

10

Assessing Language

ONE OF THE FASCINATING aspects of the human brain is its predisposition for language. Our capacity for expressing ourselves and communicating with one another was a crucial outcome of the evolutionary process. Listening and speaking have been natural processes for the human brain for ages. Reading and writing, though, are tasks that human civilization developed in the last few thousand years. So although language needs to be strongly considered whenever a student has reading or writing problems, it is common for other neurodevelopmental functions to interfere with these outgrowths of human society.

Language is often a very interesting construct to assess. Parents and teachers can provide a plethora of information, and multiple points of evidence should be reviewed for recurring themes. Numerous tests address different aspects of language, though some features do remain outside the reach of testing (but can still be assessed).

For this chapter, I follow a similar structure to the discussions of attention and memory. That is, I describe language conceptually and theoretically, and then outline important distinctions related to the construct of language. Next I discuss language assessment in general, as well as specific types of tasks designed to test language and task-analysis considerations, then outline potential signs of weak language and provide some case studies.

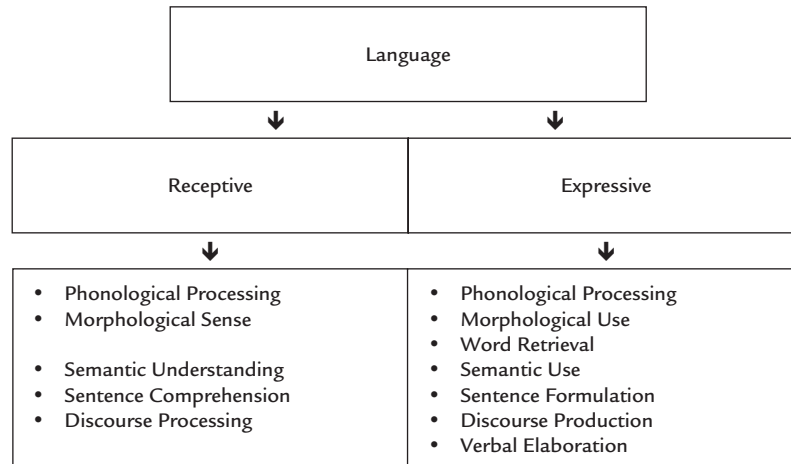
The Construct of Language

High thoughts must have high language.

—Aristophanes

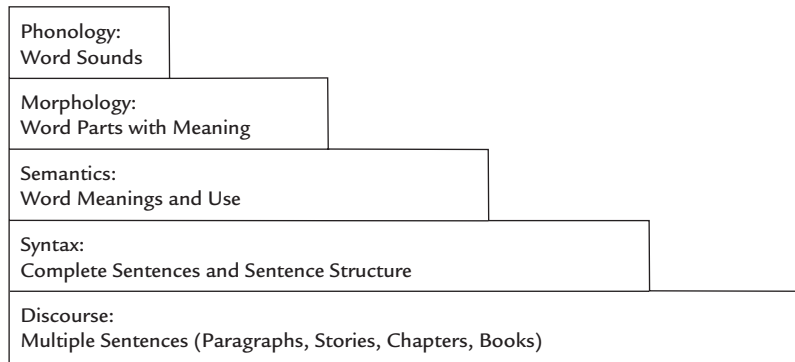
Language is the dress of thought.

—Samuel Johnson

Figure 10.1 Two-System Model of Language

Language can be grossly divided into receptive language and expressive language (a division outlined in Figure 10.1 and discussed in more detail in Appendix A). *Receptive language* is about comprehending incoming information (listening, reading, observing hand signs). *Expressive language* is about communicating or attaching meaning to outgoing information (speaking, writing, making hand signs). In general, expressive language development lags behind receptive language. For instance, think about toddlers and young children, who can understand language at a higher level than they can speak it. Auditory receptive language development begins at about nine months, followed by expressive language development, which begins to emerge at about twelve months; not all receptive language precedes oral expressive language, but one must comprehend in order to use language meaningfully (Johnson, 1993). As another example, consider the experience of learning a foreign language; the capacity to understand what you hear usually comes earlier than the ability to communicate via words and sentences. Students with learning problems can show discrepancies (that is, useful clinical contrasts) between their receptive and expressive language.

Within both sides of language, specific levels differ in terms of the size of the language unit (for example, word or sentence) and the amount of meaning (see Figure 10.2). At the smallest and most basic level is phonological

Figure 10.2 Levels of Language

processing, which handles and manipulates the individual sounds that make up spoken words. The English language contains forty-four basic sounds, or *phonemes*. Phonological processing (also referred to as *phonology*), which has been widely studied, has both a receptive component (used when listening and decoding) and an expressive component (used when generating words and spelling). The next level down from word sounds would be meaningful word parts, or *morphemes*. Morphemes are not syllables (which are sound divisions in words) or simply letters; the smallest unit in a word that contributes to the meaning of the word is a morpheme. Some words (like *it*) contain only one morpheme, while others contain several (like *post-modernism*, which has *post*, *mod*, *ern*, and *ism*). Morphemes include root and base words, as well as suffixes and prefixes (Cooper, 2000). Having a deep understanding of a language and the etymology of words is closely related to *morphological sense* (comprehending morphemes when listening and reading) and *morphological use* (applying morphemes when spelling and writing).

Morphology leads to *semantics*, or the understanding and use of whole words. Aspects of semantics include being able to identify or recognize word meanings (*semantic understanding*), define words and use them in sentences and discourse (*semantic use*), and appreciate connections between related words. On the expressive side of language, *word retrieval* is the capacity to access words from memory efficiently when they are needed.

170 Revealing Minds

☞ Word retrieval, like other language functions, is closely related to long-term memory access. In a way, word retrieval is a narrow slice of more general memory retrieval. It is important to remember that theoretical frameworks help you organize findings, but they are not the be-all-and-end-all in terms of how the brain is wired.

Most communication involves putting several words together into phrases and sentences. *Syntax* is the understanding (*sentence comprehension*) and construction (*sentence formulation*) of language at the sentence level. *Discourse* is the largest size of language, and is made up of multiple sentences (sometimes thousands, as is the case with this book). As with other language levels, discourse has a receptive side (*discourse processing*) and an expressive side (*discourse production*).

Within each of these five levels of language is an additional hierarchy of functions. For example, awareness of individual phonemes is the most advanced component of phonological processing; children tend to become aware of larger linguistic units (such as words and syllables) before becoming aware of smaller linguistic units like phonemes (Snider, 1995). Also, some experts distinguish *phoneme awareness* (analyzing and isolating different sound units in a word) and *phoneme discrimination* (determining whether two phonemes sound alike or not); phoneme awareness has been found to be a better correlate of reading skill than simple phoneme discrimination (Joshi, 1995). Experts also have posited an intermediate unit between the phoneme and the whole word called the *onset-rime*; the onset is the initial consonant or consonant cluster (for example, /d/ in *door*) and the rime is the vowel and the remainder of the syllable (the /-oor/ part of the word) (Foorman, 1995). Morphemes and whole words can vary in terms of size, complexity, and degree of abstractness. Sentences can have basic structures or be more challenging in terms of word order and deployment of conventions (for example, clauses, commas, semicolons). Discourse also varies along similar lines, such as a paragraph in a newspaper article versus a poem by e. e. cummings. Using language to extend and develop ideas is at the apex of discourse production, and is referred to here as *verbal elaboration*.

☞ Two major processes of phonemic awareness are *segmenting* (hearing a spoken word and identifying its phonemes) and *blending* (hearing individual phonemes and putting them together to form a word); segmenting and blending can occur without letter knowledge (Cooper, 2000).

Language functioning relates to other neurodevelopmental constructs, including attention and memory. As I point out in Chapter Eight, language development enhances regulation of output, making it easier to avoid acting on impulse (Anderson, 1998). Difficulty with sustaining attention to ideas and thinking could explain weak listening comprehension and language production in students with attention deficits (Zentall, 1993). In addition, Johnson (1993) pointed out that all oral language requires memory, particularly sequential memory.

Some Important Distinctions

As mentioned in the preceding section, an important distinction in language is between *receptive* (incoming) and *expressive* (outgoing) functions. Because students can have understanding and communication at very different levels, it is important to be aware of this distinction when task-analyzing assessment methods and academic skills. Other general distinctions involve the terms *auditory*, *oral*, and *verbal*. *Auditory* refers to the processes of hearing any and all sounds, including both linguistic sounds and nonlinguistic sounds (such as a train whistle). *Verbal* refers to use of language in either written or spoken form, though many use it to describe information that is printed. Finally, *oral* refers narrowly to spoken language (not writing).

Again, *phonemes* are individual word sounds (as I said, English has forty-four of them), whereas *graphemes* are printed letters. Common letter sequences are known as *orthographic patterns*, and usually do not have any associated meaning (Keene & Zimmermann, 1997); in contrast, *morphemes* are word parts that do convey some meaning. The word “microscopic” contains eleven letters but fewer orthographic patterns (*cr*, for example) that are commonly found in other words (see Figure 10.3). However, its morphemes (such as *micro-*) arguably are orthographic patterns as well. Though

Figure 10.3 Components of a Printed Word

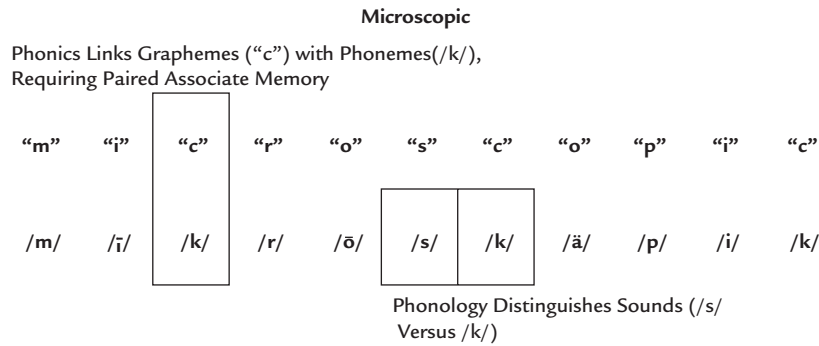
Microscopic	
Phonemes	m i c r o s c o p i c
Graphemes	/m/ /i/ /k/ /r/ /o/ /s/ /k/ /ä/ /p/ /i/ /k/
Orthographic Patterns	cr sc pic
Morphemes	micro- scop- -ic
Base or Root Word	scope
Prefix and Suffix	micro- -ic

orthographic patterns may not be morphemes (that is, have meaning), most morphemes are also orthographic patterns. In terms of tactics for spelling, words can fall into three general orthographic patterns: those with regular and simple patterns (such as *boot*); words with more complex patterns that can be deciphered using phonology, semantics, syntax, and etymology (such as *extravagant*); and challenging words that just have to be learned by rote (like *Wednesday*) (Aaron, 1995). Finally, the base word or *root word* is the core component in terms of meaning, to which prefixes or suffixes may be added to modify meaning in some way.

The difference between phonemes and graphemes leads to the important distinction between phonological processing and phonics. Let's return to *microscopic*, as a spoken word, made up of a series of sounds, or phonemes (see Figure 10.4). Phonological processing (or phonology) enables distinguishing the eleven distinct sounds within the word, such as between the sounds /r/ and /ö/. The printed word *microscopic* comprises eleven letters, or graphemes, some of which also constitute orthographic patterns. Phonics is the system of the connections between phonemes and graphemes, such as the sound /k/ with the letter "c." So while phonological processing is based in sound, phonics is based on the connecting of sound to print (Foorman, 1995; Snider, 1995).

Weak phonological processing can lead to difficulty with phonics; if one has trouble distinguishing word sounds (for example, /t/ from /d/), then

Figure 10.4 Phonics Versus Phonology



connecting them to printed symbols is also going to be hard. On the other hand, difficulty with phonics does not necessarily mean that phonology is weak, because phonics is a skill that requires not just phonology but other neurodevelopmental functions as well (such as paired associate memory). Another clinical contrast, then, is weak decoding (specifically word attack) but intact or strong performance on pure phonological processing tasks (without print), which would isolate the memory component of phonics as the possible culprit.

☞ A *consonant digraph* is two consecutive consonants that represent one sound; a *consonant blend* is two or three grouped consonant sounds in which each individual sound is heard. Similarly, a *vowel digraph* is two consecutive vowels that represent one sound; a *diphthong* (sometimes referred to as “vowel blend”) is two grouped vowel sounds in which two sounds are heard (Cooper, 2000).

Discourse production refers to language beyond the sentence level (for example, summarizing paragraph or telling a story) and involves the rules of language (such as grammar, punctuation, basic organization) and organizing and sequencing of ideas to convey meaning or make an argument. In contrast, *verbal elaboration* is expansion of ideas through language and involves extended thinking and the quality of ideas. To assess discourse production, lengthy pieces such as passage summaries and book reports would

174 Revealing Minds

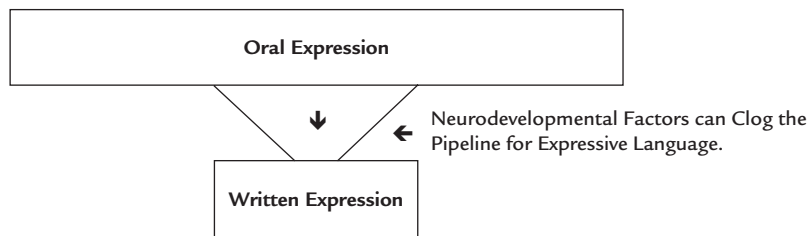
be examined for organization and for how well the various rules of language were followed (that is, how well the sentences are connected and paragraphs constructed). To assess verbal elaboration, the same pieces used to assess discourse production could be considered in terms of quality of thought, or how extended the ideas in the piece are for conveying good thinking. An instruction manual for a DVD player, for example, may be written cleanly with good discourse production, but because it is just conveying basic information it would be sparse in the way of verbal elaboration. In contrast, discourse can be quite elaborate in terms of idea density and meaning (for example, a poem, a song, an improvised speech) while not following traditional language conventions.

☞ If forced to choose, I would rather have good verbal elaboration and weak discourse production than vice versa. Verbal elaboration is about the quality of thought that can be developed through language, and this is harder to teach and remediate. Discourse production is more coachable (for example, by providing rules and examples to follow).

Narrative discourse tells a story or relates events and characters. Narratives are often fictional, but not always (they can relate a personal anecdote or historical event). Expository discourse is intended to convey information and is often nonfiction and more detail-laden (textbooks, lectures, manuals). This is an important distinction because some students show better comprehension for narrative material, perhaps because it tends to be more contextualized than expository language. On the other hand, a student with excessive cognitive activation may get distracted by the details and connections in a narrative passage (being reminded of experiences similar to those of characters in a story).

As described in Chapter Six, *oral expression* is communication through speaking and *written expression* is communication on paper (or via word processing software). While expressive language is a central ingredient to both oral and written expression, each involves a slightly different set of neurodevelopmental ingredients. What is perhaps most important, writing requires neuromotor function in terms of either graphomotor (handwriting) or fine motor (keyboarding); motor difficulties in these areas will usually restrict speed and volume of written output. In addition, the process of writing

Figure 10.5 Oral Expression Versus Written Expression: Constrictions on Writing



involves numerous rules and conventions that need to be recalled from long-term memory, mentally suspended in active working memory, and executed with the help of the attention production control system. Finally, the complexity of writing (relative to speaking) means that it is more draining in terms of the mental energy control system.

Because of the different sets of neurodevelopmental ingredients for writing and speaking, students may display clinical contrasts in their oral and written expression, depending on their profiles. If, for example, a student has intact or strong expressive language but a weakness in some aspect of memory or attention, then you are likely to observe longer and more sophisticated speaking than writing from this student, whose expressive language would be mired by weaknesses in other areas. It would be as though a pipeline (between brain and page) was clogged up (see Figure 10.5).

Finally, a student's language can differ dramatically in terms of what is comprehended and generated between social situations and academic work. Most students naturally engage in large amounts of automatic or social language, which is their informal, less structured conversational language (or lingo). For the most part, a person can dictate the topic of discussion during social language. On the other hand, in the classroom students are required to employ literate language, which is more formal and analytic. Also, the topics for literate language are usually imposed on the student.

General Assessment Considerations

Because of language's prevalence in school, an enormous amount can be learned about a student's comprehension and communication from teacher reports and a review of academic work. Although product observations, such as reviewing a student's writing sample or piece of math homework, can be

176 Revealing Minds

revealing, process observations may be even more important for language assessment. For instance, listening to a student read a list of words or a passage is extremely informative about decoding, as is observing the writing process and interviewing about plans for a written assignment.

However, language assessment usually also requires isolating language from reading and writing skills. Though receptive and expressive language are critical components of reading and writing, respectively, many other neurodevelopmental functions are involved in these skills. Assessment of oral formulation involves tasks such as telling stories, giving summaries of what has been read, or telling how to make or do something (Johnson, 1993). Also, language should be assessed in relation to other functions, including attention, memory, and neuromotor function (Moats, 1994b). As I mentioned earlier, when a student has difficulty understanding after a presentation of information (a set of oral directions, for example) but readily improves after a repetition, the culprit is often attention (superficial processing depth), as opposed to language; when repetition does not help, language is more likely to be the undermining factor.

Finally, language and behavior have significant interactions. The co-occurrence of social-emotional and behavioral problems and language weaknesses ranges between 50 percent and 70 percent. Research on this relationship has been conducted in both directions. First, children with primary language weaknesses have been tracked over time and found to have elevated rates of social, emotional, and behavioral problems. Second, children with primary diagnoses in the emotional-behavioral realm have been found to have moderate to severe language difficulties. The interaction may be a downward spiral in which students with communication difficulties resort to inappropriate means to meet their needs (such as aggression), leading to repeated failures (for example, peer rejection) and consequent feelings of inadequacy and potential psychopathology (McCabe, 2005). Therefore, assessments of students with language difficulty should also consider the possible connection with behavior problems (and vice versa).

Here are some steps that are generally useful to take when assessing language:

- Make use of both product and process observations within academic work.

- Isolate language functions with specialized tasks (for example, oral expression, listening comprehension).
- Assess language in the context of a student's overall neurodevelopmental profile, considering other areas such as attention and memory.
- Be aware that language difficulty and behavior problems can go hand in hand.

Tasks Designed to Assess Components of Language

This section provides descriptions of some of the most useful tasks for isolating particular language functions. Most do not involve reading or writing because, as has been pointed out, these academic skills involve so many other functions that deciphering specific breakdown points can be very difficult without specialized methods. Task descriptions are summarized in Table 10.1, along with examples of available tests and subtests. (And Appendix D includes full battery names for acronyms and test publishers.)

Starting at the most basic level of language, several kinds of tasks assess phonological processing at increasing levels of complexity: appreciating sounds, comparing and contrasting sounds, blending and splitting syllables, segmenting phonemes, and manipulating phonemes (Snider, 1995). An example of a sound comparison task is matching words that start with the same sound (for example, which word starts with the same sound as *cook*: *book*, *dog*, and *cat*); often sound comparison tasks include pictures of the words to be compared, which is particularly useful for younger students or those with extreme decoding weaknesses. Segmenting words (for example, breaking the word *bug* into the three phonemes /b/, /u/, and /g/) is a phoneme analysis task, while blending sounds (putting the sounds /k/, /a/, and /t/ into the word *cat*) is a phoneme synthesis task (Snider, 1995). One of the more challenging phonology tasks is elision, in which the student transforms orally presented words by omitting specific phonemes. (For example, "Say *trap* without the /r/ sound.") A similarly difficult task involves replacing a specific phoneme to create a different word. (For example, "If you change the /s/ in *sail* to /t/, what word do you create?")

Table 10.1 Assessment Task Types for Language

<i>Task Type</i>	<i>Description</i>	<i>Primarily Assesses¹</i>	<i>Examples²</i>
<i>Sound matching</i>	<i>Matching pictures of objects with similar initial word sound or final word sound (response can be speaking or pointing)</i>	<i>Language (phonological processing)</i>	<i>Sound Matching (CTOPP); Test of Phonological Awareness (TOPA)</i>
<i>Blending</i>	<i>After hearing segmented words (for example, played at slow speed on audiotape) blending the word sounds by stating the words at normal pace</i>	<i>Language (phonological processing)</i>	<i>Blending Words, Blending Non-words (CTOPP); Phonological Awareness (CELF-IV); Sound Blending (WJ-III Cognitive)</i>
<i>Elision</i>	<i>Transforming words by deleting phonemes from orally presented words</i>	<i>Language (phonological processing)</i>	<i>Elision (CTOPP); Phonemes (PAL); Phonological Awareness (CELF-IV); Phonological Processing (NEPSY)</i>
<i>Rapid automatic naming</i>	<i>Quickly naming visually displayed letters, numbers, and objects; taps convergent retrieval because of the required specificity of responses</i>	<i>Language (word retrieval)</i>	<i>Rapid Digit Naming, Rapid Letter Naming, Rapid Object Naming (CTOPP); Rapid Picture Naming (WJ-III Cognitive); Speeded Naming (NEPSY)</i>
<i>Category naming</i>	<i>Quickly naming words belonging to a semantic (such as vegetables) or phonemic (such as words that start with “t”) category; taps divergent retrieval because of multiple potential responses</i>	<i>Language (word retrieval)</i>	<i>Verbal Fluency (NEPSY); Verbal Fluency Test (D-KEFS); Word Associations, Rapid Automatic Naming (CELF-IV); RAN-Digits, RAN-Letters, (PAL); Retrieval Fluency (WJ-III Cognitive)</i>
<i>Receptive vocabulary</i>	<i>Pointing to picture of orally presented word in a multiple-choice array; selecting the correct definition of a word in a multiple-choice format</i>	<i>Language (semantic understanding)</i>	<i>Picture Vocabulary Multiple-Choice, Vocabulary Multiple-Choice (WISC-IV Integrated); PPVT-III</i>
<i>Expressive vocabulary</i>	<i>Orally defining words</i>	<i>Language (semantic use)</i>	<i>Verbal Knowledge (SBS); Vocabulary (WISC-IV Integrated); Vocabulary (WAIS-III); Word Definitions (DAS); Word Definitions (CELF-IV)</i>

<p><i>Direction following</i></p>	<p><i>Following orally presented directions, usually by pointing to objects on an easel or in a booklet, sometimes by drawing</i></p>	<p><i>Language (sentence comprehension)</i></p>	<p><i>Concepts and Following Directions (CELF-IV); Verbal Instructions (PEERAMID-2); Verbal Instructions (PEEX-2); Comprehension of Instructions (NEPSY)</i></p>
<p><i>Complex sentences</i></p>	<p><i>Answering questions that are challenging in terms of sentence structure or vocabulary, or both; response may be oral (using expressive language) or multiple-choice (no expressive language)</i></p>	<p><i>Language (sentence comprehension)</i></p>	<p><i>Comprehension of Basic Concepts, Inferences (CASL); Yes, No, Maybe (PEERAMID-2); Complex Sentences (PEEX-2); Figurative Language (TLC); Sentence Questions</i></p>
<p><i>Ambiguous sentences</i></p>	<p><i>Identifying and explaining at least two of the multiple possible meanings of a sentence; can be in multiple-choice format, which isolates the receptive demand</i></p>	<p><i>Language (sentence comprehension)</i></p>	<p><i>Ambiguous Sentences (TLC); Ambiguous Sentences (CASL); Sentence Ambiguity (PEERAMID-2)</i></p>
<p><i>Sentence construction</i></p>	<p><i>Generating oral sentences that include provided sets of words (usually two to four); words are usually displayed on a page or easel, sometimes with an accompanying picture</i></p>	<p><i>Language (sentence formulation)</i></p>	<p><i>Oral Expression: Recreating Sentences (TLC); Formulated Sentences; Sentence Assembly (CELF-IV); Sentence Formulation (PEERAMID-2); Sentence Formulation (PEEX-2)</i></p>
<p><i>Passage listening comprehension</i></p>	<p><i>Answering questions about orally presented passages; response may be oral (using expressive language) or multiple-choice (no expressive language)</i></p>	<p><i>Language (discourse comprehension)</i></p>	<p><i>Missing Information (PEERAMID-2); Paragraph Summarization and Comprehension (PEEX-2); Understanding Spoken Paragraphs (CELF-IV)</i></p>

¹The neurodevelopmental functions and constructs listed here are those that are primarily assessed by the given task; other functions and constructs may be tapped as well.

²Full test and battery citations are listed in Appendix D.

180 Revealing Minds

All the tasks described thus far are sound-based, in that the words are presented orally and not in print. This is an important feature of most phonological processing tasks because it minimizes the effects of the various other functions that can undermine decoding. However, having the student read pronounceable non-words, or nonsense words, can provide a window into the student's relatively pure use of phonics (Aaron, 1995; Joshi, 1995). Examples of nonsense words are *hune*, *jeptar*, and *lomun*. Decoding such words requires word attack skills, because their unfamiliarity precludes using sight word recognition and recall of common orthographic patterns. Consequently, decoding demands are focused on sound-symbol connections (paired associate memory) and phonological processing, both needed for phonics.

Few available tasks assess morphology specifically. Those that do exist generally ask the student to alter a word in some way, such as converting from singular to plural (for example, *goat* to *goats*, *mouse* to *mice*, *stimulus* to *stimuli*) or changing a verb tense (such as *bake* to *bakes* or *baked*). For such tasks, the focus is on suffixes, which are a particular type of morpheme. A great deal can be learned about morphology, though, through informal techniques and limit testing, such as asking the student to name some words that are related to a word in a reading task (for example, going from *capture* to *capture*, *captivity*, and perhaps even *caption*), which would assess the student's understanding of base and root words, as well as other morphemes. Another tactic is to ask the student to define a morpheme (for example, "What does 'civil' mean?") and then interview about how it can be altered (for example, "How does the meaning of 'civil' change if we add '-ity'?").

☞ Exploring the student's morphology probably is not necessary unless a problem is first detected at the semantic level. But when the student has trouble with word meanings, it can be very useful to isolate any difficulty understanding or using morphemes.

By contrast, many kinds of tasks can help you assess word retrieval. Most are timed, and students are often engaged in them by describing them as a sort of "brain race." (For example, "Let's find out how fast you can pull words out of your brain when you need to.") Word retrieval tasks fall into one of two general categories: convergent and divergent. *Convergent tasks* require the

student to quickly retrieve a specific word, such as naming something displayed visually (pictures of objects, letters, numbers, colors). *Divergent tasks* ask the student to quickly retrieve words that belong to a defined category, which could be a semantic category (such as plants) or a phonemic category (such as words that start with “m”). Students can differ in their performance across convergent and divergent word retrieval tasks. Some students benefit from the visual prompting and structure of convergent tasks, whereas others perform better with the degree of freedom afforded by divergent tasks.

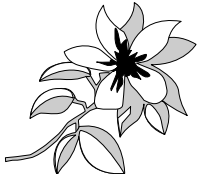
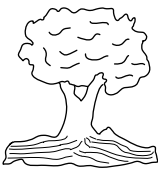
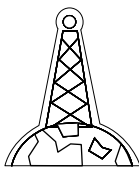
Practically all language tasks have receptive demands of some kind, which could be simply understanding instructions for the task. The major differentiation, though, between tests of receptive language and tests of expressive language is the kind of output the student is required to generate. In a nutshell, if the student has to respond in some way with language (using words, sentences, or discourse), then the task assesses both receptive and expressive functions. On the other hand, if the student can respond in a way that uses minimal language (by pointing, drawing, or selecting from multiple-choice options), then the task is targeted more on receptive function than on expressive function.

At the semantic level, any task that has the student provide definitions of words assesses semantic use (expressive). However, a multiple-choice vocabulary task, such as selecting a definition or pointing to a picture that illustrates a word, assesses semantic understanding (receptive). When a student struggles with an expressive task, it is usually important to follow up with an analogous receptive task to assess the extent of the language difficulty (see Figures 10.6 and 10.7), since some students actually have good understanding of words, sentences, and discourse despite having a hard time using them to communicate. For instance, maybe the student knows what a tree is, but has a hard time putting that knowledge into words. Converting any open-ended question into a multiple-choice question is an example of limit testing.

Sentence comprehension tasks vary in the complexity of language. The capacity to understand basic sentence structures (for example, subject, object) can be assessed via direction-following activities. For instance, the student may be asked to follow orally presented instructions using printed shapes and symbols. A more advanced task would be to answer comprehension questions about orally presented complex sentences (that is, challenging in terms of sentence structure or vocabulary, or both); the questions themselves can

182 Revealing Minds

Figure 10.6 Expressive Versus Receptive Vocabulary Tasks: Basic Examples

Expressive Task:		What is a <i>tree</i> ?	
Receptive Task:		Which is the definition of <i>tree</i> ?	
A.	B.	C.	
Plant with one main stem or trunk, which develops branches	Structure that is relatively higher than its length and width	Part of a plant that produces a seed; usually has petals and pollen	
Receptive Task:		Point to the picture of a <i>tree</i> :	
			
			

also be challenging for students. Still more advanced is understanding the multiple meanings of ambiguous sentences (such as “We’ve got to get to the bottom of this”). Sentence ambiguity tasks can combine receptive and expressive demands; identifying subtle double meanings of sentences obviously is receptive, but explaining those possible meanings is expressive and can be just as challenging. One student may not decipher the multiple meanings (suggesting weak sentence comprehension), while a second student might understand the different meanings but be unable to explain them clearly. A multiple-choice format can help you differentiate between these two levels of

Figure 10.7 Expressive Versus Receptive Vocabulary Tasks: Advanced Examples

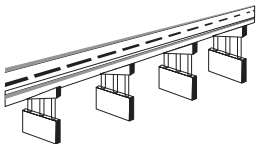



Expressive Task:		What is an <i>arch</i> ?	
Receptive Task:		Which is the definition of <i>arch</i> ?	
A.	B.	C.	
Segment of a curve or circle	Curved structure that supports weight of material over open space	Structure over open space that provides passage for pedestrians or vehicles	
Receptive Task:		Point to the picture of an <i>arch</i> :	
			
			

Figure 10.8 Mock Sentence Comprehension Tasks

Basic: "Point to the black square after you point to the white square and the triangle."


Complex: "If they hadn't arrived early, nobody would have had a chance to see it. *Would anybody have seen it if they had arrived late?*"

Ambiguous: "What are different things that this sentence could mean? *That's really up in the air.*"

task performance, since the second student would probably be able to select correct meanings from displayed options. Figure 10.8 includes examples of sentence comprehension tasks.

Again, neurodevelopmental tasks of receptive language usually avoid reading and tasks of expressive language usually avoid writing, the rationale being to isolate specific functions that might be causing a learning or skill breakdown. Sentence formulation tasks exemplify this principle, as they are generally designed so that the student creates sentences orally. One such task displays two or three words, sometimes with an accompanying picture, and then asks the student to create a meaningful sentence that includes all the words in their given form (for example, no tense changes to verbs). Figure 10.9 gives you another look at a mock sentence generation task originally presented in Chapter Six, which presents a set of words that the student must order so as to construct at least one meaningful sentence. In one version of this task, the words are displayed on an easel and the student responds orally. In a second version of this task, the words are displayed on individual cards and the student responds by sequencing the cards on the table. Both versions of this task assess sentence comprehension without mixing it with

Figure 10.9 Mock Sentence Generation Task

Finished	Their	Basketball	And
Kids	After	Work	Played
Then	School	The	

184 Revealing Minds

graphomotor function, but the second version requires less active working memory since the reordering of the words can take place on the table instead of on mental counter space.

Assessing discourse processing via listening comprehension generally involves simply reading a passage to the student and then asking questions to determine the level of understanding. It is usually advisable to use both narrative and expository discourse, since students encounter both in their academic work. Comprehension questions should also vary in type, including factual recall, inference drawing, and predicting. In addition, multiple-choice questions can be used to factor out expressive language difficulty.

Royer, Greene, and Sinatra (1987) described an interesting method called the Sentence Verification Technique (SVT), which could be used to assess discourse processing and sentence comprehension (as well as processing depth). SVT, which was used successfully with students in Grade 3 and higher, first involves developing an equal number of four types of test sentences derived from sentences in a text passage. The four test sentence types are *originals*, or exact copies of passage sentences; *paraphrases*, which have the same meaning as passage sentences but with most of the words changed; *meaning changes*, which are sentences with altered meanings that contain several of the same words as passage sentences; and *distracters*, which relate to the same passage topic but differ in meaning and wording from passage sentences. With the four types of test sentences developed in advance, the student then reads or listens to the passage and, without having the text for reference, judges each of the test sentences to be *old* (originals or paraphrases) or *new* (meaning changes and distracters). Students who are overly focused on decoding (to the point of missing the meaning of the passage) may perform well on originals and distracters but have difficulty with paraphrases and meaning changes; in contrast, students who are overly focused on meaning might accurately identify originals, paraphrases, and meaning changes, but display difficulty with distracters.

To assess discourse production as separate from written expression (that is, through oral expression), the student needs to be given a prompt or topic and asked to discuss it. One tactic is to have the student read or listen to a passage and then summarize it, although insufficient understanding or lack

of memory will interfere with the task and keep it from providing a clear window into expressive functioning. As an alternative, the student could be asked to describe a personal experience (for example, something that happened last vacation), a hobby or favorite activity, or the adult job that seems most appealing.

☞ As a movie buff, I am biased toward asking students to summarize movies they have recently seen. This can put students at ease since the topic is nonacademic and fun.

Personal norms are needed when appraising the student's summaries and descriptions. How well is the information organized? Are the references (for example, the pronouns) clear? Do sentences link together in logical ways? Does the student check in to see that the listener is following? As mentioned earlier in this chapter, assessing verbal elaboration involves going beyond how well the student's discourse is organized and based on the rules. What is the quality of thought in the student's language? How extended or well-formulated are the ideas? Does the student communicate the bare minimum or provide a complete picture of the thought process?

Task-Analysis for Language

Practically any assessment task is an opportunity to look at a student's language functioning. To take advantage of the opportunity, however, you need to be aware of the specific language demands of a task, regardless of whether it is designed to assess language. Table 10.2 lists some considerations for language task-analysis.

Again, academic tasks can be very revealing windows into language functioning, especially when used in conjunction with specific language tasks that isolate particular functions. Although math has many nonverbal aspects, language (especially semantics) is also a factor for success in math. The student's understanding of word problems relates to sentence comprehension and discourse processing. Thus you can assess a student's expressive language and

Table 10.2 Considerations for Language Task-Analysis

<i>Question About Task</i>	<i>Analysis of Language Demands</i>
<ul style="list-style-type: none"> • <i>How much language is presented to the student (including task instructions)?</i> • <i>How much visual support (such as pictures) is provided along with language?</i> • <i>How complicated is the language presented to the student?</i> • <i>How much language is the student required to generate?</i> • <i>Can the student respond without having to use language, or with very little language?</i> • <i>How sophisticated or elaborated do the student's responses need to be?</i> • <i>Does the task involve word sounds, word parts, whole words, sentences, or discourse?</i> 	<ul style="list-style-type: none"> • <i>Extent of receptive language</i> • <i>Complexity of receptive language</i> • <i>Complexity of receptive language</i> • <i>Extent of expressive language</i> • <i>Complexity of expressive language</i> • <i>Complexity of expressive language</i> • <i>Levels of language</i>

verbal elaboration during an interview that focuses on procedures the student used for solving various math problems.

Reading, writing, and spelling obviously are loaded with language demands. Passage reading can be modified into a *cloze task* (one in which words are removed and the student needs to identify missing words using the remaining information); such a task requires understanding of context clues and receptive language at several levels. Cloze tasks can also be based on individual words with letters removed. Reading decoding tasks can be used to assess phonological processing, especially when nonsense words are employed (weak decoding, though, may be caused by factors other than language). Nonsense words can also be used for spelling tasks to assess phonics, as well as knowledge and application of spelling rules (Moats, 1994a). Spelling is a multifaceted task that requires several constructs, including memory (such as recall of rules, orthographic memory, and paired associate memory) and language (such as phonological processing, morphological use, and semantic use). When a student spells well, it suggests intact or strong functioning across these neurodevelopmental areas. Weak spelling, though, needs to be closely examined (in conjunction with neurodevelopmental tasks) to determine

Table 10.3 Considerations for Spelling Assessment

<i>Element</i>	<i>Examples</i>
Predictable Phoneme-Grapheme Correspondences	
<i>Blends</i>	<i>flat, dragon</i>
<i>Digraphs</i>	<i>chip, fish</i>
Unpredictable Phoneme-Grapheme Correspondences	
<i>Single consonants</i>	<i>dress, edge, result</i>
<i>Tense vowels</i>	<i>grown, fight, explain</i>
<i>R-controlled vowels</i>	<i>fear, port, bird</i>
<i>Diphthongs</i>	<i>boil, power, bout</i>
<i>Consonant blends</i>	<i>blink, square, scary</i>
<i>Consonant digraphs</i>	<i>which, kitchen</i>
Syllable Patterns	
VCCV	<i>sister, September</i>
Open VCV	<i>behind, nobody</i>
Closed VCV	<i>damage, management</i>
C-le	<i>bugle, treatable</i>
R-controlled vowel	<i>porter, curdle</i>
Idiosyncratic	<i>action, atomic</i>
Orthographic Rules and Syllable Juncture	
-ve	<i>hive, give, glove</i>
Doubling	<i>jogging, flopped</i>
y to i	<i>studious, beautiful</i>
Drop silent e	<i>caked, coming</i>
Inflections	<i>walked, logs, fishes</i>
Silent Letters	<i>sign, bomb</i>
Irregular (Odd) Spellings	<i>of, enough, said</i>
Homophones	<i>their, there; to, two, too</i>

Source: Based on Moats (1994a).

the specific breakdown points. Spelling assessment should include words that sample a range of orthographic patterns, sound-symbol relationships, and morphemes. Dynamic assessment of spelling incorporates instructional elements such as talking about base words and their derived words, pronouncing by syllables, and segmenting phonemes (that is, orally breaking down words by sounds) (Moats, 1994a). Table 10.3 includes detailed information about elements of a spelling sample.

188 Revealing Minds

A writing sample can be an important tool for appraising a student's expressive language. Providing a standard prompt (for example, "What are some steps our society can take to reduce pollution?") helps the student get started, and also makes it easier to compare across students and better use personal norms to identify typical and atypical errors, patterns, and overall quality. Writing prompts can be pictures, and guidelines for developing such prompts include using a picture that depicts an interesting scene or event, contains at least two characters, and displays potential conflict between characters requiring resolution (Hooper et al., 1994). Since writing also requires other constructs besides expressive language, it is important to compare the student's written and oral expression (Chapter Six describes these and other useful clinical contrasts). To make full use of writing as an assessment task, it is important to have the student describe the thought process that accompanies writing (sometimes referred to as a "think-aloud protocol"). In addition, semi-structured interviews can be used to probe the student's thinking after the writing task (Hooper et al., 1994). Sample questions: What was your main idea? What were your supporting ideas? Why did you put the information in this order? How clear was your summary? Would you make any changes to the paper now?

Language Signs and Symptoms

The preceding discussion about tactics and tasks for assessing language has already illuminated numerous indicators of language functioning. Table 10.4 summarizes these and other potential signs of language. (Note: Similar information is provided in Appendix C, which also lists typical findings for other neurodevelopmental constructs.) It is important to remember that a student's language may seem different depending on the setting or social context. For instance, a student may sound fluent during casual conversation or with peers but fall apart on more challenging or decontextualized tasks. Academic tasks involve literate language that places specific demands on the student. Put differently, language weaknesses are harder to conceal in academic work than in social interactions. In some cases, though, a student may have better literate and academic language than social language, perhaps having a hard time with the speed and lingo of peer conversation. (For further discussion of social cognition, see Chapter Eleven.)

Table 10.4 Signs and Symptoms of Language

<i>Language Level</i>	<i>General Findings</i>
<i>Phonological processing</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Decoding words (including nonsense words) through phonics-based word attack strategies such as segmenting and re-blending (rather than recognizing sight words)</i> • <i>Rhyming words and syllables</i> • <i>Misspellings that are phonetically logical (such as enuf for enough)</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Reading with little fluency or rhythm</i> • <i>Misspellings that are not phonetically logical (such as alpel for apple)</i> • <i>Decoding errors that are visually close but with poor phonics (siege for sieve or fat for first)</i>
<i>Morphological sense</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Identifying words that are related via root or base</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Trouble determining meaning of a word by looking at its component parts</i> • <i>Decoding errors involving omissions of prefixes or suffixes (for example, distribute for distributed)</i>
<i>Morphological use</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Figuring out how to spell words based on morphemes (for example, “idio-syn-crat-ic”)</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Spelling errors that reveal limited understanding of morphemes (such as carsik for carsick)</i>
<i>Word retrieval</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Good automaticity and fluency with decoding</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Overreliance on nondescript words such as stuff and things in speech and writing</i>

(Continued)

Table 10.4 Signs and Symptoms of Language (*Continued*)

<i>Language Level</i>	<i>General Findings</i>
<i>Semantic understanding</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Understanding words encountered in reading</i> • <i>Grasping math and science terminology</i> • <i>Correctly spelling homophones (such as piece and peace) based on context</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Student describing trouble understanding words teachers use</i> • <i>Trouble understanding social lingo</i> • <i>Decoding errors involving stress on wrong syllable (“dom-IN-ate” for “dominate”)</i>
<i>Semantic use</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Accurately defining terms on tests and quizzes</i> • <i>Explaining meanings of words encountered when reading</i> • <i>Forming clear answers to comprehension questions</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Erroneous, vague, or limited word use in speech and writing</i> • <i>Difficulty using social lingo</i>
<i>Sentence comprehension</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Understanding task instructions</i> • <i>Reading math word problems and identifying the procedure needed to solve the problem</i> • <i>Self-correcting decoding errors based on context</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Errors in listening comprehension that are not readily corrected after repetition</i> • <i>Trouble answering comprehension questions about reading</i> • <i>Difficulty determining word meanings based on sentence context</i>
<i>Sentence formulation</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Adroitly rephrasing ambiguous sentences into other versions that convey multiple meanings</i> • <i>Forming clear answers to comprehension questions</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Repetitive or frequent use of simplistic sentence structures in written work</i> • <i>Trouble with grammar (for example, unclear pronouns or noun-verb disagreements)</i>

Table 10.4 Signs and Symptoms of Language (*Continued*)

<i>Language Level</i>	<i>General Findings</i>
<i>Discourse processing</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Comprehending lectures and class discussions</i> • <i>Reading math word problems and identifying the procedure needed to solve the problem</i> • <i>Self-correcting decoding errors based on context</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Errors in listening comprehension that are not readily corrected after repetition</i> • <i>Trouble answering comprehension questions about reading (such as drawing inferences)</i> • <i>Difficulty determining word meanings based on passage context</i>
<i>Discourse production</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Providing good summaries of listening or reading passages</i> • <i>Forming clear answers to comprehension questions</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Disorganized ideas in written work, sentences not connected cohesively</i> • <i>Trouble describing personal experiences in a clear fashion</i>
<i>Verbal elaboration</i>	<p>Asset Indicators</p> <ul style="list-style-type: none"> • <i>Sharing developed thinking during class discussions</i> • <i>Ideas extended through oral and written expression</i> <p>Signs of Dysfunction</p> <ul style="list-style-type: none"> • <i>Frequent use of very brief responses to questions</i> • <i>Having a hard time explaining how problems were solved or tasks approached</i> • <i>Minimal written and oral output</i>

CASE STUDY

Nate is ten years old and in the fifth grade. Although he can decode effectively, throughout his schooling he has experienced reading comprehension problems that have gotten more severe. His grades on quizzes and tests have also been poor. He does not enjoy reading at all, but his parents note that he likes movies; in fact, he tends to watch some of his favorite animated movies over and over on DVD.

192 Revealing Minds

Nate is quite social and can be seen interacting with his circle of buddies during recess, P.E. class, and lunch.

The assessment confirmed that Nate has weak receptive language, from the whole word level through understanding of discourse. He has thin vocabulary knowledge, is easily confused by different sentence structures, has trouble with ambiguous language, and struggles with inference drawing. His language weaknesses certainly affect his reading comprehension, and that poses more of a problem now that he is “reading to learn,” but they also affect his listening comprehension; as a result, his knowledge base is not developing as it should and his test performances have suffered. (He also may have a hard time understanding some test questions.)

Nate’s receptive language is particularly weak with the literate material that abounds in schoolwork. When interacting with peers he has a better time understanding their more casual, social language (their lingo). Also, he has soaked in animated movies through repeated viewings, and such movies also provide a great deal of visual support for the language. Nate’s learning plan may need to prioritize his language weaknesses, as it is unlikely that he can tackle everything at once. It might make sense to start with his semantic understanding (for example, bolstering his lexicon through word families) and then move to sentences and discourse.

CASE STUDY

Shawn is a ten-year-old fifth grader. Socially, he is described by his teachers as shy and relatively quiet in class. He has a very good friend with whom he spends the majority of his free time at school. Academically, writing has emerged as a major issue; his output is typically brief, nondescriptive, and general, and also lacking good structure and organization. However, he is an accomplished reader and seems to be focused in class. Shawn’s parents report that he reached his early childhood developmental milestones on time, with the exception of putting words together to form short sentences (delayed by about six months).

During the assessment Shawn showed a significant discrepancy between his receptive language and his expressive language. He demonstrated a good grasp of word meanings through multiple-choice items, but struggled to define words on his own. He comprehended various orally presented sentences and passages, but had trouble constructing sentences from word and picture prompts. In general, he

seemed to understand task directions and questions, but expressed himself slowly, briefly, and with noticeable effort; for instance, he had a hard time describing a book he recently read.

In short, Shawn has weak expressive language but good receptive language. This clinical contrast plays out in his academics in terms of much better reading skill than writing ability. He also takes in material when listening, but his class participation is limited because he struggles with putting his ideas into words. His somewhat withdrawn nature probably also stems from his weak expressive language, as he may be uncomfortable communicating with peers unless he is very comfortable (as with his good friend).

Shawn may require language therapy to improve, but much can be done in the classroom and at home to help him. He needs regular opportunities to practice using language, such as during family meals and when riding in the car; affinity topics may engage him better, and over time he can be pushed to elaborate on other material. At school, small group work (perhaps including his friend) may elicit more oral participation than whole-class discussions. Also, his receptive language and reading skill need to be acknowledged, celebrated, and nurtured.

CASE STUDY

Maya is fifteen years old. She is off to a rocky start in high school in her freshman year. Her father reports that she has generally been a “solid B student,” but only by “working her tail off.” Her teachers similarly describe her as a very determined worker, but she is having real trouble in English, science, and history classes. She says that the reading and writing assignments are very difficult for her. Her best subjects are math and art. She is also a fine athlete, but her parents are considering pulling her out of sports so that she can spend more time on her studies.

The assessment determined that Maya has appropriate decoding skills, but that her receptive language varies. At the lower levels (that is, sound and word), she has pretty good functioning, but she has more difficulty with the higher levels (sentence and discourse). In particular, she has trouble with abstract and complex language that comes in extended pieces (such as that found in novels and textbooks). Maya’s expressive language shows a similar pattern. She can provide word definitions, for example, and construct basic sentences and paragraphs, but she really struggles

194 Revealing Minds

with composing complicated sentences and writing essays. By working very hard, Maya was able to maintain fairly good grades through middle school, but high school hit her with a great deal of extended, complex language demands that have overwhelmed her.

One approach to Maya's learning plan is providing her alternative means of accessing information. For example, she would probably do better with history information that has been condensed into notes, rather than having to read through lengthy chapters. Her writing process may need to be explicitly staged, so that she does not feel so overwhelmed. Also, she might be allowed to substitute some writing assignments with other formats, such as completing detailed graphic organizers or constructing a diagram (for science, for example). Finally, her assets in math and art (which, incidentally, involve relatively little language) need to be highlighted. Taking away athletics should be an absolute last resort, as sports are probably making her feel better about herself.

This and the two chapters that precede it have covered the big three constructs of attention, memory, and language that play such huge roles in academic work. The neurodevelopmental framework contains other constructs, though, which should be considered when assessing to understand. The next chapter is devoted to assessment considerations for these other factors.