when this lack is noticed by the parents.		
Family history of learning problems		
Deficits in vocabulary		
Slower development than siblings		
Problems communicating with L1 peers		
Poor memory		
Poor comprehension		
General disorganization and confusion		
Difficulty paying attention		
Difficulty conveying thoughts		
Inappropriate use of social language		
Frequent interruptions		
Problems taking turns when talking		
English language development that appears to be significantly different than that of peers who are also learning English (from ESL teachers/paras and record review)		
Any of the indicators above		
Need for different instruction than peers		
Slow progress on language proficiency tests		
Vocabulary deficits		
Difficulty in learning English at a normal rate, even with help in both languages		
Need for frequent repetition and prompts during instruction		
Poor sequencing skills		
Slowness in responding to questions		
Problems communicating with peers in their first language		
Poor memory		
Poor comprehension		
General disorganization and confusion		
Difficulty paying attention		
Difficulty conveying thoughts		
Inappropriate use of social language		
Frequent interruptions		
Problems taking turns when talking		

Also consider: Specific sensory, neurological, organic, motor, or other conditions that impact learning; educational and language history; and other relevant factors. Clinical signs of each specific learning disability are listed in Chapters 5–10

Table 11.2 Data that can be gathered through record review

Source of data	Questions that can be answered
• A record of past and present school enrollments; a record of absences and tardies	• Have there been many schooling interruptions that could impact the student's reading, math, or writing skills?
• The student's grades in each class, including teacher comments	• Has the student had consistent problems in the area of reading, math, and/or writing?
• Results of tests and inventories	• Which parts of the reading/math/writing curricula have been mastered?
• A record of interventions that were put in place if the student struggled in reading/math/writing	• Which interventions worked? • Which did not work and do we know why?
• A psychoeducational report that was completed in the past to determine eligibility for a 504 Plan or special education	• Has the student had consistent problems in the area of reading, math, and/or writing?
• An Individual Educational Plan (IEP)	• Were reading, math, and/or writing skills targeted for improvement? • Which interventions were successful?
• The ESL file	• Is there information about the student's educational history in reading, math, and/or writing?
• Results of English proficiency tests	• Does the student have sufficient oral language proficiency to understand instruction that is being given in the classroom? What level of proficiency in English has the student attained?

Table 11.3 Data that can be gathered through interviews

Source of data	Questions that can be answered
• Parents or caregivers	• Is there a family history of learning problems?
	• What is the student's history of school attendance and early learning experiences with reading/math/writing?
	• What are the child's special skills and interests?
	• How has this child's development compared with the development of siblings?
	• Has the child had problems with reading, math, or writing in the past?
	• Does the child have a history of ear infections?
	• Was there trauma during the child's birth?
	• Has the child ever been knocked out or had a concussion?
• ESL teachers • Regular education teachers • Paraprofessionals	• How does this student learn in comparison with ESL peers?
	• What are the student's academic strengths and weaknesses?
	• Does the student take longer than peers to complete assignments and tests that require reading?
	• Does the student need different instruction than peers in this area?

Table 11.4 What to do and what not to do when testing English learners

When using tests …	
Do this	Don't do this
Check the demographics of the norming sample to make sure that your student is represented if you are going to use standard scores.	Don't report and make decisions on standardized scores from tests that do not represent your student.
Choose tests that provide diagnostic data that can be linked to instructional interventions: Which specific skills have been mastered and which have not?	Don't choose tests that yield little diagnostic data.
Choose tests with a sufficient number of items so you can do error analyses on the student's responses.	Don't use tests that have an insufficient number of items to adequately sample the student's specific skills.
Choose tests for the purpose of placing students in settings where they will be taught at their instructional level.	Don't choose measures which yield little information on the student's independent, instructional, and frustration levels.
Make eligibility decisions based on multiple indicators of a learning disorder: clinical signs, interview and record review data, and test-teach-test intervention results. Use test scores when your student was represented in the norming sample.	Don't make eligibility decisions based on discrepancies between IQ and achievement scores or on a pattern of strengths and weaknesses before the student has grade-appropriate cognitive academic language proficiency skills (CALP).
Provide English learners with the intensity of interventions needed, including special education, if appropriate.	Don't put off providing the intensity of services needed until the student has gained a certain level of English language proficiency.

Dynamic Assessment or Test-Teach-Test

Because English learners come from so many different backgrounds and experiences, they often do not resemble individuals from the norming samples of standardized tests. We are interested in these students' current levels of English proficiency, native language proficiency, and academic achievement but we also want to know whether they are typical or atypical learners. One way to learn about this is through dynamic assessment (McCloskey & Athanasiou, 2000). Dynamic assessment involves testing a student to determine his or her *instructional level* on a task, which is effectively the baseline data. Then some kind of evidence-based intervention (training, teaching, tutoring, or scaffolding) is provided. Progress is monitored to see the effect of the intervention and to determine the amount of training that is needed for the student to successfully perform the task. If the task is learned easily or with little training, we may assume that the student is more like a typical learner rather than like a learner with a learning disability. These procedures have been used successfully to identify impairments in English learners (Peña, Gillam, & Bedor, 2014).

In dynamic assessment, we first test to find the student's instructional level, then apply the intervention for a period of time, and then retest to see how much progress

has been made. If the intervention was effective, it will be continued; if it is not effective, the intervention may be changed. In research, this is called the single case study.

A brief explanation of what is meant by "instructional level" may be helpful. Salvia, Ysseldyke, and Witmer (2017) explain that these terms represent different levels of text difficulty for readers: (a) the independent level, (b) the instructional level, and (c) the frustration level. Students who have 95–99% word-reading accuracy and can comprehend most of what they read are said to be reading at their *independent* level. At this level, individuals need very little help in recognizing words and comprehending the meaning of the text. They might have to stop at times to look up a word or ask for clarification but at the independent level they are able to read independently and read for enjoyment.

At the *instructional* level, individuals will accurately decode 85–95% of what they read and comprehend the majority of what is read. When we are instructing students individually or in the classroom, we want them to be at their instructional level. This is the level at which teachers or tutors will pre-teach vocabulary, for example, because it is anticipated that students will not be able to immediately recognize and understand all words and concepts in the text. Teachers will need to check for comprehension and perhaps give further elaborations and explanations of the material. Without the guidance of a teacher at this level, students will have to have the patience and motivation to look up words in the dictionary and ask others for explanations of concepts and terms.

At the *frustration* level, students comprehend less than 85% of what they read. Without help at the frustration level, the student would need to look up every tenth word or so in a text and might only understand about half of what is read. This is truly frustrating and requires a great deal of determination and patience on the part of the learner.

With dynamic assessments, we try to ascertain the level at which the student has at least 85–95% accuracy in word recognition and comprehends at least 75% of what is read. That is the baseline or starting point. The intervention may be embedded in the assessment, similar to the teaching items that are at the start of many subtests on cognitive ability measures. During the assessment, immediate and graduated prompts and cues are given based on the performance of the examinee so the examiner can see how readily the child is able to improve his or her performance given the scaffolding.

Short probes of varying difficulty are administered until the student's instructional level is determined. The process of probing might take from 1 to 5 min. The examiner counts the number of correct and incorrect responses that the child makes in the allotted time. The correct and incorrect scores are plotted on a graph. For example, a child may be asked to read a passage aloud for 1 min. The examiner counts the number of words read correctly and the number of errors during that minute. Following best practices, three probes will be done and the median probe

Table 11.5 Tests in English for Use with English learners

Beery-Buktenica (VMI-6)	*Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition* (Beery, Buktenica, & Beery, 2010) measures visual-motor integration skills, visual perception skills, and motor coordination skills for individuals aged 2 through adult. It is intended to be used to identify students who have visual-motor integration deficits. The VMI was normed on a sample of 1737 individuals aged 2–18 years. The website is http://www.pearsonclinical.com/therapy/products/100000663/the-beery-buktenica-developmental-test-of-visual-motor-integration-6th-edition-beery-vmi.html.
DAR-2	*Diagnostic Assessments of Reading-Second Edition* (Roswell, Chall, Curtis, & Kearns, 2005) is intended to identify students who need help with reading and determine which specific reading skills have been mastered and which still need to be taught. It is appropriate for any student aged 5–0 through adult and measures print awareness, phonological awareness, letters and sounds, word recognition, word analysis, oral reading accuracy and fluency, silent reading comprehension, spelling, and word meaning. The DAR-2 was normed on 1395 children, 10% of which were Hispanic. The website is http://www.proedinc.com/customer/productView.aspx?ID=4545.
DP-3	*The Developmental Profile-Third Edition* (Alpern, 2007) can be very helpful in assessing English learners, as long as they are younger than 13 years of age. The DP-3 provides standard scores in five different areas of development: physical, adaptive behavior, social-emotional, cognitive, and communication. It can be used as a screener and as a diagnostic instrument. Information is gathered through interviews and/or checklists from parents, caregivers, and teachers. The DP-3 is available in Bulgarian, Czech, Danish, and Spanish but information can be gathered in any other language through the help of an interpreter who helps with parent interviews. The website is http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3.
DAS-2	*The Differential Abilities Scales-Second Edition* (Elliott, 2007) provides insight into a child's information processing. It is appropriate for children who are 2 years and 6 months through 17 years and 11 months. It measures verbal intelligence, spatial reasoning, nonverbal reasoning, verbal and visual working memory, immediate and delayed recall of visual stimuli, processing and naming speed, phonological processing, as well as general intellectual ability. The nonverbal subtests can be administered in Spanish.
GORT-5	*The Gray Oral Reading Test-Fifth Edition* (Wiederholt & Bryant, 2012) is a widely used test of oral reading fluency, miscue analysis, and comprehension. It includes developmentally sequenced reading passages; each passage has five comprehension questions. The normative data were collected in 2008–2010. It gives grade and age equivalents, percentile scores, and scaled scores for rate, accuracy, fluency, comprehension, and a composite Oral Reading Index. It is intended to be used to identify students with reading difficulties, diagnose reading disabilities, determine strengths and weaknesses, and evaluate students' progress in reading. The website is http://www.mhs.com/product.aspx?gr=edu&prod=gort5&id=overview.
KTEA-3	*The Kaufman Test of Educational Achievement-Third Edition* (Kaufman & Kaufman, 2014) is for individuals aged 4–0 through 25–11. It measures reading (phonological processing, letter and word recognition, nonsense word decoding, silent reading fluency, reading comprehension, reading vocabulary, word recognition fluency, decoding fluency), math (math concepts and applications, math computation, math fluency), writing (writing fluency, written expression, spelling), oral language (listening comprehension, oral expression), as well as associational fluency and object naming fluency. It is intended for use as an assessment of academic skills in reading, written language, oral language, and math, and to help identify learning disabilities. Normative data was collected from July 2011 through July 2013 on 3000 individuals. The website is http://www.pearsonclinical.com/education/products/100000777/kaufman-test-of-educational-achievement-third-edition-ktea-3.html

Table 11.5 (continued)

TEMA-3	*Test of Early Mathematics Ability-Third Edition* (Ginsburg & Baroody, 2003/2011) is intended to be used as a norm-reference measure or diagnostic instrument to determine math-related strengths and weaknesses in children aged 3–0 through 8–11. It can also be used to measure progress and to guide instruction and remediation. It measures numbering skills, number-comparison facility, numeral literacy, mastery of number facts, calculation skills, and understanding of concepts. It has two forms and each form was normed on approximately 600 children, 13% of which were Hispanic. The website is http://www.proedinc.com/customer/ProductView.aspx?ID=2891.
TEWL-3	*Test of Early Written Language-Third Edition* (Hresko, Herron, Peak, & Hicks, 2012) is for children aged 4–0 through 10–11 and is intended to be used as a diagnostic assessment of writing skills. It measures basic writing skills (metalinguistic knowledge, directionality, organizational structure, awareness of letter features, spelling, capitalization, punctuation, proofing, sentence combining, and logical sentences) and contextual writing skills (story format, cohesion, thematic maturity, ideation, and story structure). The TEWL-3 was normed on 2085 children from 30 US states and British Columbia, Canada. The website is http://www.pearsonclinical.com/language/products/100000086/test-of-early-written-language-third-edition-tewl-3.html#tab-details.
UNIT-2	*The Universal Nonverbal Intelligence Test-Second Edition* (Bracken & McCallum, 2016) is intended to be used as an assessment of intelligence for culturally and linguistically different examinees, as well as deaf and hard-of-hearing individuals, aged 5–0 through 21–11. It provides diagnostic information regarding cognitive strengths and weaknesses and can help determine eligibility for special education programs. It was normed on 1802 individuals in 33 states and was representative of US census estimates in 2014. There are studies in the manual regarding various ethnic and racial groups, including English learners. The website is http://www.proedinc.com/customer/productView.aspx?ID=7632.
Vineland-3	*The Vineland Adaptive Behavior Scales-Third Edition* (Sparrow, Cicchetti, & Saulnier, 2016) is intended for use in diagnosis and qualification for special programs. It can be used with individuals from birth through 90 years of age. It measures daily living skills (personal, domestic, community), socialization (interpersonal relationships, play and leisure, coping skills), motor skills (fine and gross), and maladaptive behavior (internalizing and externalizing). The website is http://www.pearsonclinical.com/psychology/products/100001622/vineland-adaptive-behavior-scales-third-edition--vineland-3.html#tab-details.
WISC-V	*The Wechsler Intelligence Scale for Children-Fifth Edition (*Wechsler, 2014*)* is intended for use in identifying and diagnosing learning disabilities, intellectual disabilities, and giftedness, and assessing the impact of brain injuries. It was normed on 2200 children in the USA aged 6 years through 16. It has a nonverbal scale that can be used for English learners.
WJ-IV Cognitive	*The Woodcock-Johnson Tests of Cognitive Abilities-Fourth Edition* (Woodcock, McGrew, & Mather, 2014) has several subtests and index scores which can be helpful in testing English learners on various aspects of visual processing, including visual-spatial ability, processing speed, and short-term memory.

Table 11.6 Other Tests for Use with English Learners

Aprenda-3	*Aprenda: La Prueba de Logros en Español-Tercera Edición* (2005) measures reading, math, language, writing, spelling, listening, science, and social science in Spanish for students in K-12. It is intended for use as an assessment of academic achievement for Spanish-speaking students. It was normed on US Spanish-speaking students and has additional reference norms that include children from Mexico and Puerto Rico. It is published by Pearson and the website is http://www.pearsonassessments.com/learningassessments/products/100000585/aprenda-3-aprenda-la-prueba-de-logros-en-espanol-tercera-edicion.html. It was modeled after the *Stanford Achievement Test series, Tenth Edition* (Stanford-10). It is group administered; Braille and large print versions are available.
Batería III	*The Woodcock-Muñoz Pruebas de Aprovechamiento Normative Update* (Woodcock, Muñoz-Sandoval, McGrew, & Mather 2004, 2007) measures oral language, math, writing, cognitive academic language proficiency, and vocabulary. It is intended as an assessment of student achievement in Spanish and can be used for diagnosis of learning disorders and determination of language proficiency or "dominance" in individuals aged 2 through adult. The website is http://www.hmhco.com/hmh-assessments/achievement/bateria-iii-wm. This test is the English equivalent of the *Woodcock-Johnson Tests of Achievement-Third Edition*. The Woodcock-Muñoz Pruebas de Habilidades Cognitivas Normative Update (Woodcock, Muñoz-Sandoval, McGrew, & Mather 2004, 2007) has 31 subtests which measure general intellectual ability, broad and narrow cognitive abilities, as well as executive functioning abilities. The cognitive portion of the Batería III includes 31 tests for measuring (in various combinations) general intellectual ability, broad and narrow cognitive abilities, and aspects of executive functioning. More information can be found at http://www.hmhco.com/shop/k12/Bateria-III/id/924333.
BVAT-NU	*The Bilingual Verbal Ability Tests Normative Update* (Muñoz-Sandoval, Cummins, Alvarado, & Ruef, 2005) is a test that is specifically designed to assess cognitive academic language proficiency (CALP) in English and 17 other languages for ages 5 through adult. It is intended to be used as an overall verbal ability measure for bilingual students who are being evaluated for special education and gifted programs. The idea behind the BVAT-NU is that students who are bilingual know some academic vocabulary in their first language, some in the second language, and some in both languages. There are three subtests—picture vocabulary, oral vocabulary, and verbal analogies. The subtests are first administered in English. Then the examiner goes back and re-administers in the student's other language the items that were missed in English. The BVAT-NU can be administered by an ancillary examiner. The BVAT-NU yields an overall bilingual verbal ability score and a score of the student's proficiency in academic language in English. The website is http://www.hmhco.com/hmh-assessments/bilingual/bvat. The English equivalent is the picture vocabulary, oral vocabulary, and verbal analogy tests from the Woodcock-Johnson Tests of Cognitive Ability-III.
IDEL	*Indicadores Dinámicos del Éxisto en la Lectura* (Good, Baker, Knutson, & Watson, 2006) is the Spanish version of DIBELS. It can be used with students in grades kindergarten through three. It measures letter naming fluency, phoneme segmentation, nonsense word fluency, oral reading fluency, oral retelling, and fluency in word use in Spanish. It is intended for use as a progress monitor in pre-reading and early reading skills. Benchmarks are based on US children in bilingual programs. The website is https://dibels.org/idel.html.

Table 11.6 (continued)

Logramos-3	*Logramos-Tercera Edición* (Aparicio & Nikolov, 2014) parallels the scope and sequence of the Iowa Assessments. It is intended to be used as a test of academic achievement in Spanish and for instructional planning and assessing progressing. It measures reading, written expression, math, science, social studies, language, spelling, capitalization, punctuation, computation, word analysis, and listening. The Logramos-3 was normed on a national sample of Spanish-speaking students in bilingual/ELL classes during 2013–2015. The website is http://www.hmhco.com/hmh-assessments/bilingual/logramos-3.
PHAI	*Prueba de Habilidades Académicas Iniciales* (Ramos, Hresko, & Ramos, 2006) is the Spanish version of the *Young Children's Achievement Test* (YCAT). It is intended to be used to identify children aged 4–0 through 7–11 who are normally developing and children who are at risk. It was normed on 650 Hispanic children throughout Mexico and represents Mexico's 2000 census. It gives scores in general information, reading, writing, mathematics, and spoken language. The website is http://www.proedinc.com/customer/productView.aspx?ID=3717.
Spanish Reading Inventory	*Spanish Reading Inventory Pre-Primer through Grade Eight-Second Edition* (Johns & Daniel, 2010) consists of several individually administered informal reading tests which assess a student's reading proficiency in Spanish. Word recognition and comprehension are tested. Narrative and informational passages are included.
TPAS	*Prueba de Conciencia Fonológica en Español*/Test of phonological awareness in Spanish (Riccio, Imhoff, Hasbrouck, & Nicole, 2004) is for children aged 4–0 through 10–11 and measures phonological awareness in Spanish (initial sounds, final sounds, rhyming words, and deletion). It is intended to identify children who have phonological awareness deficits. It was normed on native speakers of Spanish from Mexico, Spain, and the USA. The website is http://www.hmhco.com/hmh-assessments/other-clinical-assessments/tpas.
TVIP	*Test de Vocabulario en Imágenes Peabody* (Dunn, Lugo, Padilla, & Dunn, 1986) measures receptive vocabulary in Spanish for ages 2–0 through 17–11. It is the Spanish equivalent of the *Peabody Picture Vocabulary Test* (PPVT) and is intended for use in assessing oral receptive vocabulary of Spanish-speaking students. It was normed on Mexican and Puerto Rican samples of monolingual Spanish speakers. The website is http://www.pearsonclinical.com/language/products/100000487/test-de-vocabulario-en-imagenes-peabody-tvip.html.
Vineland-3	*The Vineland Adaptive Behavior Scales-Third Edition* (Sparrow et al., 2016) is intended for use in diagnosis and qualification for special programs. It has a caregiver form in Spanish. It can be used with individuals from birth through 90 years of age. It measures daily living skills (personal, domestic, community), socialization (interpersonal relationships, play and leisure, coping skills), motor skills (fine and gross), and maladaptive behavior (internalizing and externalizing). The website is http://www.pearsonclinical.com/psychology/products/100001622/vineland-adaptive-behavior-scales-third-edition--vineland-3.html#tab-details.
WISC-IV Spanish	*The Wechsler Intelligence Scale for Children-Fourth Edition-Spanish* (Wechsler, 2004) is intended as a measure of mental ability for Spanish-dominant children in US schools. It was normed on children whose families came from several areas, including Mexico and other parts of Central America, Cuba, Puerto Rico, the Dominican Republic, and countries in South America. It is recommended that the examinee be within the first through fifth year in the US education system; however, the examiner must determine that the child is "Spanish dominant." The test can be administered by Spanish-speaking examiners and English-speaking examiners with a trained associate who is fluent in Spanish.

Table 11.6 (continued)

WMLS-R NU	*The Woodcock-Muñoz Language Survey-Revised Normative Update* (Schrank, Wendling, Alvarado, & Woodcock, 2010) is intended to be used to establish English and/or Spanish cognitive academic language proficiency levels in reading, writing, listening, and language comprehension for ages 2–0 through adult. It can also be used to determine eligibility for bilingual services, monitor progress, and determine eligibility for specific learning disabilities programs. It tests picture vocabulary, verbal analogies, letter-word identification, dictation, understanding directions, story recall, and passage comprehension. The website is http://www.hmhco.com/hmh-assessments/bilingual/woodcock-munoz.

scores are then used as the examinee's baseline and plotted on a graph. This gives a quick assessment of the student's proficiency in oral reading. A goal line is added to the chart; this indicates the level of skill that is needed in the classroom. If the examinee's scores are lower than those of the typical reader at that grade, interventions are put into place. Probes are administered on at least a weekly basis. A trend line is computed to see if the examinee's growth with the help of the intervention is going to result in eventually reaching the desired level of skill. After a given period of time, if it appears that the intervention is going to be effective in helping the student reach the desired skill level, it can be continued. If the trend line indicates that the student will not reach the desired skill level in a certain amount of time, the intervention may be changed and/or intensified.

It can be onerous for busy school psychologists and other educators to create their own charts showing rate of improvement, goal lines, and trend lines and it is certainly convenient to use programs such as AIMSweb (2014) and DIBELS (2016) instead. Table 11.7 shows terms that are used to describe the assessments used in test-teach-test procedures.

Although general outcome measures are not taken from the curriculum being used in the child's classroom, they have certain advantages: (a) The data generated are not subject to the vagaries of the actual curriculum, such as grade-level texts that represent a number of different reading grade levels. (b) It is usually more convenient for school psychologists to use data generated by GOMs than to create the measures and generate the data by themselves. (c) These measures can provide school-wide, grade-wide, and classroom-wide screening data so that more systemic changes can be made, in case lack of progress is not due to the learner but to other factors outside the child, such as instruction or curricula.

Test-teach-test assessments can be created by the school psychologist or by the teacher in order to assess word recognition and decoding, reading fluency, reading comprehension, math calculation and problem-solving, and, to an extent, writing. When assessing reading, for example, a series of grade-level reading passages and word lists are created which typically range from a year or so below the student's current grade level through a year or so above the current grade level. For English learners, the range of the passages may have to go lower. Consider Jun, an English learner from China with a learning disability who is placed in ninth grade when he first comes to the English-speaking school. Jun's reading skills in English may be at a first grade level.

Table 11.7 Screeners and progress monitors

Measure	Definition	Example
Curriculum-based dynamic assessment (CDA)	Teaching a specific authentic task and collecting progress and procedural data as students acquire the task (Barrera, 2006)	The student orally reads a 1-minute passage which is rated for fluency. A fluency intervention (such as repeated readings) is implemented for 2 weeks. The student is retested to see whether typical progress has been made.
Curriculum-based assessment (CBA)	Using classroom-based tasks to determine students' skills (Barrera, 2006)	The student orally reads a 1-minute passage taken from a text that is currently being used in his or her classroom.
General Outcome Measurement (GOM)	Using frequent probes of small skills to monitor progress toward larger, more complex skills (Shinn, 2013)	The student orally reads a 1-minute passage to determine instructional reading level and progress toward goals.
Mastery measurement (MM)	Measuring mastery of particular small skills (Shinn, 2013)	The student is given a probe of addition facts through ten to determine if he or she has mastered those facts.
Curriculum-based measurement (CBM)	A standardized form of CBA in which learning tasks are tested for reliability and validity (Barrera, 2006)	The student orally reads a 1-minute passage to determine instructional reading level and progress toward goals.

The objective of the probes is to find the learner's independent, instructional, and frustration levels in the various components of reading. Examinees start out with the easiest word lists and continue until they can decode less than 85% of the words. That is the frustration level. The instructional level is when they can decode 85–95% of the words and, at the independent level, they can decode at least 95% of the words (Salvia et al., 2017).

Passages can be taken from texts that are in the actual curriculum being used by the school. This is true "curriculum-based assessment," and generally it is recommended that, for each grade level, passages be taken from the beginning, middle, and end of the text, avoiding poetry, plays, and other less familiar formats. It is advisable to check the readability statistics of passages that are taken from textbooks. The Intervention Central website (http://www.interventioncentral.org/) has a number of helpful programs that can be used to generate word lists and passages (Letter Name Fluency Generator, Dolch Wordlist Fluency Generator, Reading Fluency Passage Generator, and Test of Reading Comprehension-Maze Passage Generator). These are easy ways to determine the readability level of lists and passages. Microsoft Word can be set to "Show Readability Statistics" (first go to Languages and then Proofing). Whenever you use the Spelling and Grammar check, you will also get the Flesch-Kincaid reading level.

Test-teach-test dynamic assessments can help determine whether low-achieving English learners, when given evidence-based interventions in a tiered system of support, still show significantly slower rates of academic growth (Barrera, 2006). Test-teach-test data can add to the multiple indicators that school psychologists can use to help determine learning disorders in English learners.

Intervening

Can't Do–Won't Do Assessment

Step 6 in Table 11.8 requires the determination as to whether this is a can't do or won't do problem. The can't do–won't do assessment is a procedure for ascertaining whether the student does not have a specific skill or behavior versus whether the student possesses the skill, but is not motivated to exhibit the skill (VanDerHeyden, 2014). There are three possible can't do–won't do problems:

a. Can't do problem: The child lacks the skill and has never been known to perform it. If so, conduct task and error analyses and then teach the skill.
b. Can't do under certain conditions problem: The child has been known to perform the skill but does not do it under certain conditions. For a can't do under these conditions problem, determine the necessary modifications for the student to be successful.
c. Won't do problem: The child has the skill but does not use it. For a won't do problem, analyze the antecedents and consequences and determine a way to reinforce performance of the skill that is meaningful to the child.

Table 11.8 Steps in the intervention process

1. Refine the referral concern
2. Select the problem to start with
3. Determine what information you already have
4. Analyze the problem using hypothesis testing; gather addition information, if needed
5. Measure the skill or behavior
6. Determine whether this is a can't do or won't do problem. (See below for instructions.)
7. Get consensus among educators and, if possible, parents on the definition of the problem
8. Collect baseline data
9. Set the goal for improvement
10. Plot the aim line on a chart
11. Select an intervention
12. Develop the action plan
13. Implement the intervention
14. Monitor student progress and treatment integrity
15. Make alterations to the intervention and/or the goal as indicated by the data
16. Evaluate student progress and determine the effect size of the change
17. Determine how to maintain the successful intervention
18. Evaluate the need to address additional problems

In order to determine whether it is a can't do or won't do problem, you begin by having the student answer a question or perform a task. You might become aware of the types of questions and items on which the student is not successful by examining work samples or interviewing the teacher during the problem identification step in the consultation process. For example, the student might make frequent errors in solving subtraction problems requiring regrouping. In this case for the can't do–won't do assessment, you first have the student complete ten subtraction problems. Then you offer the student a reward for improving performance on a second set of ten subtraction problems. (The reward has to be something that this particular student would find to be reinforcing.)

- If the student scores poorly on both sets of problems, the conclusion is that the student has not acquired the math skills of subtraction with regrouping; this is a can't do (or skill) problem. The student has not yet learned the skill. You could offer the student a trip to Disney World if he or she will correctly perform the skill; the child still won't be able to do it.
- If the student's score noticeably improves on the second problem set, the conclusion is that the student is able to subtract with regrouping accurately, but does not do so unless rewarded; this is a won't do (or performance) problem.

Figuring Effect Sizes

Several procedures for describing the extent of the change resulting from the intervention are particularly useful when an intervention is implemented with one or a few students (McKellar & Unruh, 2015). Goal attainment scaling (GAS) is a criterion-referenced procedure for measuring change in behaviors and skills that can be used with either qualitative or quantitative data (Coffee & Ray-Subramanian, 2009; Kiresuk, Smith, & Cardillo, 1994; Roach & Elliott, 2005). A scale (5 or 7 points) is developed to show change relative to the baseline measurement. For example, in a 5-point scale, zero would be the baseline behavior, that is, the level of the student's performance before the intervention commences. Scores of +1 and +2 are defined (with descriptive, nonambiguous language) as incremental improvement from the level of the baseline behavior. Likewise, scores of −1 and −2 are defined as incremental regression from the level of the baseline behavior. The levels should not overlap and there should not be gaps between levels. It is best to treat GAS scale as an ordinal, not an interval scale. Then use nonparametric procedures for measuring the positive impact.

Percentage of nonoverlapping data (PND) and percentage of data points exceeding the median of baseline phase (PEM) are nonparametric procedures that can be very useful for estimating the treatment effect of interventions used with one or a few English learners to increase their skills (Parker, Vannest, & Davis, 2011). When you explain intervention results to educators and families with a graph showing baseline and treatment data as well as the PND or PEM interpretations, they are likely to have a fuller understanding of the student's progress.

The steps in computing PND are:

1. Identify the highest baseline data point.
2. Count the number of intervention points that exceed the highest baseline data point. These are the nonoverlapping data points.
3. Divide the number of nonoverlapping data points by the total number of intervention data points. Express this value as a percentage (i.e., multiply by 100).

Suggested guidelines for interpreting PND values (Scruggs & Mastropieri, 1998, 2013) are as follows: 90% or greater is very effective; 70–89% is effective; 50–69% is questionable effectiveness; and <69% is ineffective or with no observed effect.

You can't use PND if the most extreme data point in the baseline data is the highest point possible (e.g., 100%) because PND will equal zero. In this situation, PEM is a better technique to use. PEM is the percentage of treatment-phase data that exceed the median of the baseline data points. A horizontal line is drawn through the median. If the treatment/intervention had no effect, you would expect the data points collected during the intervention to fluctuate around the median line. "The data points have 50% chance of being above and 50% chance of being below the median of the previous baseline phase" (Ma, 2006, p. 600). The greater the proportion of intervention data points that exceed the median, the stronger the effect of the intervention.

The steps in computing PEM are:

1. Identify the median baseline data point. (If there is an odd number of baseline data points, the median is the middle value. If there is an even number of baseline data points, the median is halfway between the two middle values.)
2. Count the number of intervention points that exceed the median baseline value. These are the data points exceeding the median of the baseline phase.
3. Divide the number of exceeding data points by the total number of intervention data points. Express this value as a percentage (i.e., multiply by 100).

All complex skills are contingent on the learner having certain prerequisite skills. Reading fluency requires the learner to have reading decoding skills. Since multiplication is repeated addition, addition is taught before multiplication. The intervention process begins by comparing two sets of skills; the skills of the learner at the onset of intervention and the prerequisite skills of the complex skill to be taught. Breaking down a complex skill into the prerequisite skills that undergird it is called task analysis (Rosenfield, 1987). In chapters 4–10, suggestions are given for assessing the learners' prerequisite skills in oral and written language, reading, and mathematics. This process is termed "skill analysis." The results of the learner's skill analysis indicate where in the hierarchy of prerequisites of the complex skill that intervention should begin.

As with any supplemental intervention, there is a need for a very precise match between the child's source of difficulty and the intervention; there is also the need for consistent progress monitoring over the course of the intervention in order to track growth and response to intervention (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006, p. 36).

Instructional Resources

Given the relatively rapid increase in the number of English learners, educators in some schools may need resources on how to provide effective instruction to English learners. The Sheltered Instruction Observation Protocol or SIOP Model (Echevarría, Vogt, & Short, 2017) provides user-friendly information to assist teachers in lesson planning and implementation.

References

AIMSweb. (2014). Retrieved from http://www.aimsweb.com/

Alpern, G. D. (2007). *Developmental Profile-Third Edition*. Retrieved from http://www.wpspublish.com/store/p/2743/developmental-profile-3-dp-3

Aparicio, E., & Nikolov, S. (2014). *Logramos-Tercera Edición (Logramos-3)*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/logramos-3

Aprenda: La Prueba de Logros en Español, Tercera Edición. (2005). Retrieved from http://www.pearsonassessments.com/learningassessments/products/100000585/aprenda-3-aprenda-la-prueba-de-logros-en-espanol-tercera-edicion.html

Barrera, M. (2006). Roles of definitional and assessment models in the identification of new or second language learners of English for special education. *Journal of Learning Disabilities*, *39*, 142–156. doi:10.1177/00222194060390020301.

Beery, K. E., Buktenica, N. A., & Beery, N. A. (2010). *Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition*. Retrieved from http://www.pearsonclinical.com/therapy/products/100000663/the-beery-buktenica-developmental-test-of-visual-motor-integration-6th-edition-beery-vmi.html

Bracken, B. A., & McCallum, R. S. (2016). *Universal Nonverbal Intelligence Test-Second Edition*. Austin, TX: Pro-Ed, Inc.

Coffee, G., & Ray-Subramanian, C. E. (2009). Goal attainment scaling: A progress-monitoring tool for behavioral interventions. *School Psychology Forum: Research into Practice*, *3*(1), 1–12.

DIBELS-Sixth Edition. (2016). Retrieved from https://dibels.uoregon.edu/assessment/dibels/index

Dunn, L. M., Lugo, D. E., Padilla, R., & Dunn, L. M. (1986). *Test de Vocabulario en Imágenes Peabody*. Retrieved from http://www.pearsonclinical.com/language/products/100000487/test-de-vocabulario-en-imagenes-peabody-tvip.html

Echevarría, J., Vogt, M., & Short, D. J. (2017). *Making content comprehensible for English learners: The SIOP model* (5th ed.). Boston, MA: Pearson.

Elliott, C. D. (2007). *Differential ability scales* (2nd ed.). San Antonio, TX: Harcourt Assessment.

Francis, D. J., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2006). *Practical guidelines for the education of English language learners: Research-based recommendations for serving adolescent newcomers*. Portsmouth, NH: Center on Instruction, RMC Research Corporation. Retrieved from www.centeroninstruction.org

Ginsburg, H., & Baroody, A. (2003/2011). *Test of Early Mathematics Ability–Third Edition*. Austin, TX: Pro-Ed.

Good, R. H., Baker, D. L., Knutson, N., & Watson, J. M. (2006). *Indicadores Dinámicos del Éxito en la Lectura*. Retrieved from https://dibels.org/idel.htm

Hresko, W. P., Herron, S. R., Peak, P. R., & Hicks, D. L. (2012). *Test of Early Written Language-Third Edition*. Retrieved from http://www.pearsonclinical.com/language/products/100000086/test-of-early-written-language-third-edition-tewl-3.html#tab-details

Johns, J., & Daniel, M. C. (2010). *Spanish Reading Inventory: Pre-Primer through Grade Eight-Second Edition*. Dubuque, IO: Kendall Hunt Publishing Company.

Kaufman, A. S., & Kaufman, N. L. (2014). *Kaufman Test of Educational Achievement* (3rd ed.). Bloomington, MN: Pearson.

Kiresuk, T. J., Smith, A., & Cardillo, J. E. (Eds.). (1994). *Goal attainment scaling: Applications, theory, and measurement*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Ma, H. (2006). An alternative method for quantitative synthesis of single-subject researches: Percentage of data points exceeding the median. *Behavior Modification*, *30*, 598–617. doi:10.1177/0145445504272974.

McCloskey, D., & Athanasiou, M. S. (2000). Assessment and intervention practices with second-language learners among school psychologists. *Psychology in the Schools*, *37*(3), 209–225.

McKellar, N., & Unruh, S. (2015, February). *Measuring positive impact of interventions on student learning and behavior*. Mini-Skills Workshop at the Annual Convention of the National Association of School Psychologists, Orlando, FL.

Muñoz-Sandoval, A. F., Cummins, J., Alvarado, C. G. & Ruef, M. L. (2005). *Bilingual Verbal Abilities Test Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/bvat

Parker, R. I., Vannest, K. J., & Davis, J. L. (2011). Effect size in single-case research: A review of nine nonoverlap techniques. *Behavior Modification*, *35*, 303–322. doi:10.1177/0145445511399147.

Peña, E. D., Gillam, R. B., & Bedor, L. M. (2014). Dynamic assessment of narrative ability in English accurately identifies language impairment in English language learners. *Journal of Speech, Language, and Hearing Research*, *57*, 2208–2220.

Ramos, J., Hresko, W., & Ramos, M. (2006) *Prueba de Habilidades Académicas Iniciales (PHAI)*. Retrieved from http://www.proedinc.com/customer/productView.aspx?ID=3717

Riccio, C. A., Imhoff, B., Hasbrouck, J. E., & Nicole, G. (2004). *Prueba de Conciencia Fonológica en Español*. Retrieved from http://www.hmhco.com/hmh-assessments/other-clinical-assessments/tpas

Roach, A. T., & Elliott, S. N. (2005). Goal attainment scaling: An efficient and effective approach to monitoring student progress. *Teaching Exceptional Children*, *37*(4), 8–17.

Rosenfield, S. A. (1987). *Instructional consultation*. Hillsdale, NJ: Lawrence Erlbaum.

Roswell, F. G., Chall, J. S., Curtis, M. E., & Kearns, G. (2005). *Diagnostic Assessments of Reading-Second Edition*. Austin, TX: Pro-Ed, Inc.

Salvia, J., Ysseldyke, J. E., & Witmer, S. (2017). *Assessment in special and inclusive education-Thirteenth edition*. Boston, MA: Cengage Learning.

Schrank, F. A., Wendling, B. J., Alvarado, C. G., & Woodcock, R. W. (2010). *Woodcock-Muñoz Language Survey-Revised Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/bilingual/woodcock-munoz

Scruggs, T. E., & Mastropieri, M. A. (1998). Summarizing single-subject research: Issues and applications. *Behavior Modification*, *22*, 221–242.

Scruggs, T. E., & Mastropieri, M. A. (2013). PND at 25: Past, present, and future trends in summarizing single-subject research. *Remedial and Special Education*, *34*, 9–19.

Shinn, M. R. (2013). Measuring general outcomes: A critical component in scientific and practical progress monitoring practices. Retrieved from http://www.aimsweb.com/wp-content/uploads/Mark-Shinn-GOM_Master-Monitoring-White-Paper.pdf

Sparrow, S. S., Cicchetti, D. V., & Saulnier, C. A. (2016). *Vineland Adaptive Behavior Scales-Third Edition*. Bloomington, MN: Pearson.

VanDerHeyden, A. M. (2014). Best practices in can't do/won't do academic assessment. In P. L. Harrison & A. Thomas (Eds.), *Best practices in school psychology: Data-based and collaborative decision making* (pp. 305–316). Bethesda, MD: National Association of School Psychologists.

Wechsler, D. (2004). *Wechsler Intelligence Scale for Children—Fourth Edition—Spanish*. San Antonio, TX: Harcourt Assessment.

Wechsler, D. (2014). *Wechsler Intelligence Scale for Children–Fifth Edition*. Bloomington, MN: Pearson.

Wiederholt, J. L., & Bryant, B. R. (2012). *Gray Oral Reading Tests, Fifth Edition (GORT-5)*. Austin, TX: Pro-Ed.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2014). *Woodcock-Johnson IV test of cognitive abilities*. Itasca, IL: Riverside Publishing Company.

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Aprovechamiento Normative Update*. Retrieved from http://www.hmhco.com/hmh-assessments/achievement/bateria-iii-wm#sthash.QpZ1UuKz.dpuf

Woodcock, R. W., Muñoz-Sandoval, A. F., McGrew, K. S., & Mather, N. (2004, 2007). *Batería III Woodcock-Muñoz Pruebas de Habilidades Cognitivas Normative Update*. Boston, MA: Houghton, Mifflin, Harcourt.

Chapter 12
Case Studies

Case Study Notes: Laila

In this first case, Laila has been attending school in the USA for only 1 year. Her skills are markedly uneven; she is making progress in learning oral communication in English and she does above average work in math; however, she is making minimal progress in learning to decode and spell. Laila is an example of a case in which there are not a variety of standardized tests that can be employed in her native language (Arabic). Multiple indicators of learning problems have been gathered in other ways. Following is a summary of the clinical signs of a learning disability that are evident in Laila's case.

Clinical Signs of Learning Disability

- Makes acceptable progress—even above average progress—in certain areas but minimal progress in others.

- Makes little progress in some areas compared with English learner peers.

- Slower to talk than her siblings.

- Family history of learning problems.

- Evidence of communication difficulties in her home language.

- Parent report that she seems confused and has a hard time saying what she means.

- Low phonological awareness and naming skills despite being taught at her instructional level and despite interventions.

- Need for more exposures to instructional materials than typical ESL peers.

- Difficulty forming consistent letters; inability to stay on the line while writing; inconsistent spacing; spelling the same word differently in the same paragraph.

- Lack of progress despite adequate scaffolding and interventions.

- Memory deficits in cognitive testing.

- Errors of insertion and substitution of sounds in oral reading and spelling (DAR-2).

- Progress in oral receptive and expressive skills in learning English but lack of progress in reading and writing.

Sample Case: Laila

Confidential Psychoeducational Report

Name:	Laila Almomen
Age:	8–2
Gender:	Female
Birth date:	2-11-2009
Parents:	Noor and Youssef Almomen
School:	Lincoln Elementary
Grade:	3rd
Dates evaluated:	April 2017
Examiner:	Marie E. Wilson, EdS, NCSP

Reason for Referral

Laila has been struggling to learn to read and write in English. Despite intensive interventions, Laila is not making sufficient growth to progress with her grade-mates and with her ESL peers.

Since coming to Lincoln Elementary as a second grader, Laila has had academic difficulties. Throughout second grade, she has scored in the low range on curriculum-based measurement probes of letter identification, identifying initial sounds, phonemic awareness, phonemic memory, initial sound fluency, and letter naming fluency, even after being taught at her instructional level.

Background Information

Laila's parents were interviewed by the school psychologist with the assistance of an Arabic-speaking interpreter. Mr. Almomen, who is a doctoral engineering student at a local university, speaks fluent English; however, Mrs. Almomen speaks only a few words and phrases in English. An interpreter was included so that Mrs. Almomen had the benefit of professional interpretation. According to her parents, Laila comes from a large family. She has three brothers and four sisters and is the youngest of the siblings. Laila moved with her parents and two brothers to the USA a year ago. Four older sisters and one brother remain in Saudi Arabia.

According to her parents, Laila had a normal birth and met most developmental milestones at the appropriate ages, although she was slower to begin talking than her siblings. Laila has never been hospitalized. Laila has always been somewhat quiet and shy, although she is more outgoing when with her family or others that she knows well.

When asked whether there were any members of their families who had difficulties learning, Mr. and Mrs. Almomen reported that their oldest son struggled in learning to read and that one of Laila's maternal uncles and her maternal grandfather had learning problems.

Because Mrs. Almomen does not speak English, the family speaks Arabic in the home. Mr. Almomen encourages his wife and children in learning English. Mrs. Almomen says that she is more comfortable speaking Arabic with her children and has been reluctant to learn English because she knows that her family will return to Saudi Arabia after her husband has finished his doctorate in the USA. Mr. Almomen is available most evenings and the weekends to help Laila with her homework; he has noticed the struggles that Laila has with her schoolwork.

Previous Test Results and Vision and Hearing Screenings

Laila attended kindergarten and first grade in Saudi Arabia. Since the beginning of the second grade in her current school, Laila has been administered the DIBELS measures for Initial Sound Fluency, Letter Naming Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency. She has failed to make progress in these measures throughout second grade. Her ESL teacher, Mr. David, has provided phonological awareness and letter naming instruction on a daily basis but these efforts have not resulted in much progress. In an interview, Mr. David noted that Laila initially tried to read from right to left, as in Arabic, but has since learned to go from left to right. He also reported that Laila needs many more exposures to words to learn to read them than do her ESL peers; even then, Laila has a hard time remembering words that she seemingly learned earlier the same week.

The Student Intervention Team provided interventions for Laila starting in the second semester of second grade. During the first 9 weeks, she participated in a smaller reading group and received 20 extra minutes of instruction daily which focused on phonological awareness and decoding. After a month in which little progress was made, Laila started receiving an hour of daily reading instruction with a reading specialist. Again, she made minimal progress in reading after a month of this instruction.

A review of her written products shows that Laila has difficulty forming letters that are consistent in size and shape. It is hard for her to stay on the line when she writes; at times her letters float above the line and at other times they dip below the line. The spaces between her letters and words are also inconsistent and, at times, she spells the same word differently in the same paragraph.

Laila has not had similar struggles in learning math, although she is unable to read word problems. She is making typical progress in learning oral English, according to her teacher, Mrs. Carmichael. Laila is the only Arabic speaker in the second grade at this school.

The school nurse reports that Laila passed a hearing and a vision screening at the beginning of the semester.

Assessment Measures and Procedures

- Classroom observation
- *Universal Nonverbal Intelligence Test-Second Edition* (UNIT-2)
- *Diagnostic Assessments of Reading-Second Edition* (DAR-2)
- *Test of Early Mathematics Ability-Third Edition* (TEMA-3)
- *Beery-Buktenica Test of Visual-Motor Integration-Sixth Edition* (VMI-6)
- *Developmental Profile-Third Edition* (DP-3)
- Student interview
- Informal teacher reports
- Review of previous educational history
- Classroom observations

Test Behavior and Observations

Laila was observed in her general education classroom and while she was working with the reading intervention specialist in a different setting. In the classroom, Laila was on task during 95% of the intervals observed. The teacher was delivering a math lesson with manipulatives. Laila watched the teacher while she was talking and solved problems rapidly with the manipulatives. She even helped another student at her table who was struggling with the manipulatives at one point.

During the reading instruction observation, Laila was on task during 90% of the intervals observed. She was in a group with two other children. The teacher, Mrs. Patni, had cut out squares with letters and was showing the children how they could be put together and blended to make words. Laila was able to name the letters and the sounds that they make, but she was not able to independently move the squares into the correct sequence to make words such as M-A-T or P-A-T.

During test sessions with this examiner, Laila was somewhat shy and reticent to start. Some time was spent coloring with her and she seemed to relax after this activity, saying "This is fun." Her attention was age appropriate and she appeared to try her best on the tasks and questions posed to her. The test scores reported here are assumed to be a reliable and valid reflection of her current skills.

Analysis and Interpretation of Test Results

Language Proficiency

Laila's ESL teacher reported that Laila seems bright and that she is making good progress in learning oral English. Laila is beginning to enter the early intermediate level in her listening and speaking skills. Laila uses and understands high-frequency

words and everyday comments, although she makes occasional errors. She uses phrases and simple sentences orally and in writing. She can use the present tense but still makes many errors and is sometimes at a loss for the verb that she needs. She appears to understand more than she can communicate. She does not yet use the past tense in English. She might say something like "Yesterday I go to school."

The Developmental Profile-Third Edition (DP-3) was administered to assess Laila's development in five areas: physical, adaptive behavior, social-emotional, cognitive, and communication. With this instrument, information is gathered through interviews and observations. Laila's parents were interviewed by the school psychologist with the aid of an interpreter. Laila's communication skills fall within the Below Average range, according to the DP-3. (Because the DP-3 was not normed on Arabic-speaking children this result must be viewed with some caution.) Laila's parents say that she started speaking Arabic later than her siblings but they thought that this might have been due to being the youngest and having her brothers and sisters jump in and speak for her instead of letting her speak for herself. They say she sometimes seems confused and has a hard time saying what she needs. In school in Saudi Arabia, Laila's teachers said that she was very quiet and did not want to speak up in class. Her parents say that it is difficult to separate her ability to communicate in Arabic from her shyness.

Intellectual Functioning

The Universal Nonverbal Intelligence Test-Second Edition (UNIT-2) was administered to Laila as a measure of her mental abilities. Laila's Full Scale Battery Score falls within the Average range on this measure. Her Reasoning and Quantitative Composite scores fall within the Average range and her Memory Composite is Delayed. This suggests that her nonverbal reasoning and quantitative reasoning skills are better developed than her short-term memory skills. This profile of scores indicate that Laila is relatively adept at discerning the relationships between abstract, figural stimuli. She can acquire and process information adequately through nonverbal, visual means and will typically learn best with concrete and experiential exploratory learning approaches. She can understand numerical relationships and manipulate abstract quantitative facts better than she can attend to and recall visual details.

Academic Functioning

The Diagnostic Assessments of Reading-Second Edition (DAR-2) were administered to Laila. According to this measure, Laila's word recognition is at the 1-1 (first half of first grade) level. Laila's oral reading level is 1-1, as is her spelling level. Her word meaning level is 2. In her word reading, oral reading, and spelling, Laila made errors that are typical of students with a disorder in basic reading, such as omitting

sounds while reading and inserting sounds where they don't belong. She also omitted letters and inserted letters where they did not belong while spelling. This is consistent with Laila's written products that were supplied by her teachers.

In terms of phonological awareness, she has mastered hearing initial consonant sounds but she has not mastered rhyming words, segmenting words, hearing final consonant sounds, or auditory blending. With regard to letters and sounds, she has mastered the skills of naming capital and lowercase letters, matching letters, and matching words; she has not mastered writing words. Laila has much difficulty with word analysis. She has mastered consonant sounds and short vowel sounds but not consonant blends, the rule of silent *E*, vowel digraphs, diphthongs, vowels with *R*, two-syllable words, or polysyllabic words.

The Test of Early Mathematics Ability-Third Edition (TEMA-3) was administered to Laila as a measure of her academic progress in math. The TEMA-3 measures pre-counting, counting, informal and formal math knowledge, and concept skills. Laila's overall score on this measure falls within the Above Average range.

Adaptive Behavior and Social/Emotional/Behavioral Functioning

As reported earlier, Laila's communication skills as reported by her parents on the DP-3 fall within the Below Average range. Her physical, adaptive behavior, and social-emotional domains are Average and her academic skills are Below Average. Laila's visual-motor integration skills fall within the Average range, as measured by the VMI-6.

According to observations and interviews with parents and teachers, Laila has age-appropriate social skills although she is somewhat shy and reticent on first meeting new people. She appears to be making a good adjustment to life in the USA. She is close to her family and is beginning to develop friendships at school.

Summary and Recommendations

Laila is an 8-year-old second grader with average nonverbal and quantitative reasoning ability and a deficit in short-term visual memory. Arabic is her first language. Her communication skills in Arabic appear to be below average. She is at an early intermediate level in oral English.

Despite extensive interventions, Laila has made minimal progress in phonological awareness, spelling, sounds, word recognition, word meaning, and word analysis when compared with her ESL peers. She makes many errors that are typical of children with decoding and word reading disorders. Conversely, she appears to learn math skills relatively easily and has above-average math abilities.

Although Laila is somewhat shy at school, she does not experience problems with behavior or work habits. She has age-appropriate social skills and is making friends at school.

- The multidisciplinary team should consider Laila's eligibility for placement in the Learning Disabilities Program due to specific disabilities in basic reading.
- Laila will continue to need ESL support in oral and written English. She needs to be taught at her instructional level. Frequent skill probes should be conducted both in order to determine her instructional level and reasonable academic goals, and to monitor his progress.
- Because of her limited English, directions should be given in small, contained steps and teachers need to check frequently to make sure that Laila has understood the instructions.
- Laila needs multiple opportunities to read aloud to an adult in order to receive corrective feedback.
- Laila needs to have explicit and systematic instruction in order to build her phonics skills.
- Since Laila is making good progress in math, she may enjoy books for young readers that teach names of numerals and early math concepts.

Case Study Notes: Ricardo

In our second case, Ricardo has been in the USA for only 2 years. It might seem that he has just had insufficient time to learn English because his oral language skills and reading decoding skills in Spanish are average and scores in English are very low. He is making progress in learning oral communication in English. However, in 2 years he is making only minimal progress in learning to read, write, and do math. He had experienced delays in reading fluency, reading comprehension, and mathematics in Mexico. Following is a summary of the clinical signs of a learning disability that are evident in Ricardo's case.

Clinical Signs of Learning Disability

- Makes acceptable progress in certain areas but minimal progress in others.

- Makes minimal progress compared with English learner peers.

- Experienced difficulties at birth.

- Father only completed elementary school; we're not sure why he didn't go farther but it's possible that he had learning difficulties.

- Ricardo had comprehension difficulties in school in Mexico.

- Low phonemic awareness skills despite interventions.

- Lack of progress despite adequate scaffolding.

- Above-average cognitive reasoning abilities but below-average memory and delayed quantitative concept skills.

- Errors of insertion and substitution of sounds in oral reading (DAR-2).

- Progress in oral receptive and expressive skills in learning English but lack of progress in reading and writing.

- Language memory deficits in Spanish CELF-4.

- Memory deficits in cognitive testing and lack of ability to remember math steps and skills.

- Low short-term memory and very low cognitive efficiency scores on cognitive testing in Spanish.

- Current Spanish achievement testing shows deficits in reading fluency and reading comprehension.

- Deficits in math calculation and problem-solving in testing in Spanish.

- Deficits in writing speed in Spanish.

- Behaviors are appropriate in classes where he is at his instructional level but inappropriate in other classes.

Sample Case: Ricardo

Confidential Psychoeducational Report

Name:	Ricardo Desoto-Rodríguez
Age:	15–9
Gender:	Male
Birth date:	6-16-2001
Parents:	Rosa Rodríguez and Felipe Desoto
School:	Lincoln High School
Grade:	9th
Dates evaluated:	March 2017
Examiner:	Marie E. Wilson, EdS, NCSP

Reason for Referral

Ricardo was referred for evaluation due to lack of academic progress and inappropriate behaviors in the classroom. Several academic interventions were put into place prior to the referral for a comprehension psychoeducational evaluation:

- Ms. Anna, Ricardo's ESL teacher, reports that Ricardo's level of vocabulary knowledge and reading comprehension in English were found to be at the first-

grade level, whereas his word reading accuracy and fluency are at the third-grade level. After establishing a baseline in vocabulary knowledge and reading comprehension, Ricardo received targeted interventions at his instructional level for 2 months. Although he made acceptable progress in learning the meaning of vocabulary words, his reading comprehension progress was minimal.

- Ricardo was placed in a Tier 3 math intervention group with other students whose first language is Spanish. A Spanish-speaking paraprofessional, Ms. Cruz, instructs the students in English but then translates into Spanish for students who are not able to comprehend the initial English instruction. Although Ricardo's behavior has been appropriate in that setting, Ms. Cruz reports that he made minimal progress compared to his English learner peers.

Background Information

Background information was obtained from an interview with Ricardo's mother with the assistance of an interpreter, interviews with three of Ricardo's teachers, as well as a review of Ricardo's educational and medical records. Although he would have liked to have attended, Ricardo's father was unable to miss work for the interview.

Mrs. Rodríguez, Ricardo's mother, was interviewed by the school nurse. Mrs. Rodríguez reported that Ricardo was over 11 pounds when he was born. She received medical care throughout the pregnancy and had been placed on a special diet because she was overweight. She did not smoke, use alcohol, or take medication during the pregnancy. Labor lasted for 12 h; an emergency C-section was done under general anesthesia. Ricardo was jaundiced at birth. He received a blood transfusion, and had to stay in the hospital for a few days longer than his mother. According to his mother, Ricardo met normal developmental milestones. He has a history of asthma during childhood but does not now experience asthma-related symptoms. Ricardo is currently healthy. He is full of energy, sleeps well, and only occasionally has mild headaches.

Mrs. Rodríguez was also interviewed by the school social worker with the aid of an interpreter. His mother reported that Ricardo lives at home with both parents and with his 17-year-old brother, Lucas. An older sister, Marta, is currently living in Mexico. Ricardo's father specializes in working with wrought iron. Mrs. Rodríguez does not work outside the home but she said that she would like to find work in order to be able to send money to help her relatives in Mexico. Ricardo's father completed elementary school; his mother finished high school in Mexico. The family moved to the USA 2 years ago when Ricardo was ready to start seventh grade.

Mrs. Rodríguez said that Ricardo has always struggled with learning mathematics. She also related that he did not have problems learning to read while in school in Mexico but had difficulty understanding what he read. Because of this, he did not do well on tests in certain subjects. Mrs. Rodríguez said that her husband left school

after completing the elementary grades. He left partly because he did not like school and partly because he needed to go to work to earn money to help his family.

Ricardo is a very lively and loving son, according to his mother. He likes to be busy doing things and especially enjoys working with cars. He can tune up the car and change the oil. He can fix himself simple meals and willingly does chores to help out the family. Mrs. Rodríguez said that her son is obedient, kind, and very sociable. He does not experience behavior problems at home and she is surprised when teachers tell her that he misbehaves at school.

Ricardo's family speaks only Spanish at home, according to his mother. Lucas can sometimes be of help to Ricardo with homework; however, Lucas' English is limited and so he doesn't always understand enough to help Ricardo. Lucas and Marta did not have academic problems similar to the ones Ricardo has experienced.

Ricardo's ESL teacher, Ms. Anna, reveals that he struggles comprehending low-level texts. His phonemic awareness is very low despite having spent 2 years in ESL 1, which focuses on phonics. Ricardo struggles to write sentences that can be understood by others. Lots of scaffolding, visuals, and modeling are used during instruction, as well as building background knowledge. These strategies have not seemed to help Ricardo move forward in mastering the English language. Ricardo seems to have given up in the classroom. He rarely turns in homework assignments and frequently doesn't complete class assignments. However, his attendance is good.

Ricardo's math intervention teacher, Mr. Terry, reports that he has only the most basic computation skills in math. He can usually add and subtract correctly but only occasionally gets multiplication problems right. He is unable to do anything abstract or work with math applications. His strategy is to copy the work of the students near him, since the work is always too difficult for him. If the concept has only one step and is simple, Ricardo can understand what to do for a short time but he doesn't retain the skill. Mr. Terry believes that Ricardo seems to have had learning difficulties for so long that all of his strategies are directed toward avoiding work. Ricardo is a very social person, chats easily with other students, and is well liked. He likes to be the center of attention because it takes the focus off the fact that he can't do the work in class. He has not been absent yet this year.

Previous Test Results and Vision and Hearing Screenings

This is Ricardo's first psychoeducational evaluation. *The Diagnostic Assessments of Reading-Second Edition* (DAR-2) were administered to Ricardo by his intervention teacher before reading interventions were started. On the DAR-2, Ricardo made some accuracy errors which are typical of Spanish speakers who are learning English as a second language, such as reading "esilent" for "silent" and "estay" for "stay." Other errors were typical of students with a reading disorder, such as reading "blat" for "ball" and "pet" for "bat."

Reading skill	Grade level	Specific skills	Mastered	Not mastered
Word recognition	2	Phonological awareness	Rhyming words; segmenting words; hearing initial consonant sounds; auditory blending	Hearing final consonant sounds
Oral reading accuracy	1.1			
Silent reading comprehension	1			
Spelling	<1	Letters and sounds	Naming capital and lowercase letters; matching letters; matching words; writing words	
Word meaning	2	Word analysis	Consonant sounds; short vowel sounds; vowels with *R*	Consonant blends; rule of silent *E*; vowel digraphs; diphthongs

Ms. Anna, Ricardo's ESL teacher, administered the "Levels of English Proficiency" test used by the district. Ricardo has moved from scores of 1 (beginning Level) in speaking and listening to scores of 2 (early intermediate) but his reading and writing scores have stayed at the beginning level during the 2 years he has attended ESL classes. Here are the definitions of the levels:

Levels		Definition
1	Beginning	Uses basic English but makes many errors. Understands high-frequency words and everyday comments that are related to communicating basic needs
2	Early intermediate	Responds with basic vocabulary to visual prompts, uses everyday expressions, and speaks and writes simple sentences in present and past tenses. With structured support, can produce writing that includes the main idea and basic descriptions. Continues to make basic errors in speech
3	Intermediate	Shows comprehension of familiar topics and begins to have more sustained conversations on more varied topics. Vocabularies become more detailed and wide ranging. May continue to misuse the past tense of verbs and have difficulty with conditional verb forms
4	Early advanced	Uses English in increasingly complex and demanding ways in a variety of settings. Still avoids using language that is not yet internalized. Reads and writes at grade with scaffolding
5	Advanced	Can participate at grade level in content areas with minimal language assistance

Ricardo passed a hearing and a vision screening (without glasses) on 10/11/2014.

Assessment Measures and Procedures

Reported by the speech language pathologist:

- *Woodcock-Muñoz Language Survey, Revised* (WMLS-R): English Edition
- *Woodcock-Muñoz Language Survey, Revised* (WMLS-R): Spanish Edition
- *Clinical Evaluation of Language Fundamentals-Fourth Edition* (CELF-4) Spanish Edition
- *Clinical Evaluation of Language Fundamentals-Fourth Edition* (CELF-4) English Edition

    Reported by the school psychologist:

- *Universal Nonverbal Intelligence Test-Second Edition* (UNIT-2)
- *Batería III Pruebas de habilidades cognitivas-NU*
- *Gray Oral Reading Test-Fifth Edition* (GORT-5)
- *Wechsler Individual Achievement Test-Third Edition* (WIAT-III) selected subtests
- Batería III Pruebas de aprovechamiento-NU
- Student interview
- Informal teacher report
- Review of previous educational history

Test Behavior and Observations

Ricardo was pleasant and cooperative during testing sessions; rapport was easily established with this gregarious young man. He attended well throughout testing and appeared to be motivated to do his best. He persevered on difficult items and was reluctant to say, "I don't know." He typically spoke in English but changed to Spanish when he had difficulty finding English words to express what he wanted to say. His speech in English was somewhat slow and halting. However, he spoke fluently and rapidly in Spanish.

Analysis and Interpretation of Test Results

Language Proficiency

The Spanish edition of the Clinical Evaluation of Language Fundamentals-Fourth Edition (CELF-4 Spanish) was administered to Ricardo to assess his Spanish skills. His Core Language composite score falls within the average range. Receptive and Expressive Language composite scores both fall within the below average range.

His Language Content composite score is average and his Language Memory composite is below average. Ricardo's ability to define words in Spanish is a relative strength for him.

The English version of the CELF-4 was also administered to Ricardo to assess his English skills. All of Ricardo's subtest and composite scores fall within the very low range when compared with native English speakers of the same chronological age.

The Woodcock-Muñoz Language Survey-Revised (WMLS-R) was given in both English and Spanish to determine Ricardo's Basic Interpersonal Communication Skills (BICS) and Cognitive Academic Language Proficiency (CALP). Ricardo was able to perform parallel oral language tasks with 76% success in Spanish and 0% success in English. On parallel reading-writing tasks, Ricardo performed with 46% success in Spanish and 0% success in English.

Intellectual Functioning

The Universal Nonverbal Intelligence Test-Second Edition (UNIT-2) was administered to Ricardo as a measure of his cognitive abilities. Ricardo's Full Scale Battery Score falls within the average range on this measure. His Reasoning Composite is above average. Ricardo's Memory Composite is below average, according to this measure, and his Quantitative Composite falls within the Delayed range. This suggests that Ricardo's nonverbal reasoning skills are better developed than his short-term memory skills and that his nonverbal reasoning skills are stronger than his quantitative reasoning skills. Short-term and working memory skills appear to be better developed than quantitative skills. This profile of scores indicates that Ricardo is relatively adept at discerning the relationships between abstract, figural stimuli. He can acquire and process information adequately through nonverbal, visual means and will typically learn best with concrete and experiential exploratory learning approaches.

Selected subtests of the Batería III Woodcock-Muñoz Tests of Cognitive Abilities-Third Edition Normative Update (Batería III Pruebas de Habilidades Cognitivas-NU) were administered to Ricardo to investigate cognitive process abilities. His visual-spatial processing abilities are average, according to this measure, as are his auditory processing abilities. Ricardo's ability to perform cognitive tasks rapidly was very low and his short-term memory was low.

Academic Functioning

According to the *Gray Oral Reading Test-Fifth Edition* (GORT-5), Ricardo's overall reading skills in English are very low. On this measure, his reading fluency is comparable to that of the average first grader, as is his reading comprehension.

Two of the mathematics subtests on the Wechsler Individual Achievement Test-Third Edition (WIAT-III) were administered to Ricardo. On a measure of written math calculation skills under untimed conditions, Ricardo scored within the very low range. His fluency in correctly completing addition, subtraction, and multiplication problems was also very low. Because of Ricardo's limited English proficiency skills, the math reasoning subtest was not administered.

On the Batería III Woodcock-Muñoz Tests of Achievement-Third Edition Normative Update (Batería III Pruebas de aprovechamiento-NU), Ricardo scored within the above average range in his ability to read single words in Spanish but his reading fluency and reading comprehension were both low. Tests of math calculation, math fluency, and applied problems all showed Ricardo performing in the low range. His ability to spell words correctly in Spanish is below average. Writing speed is slow and the ability to write responses to a variety of demands is very low. It should be noted that this test compares Ricardo with monolingual Spanish speakers who have been educated in Spanish, whereas he has been educated in English for the past 2 years.

Adaptive Behavior

Neither Ricardo's mother nor his teachers described any problems with adaptive behavior. For this reason, no formal assessments were conducted.

Social/Emotional/Behavioral Functioning

In terms of getting along with peers, Ricardo's social skills are a strength for him, according to interviews and observations. He can be likable and personable with both adults and peers. However, in classes that are frustrating to him, Ricardo tends to be loud and likes to play the "class clown." He has also been defiant and sometimes makes excuses to get out of classes. His teachers note that his behaviors improve when he is in classes that are at his instructional level.

Three of Ricardo's teachers served as raters for the Behavior Assessment System for Children-Third Edition (BASC-3). In two classes where Ricardo could not understand instruction or do the work, his teachers rated him as clinically significant on scales for hyperactivity, aggression, conduct problems, attention problems, and functional communication. In his intervention class, which is taught at his instructional level, Ricardo's teacher rated him as clinically significant on the scale for functional communication.

Summary and Recommendations

Ricardo is a 15-year-old ninth grader with average nonverbal mental ability. Spanish is his first language. Language proficiency testing indicates that Ricardo's basic interpersonal communication skills and cognitive academic language proficiency skills are more highly developed in Spanish than in English. Testing was done in both Spanish and English.

Ricardo has average word reading and oral language skills in Spanish. His reading fluency and reading comprehension are deficits in both English and Spanish. He also has significant difficulties in mathematics in both languages. He has failed to make typical progress in learning English in the 2 years he has been in the USA and has failed to progress in intensive math and reading comprehension interventions when taught at his instructional level. He has multiple clinical signs of learning disabilities in math and reading comprehension. He makes adequate progress in some areas and minimal progress in others. He has a history of deficits in reading fluency, reading comprehension, and mathematics in Mexico. Ricardo also has cognitive deficits in memory, quantitative reasoning, and processing speed.

Although some of Ricardo's teachers have been concerned with his behaviors in classes, the inappropriate behaviors appear to be limited to classes in which the work is above Ricardo's instructional level. At home, and when Ricardo can successfully perform the academic work at school, his behaviors are age appropriate.

- The multidisciplinary team should consider Ricardo's eligibility for placement in the Learning Disabilities Program due to specific disabilities in reading comprehension, math calculation, and math problem-solving.
- Ricardo will continue to need support in oral and written English, as well as math. He will not be able to progress unless he is taught at his instructional level. Frequent skill probes should be conducted in order to both determine his instructional level and reasonable academic goals and monitor his progress.
- Directions should be given in small, contained steps and teachers need to check frequently to make sure that Ricardo has understood the instructions. For assignments with multiple steps, it will be helpful to give simple written instructions to accompany oral instructions.
- Ricardo can benefit when information is provided visually, such as with graphs, charts, pictures, diagrams, graphic organizers, computer graphics, and pictures. Ricardo learns best when he is able to work with concrete objects and when skills are modeled for him.
- Reading comprehension strategies should be explicitly taught to Ricardo; teachers cannot assume that he will learn such strategies incidentally.
- To the extent possible, Ricardo should be placed in classes where there is the possibility that instructions can be explained in Spanish if he does not understand them in English. If a Spanish-speaking teacher or paraprofessional is not available, Ricardo can be paired with another Spanish-speaking student who can help him with understanding English instruction and directions.

Index