

Table 9.1. Essential components of reading, writing, and spoken language for screening and comprehensive assessment

SKILL	DEFINITION AND EXAMPLES	HOW IT LOOKS IN DYSLEXIA
ESSENTIAL FOR ASSESSMENT		
Phonological Awareness including Phonemic Awareness	<p>Phonological Awareness refers to an individual’s awareness of and access to the sound structure of oral language. It is the understanding that spoken language can be divided into smaller units (i.e., words, syllables, onset-rime, and phonemes) and that those units can be identified and manipulated. Students are initially more proficient with perceiving these larger units (e.g., words) than individual sounds (e.g., phonemes). Rhyming is also a task of phonological awareness.</p> <p>Examples:</p> <p>Rhyming. Tell me a word that rhymes with /top/. (/hop/, /mop/).</p> <p>Syllable Blending. Blend these syllables to pronounce a whole word: /ta/ /ble/ (/table/)</p> <p>Phonemic awareness is a subset of phonological awareness that refers specifically to the understanding of and ability to manipulate the discrete, individual sounds of language called phonemes. The critical phonemic awareness skills that serve as a foundation for beginning reading are segmentation, blending, and manipulation.</p> <p>Examples:</p> <p>Phoneme Segmentation. Pronounce all the phonemes (speech sounds) in /cat/: (/k/ /a/ /t/).</p> <p>Phoneme Blending. Blend these phonemes (speech sounds) to pronounce a whole word: /b/ /l/ /a/ /s/ /t/: (/blast/).</p> <p>Phoneme Isolation. Identify the initial, final, and medial sounds in words. What is the last phoneme (sound) in /dog/? (/g/)</p> <p>Phoneme Deletion. Say /skip/ without /k/. (/sip/)</p>	<p>Difficulty in phonological awareness, especially phonemic awareness, is one of the best predictors of dyslexia and a key predictor of early literacy acquisition. Rudimentary ability to blend, segment, and manipulate phonemes within words and syllables is a prerequisite for <i>understanding</i> phonics (grapheme–phoneme association for word identification and phoneme–grapheme association for spelling). These basic skills of blending, segmenting, and manipulating phonemes facilitate students’ understanding of the “place value” of the sequence of graphemes and phonemes within words.</p> <p>However, there are some students with dyslexia who do not necessarily have poor phonological awareness. There is a stronger neurobiological (genetic) basis than environmental basis to phonological processing.</p>
Rapid Naming: Letters, Numbers, Colors, Objects	<p>The ability to quickly name (label) common objects, colors, digits, and letters presented visually. Rapid naming of digits and letters is more closely associated with learning to read; however, for younger students who do not yet know letter or number names, assess naming for objects, colors, shapes, etc. Phonological processing is required for rapid naming but additionally requires executive functioning, attention, and fluency, among other abilities.</p>	<p>A strong predictor of dyslexia and early literacy acquisition—but less so than phonemic awareness or alphabet knowledge. It is likely that those with difficulties in both phonemic awareness and rapid naming have more severe forms of dyslexia.</p>

Table 9.1. (continued)

SKILL	DEFINITION AND EXAMPLES	HOW IT LOOKS IN DYSLEXIA
Alphabet Knowledge	Ability to name individual letters.	One of the best predictors of dyslexia and a key predictor of early literacy acquisition.
Grapheme–Phoneme and Phoneme–Grapheme Association	<p>Grapheme–Phoneme Association is the ability to associate graphemes with the phonemes they spell.</p> <p>Examples: <h> spells /h/ as in /house/. <ee> spells /ē/ as in /feet/.</p> <p>Phoneme–Grapheme Association is the ability to associate phonemes with the graphemes that spell them.</p> <p>Examples: /ch/ is spelled with <ch> as in /chair/. /oi/ is spelled with <oi> as in /boil/.</p>	Difficulties in grapheme–phoneme and phoneme–grapheme association are hallmark signs of dyslexia. There is a direct relationship between difficulties in phonological processing and development of grapheme–phoneme and phoneme–grapheme associations.
Single Word Decoding of Real Words and Predictable Nonwords	<p>Decoding of real words is the ability to use systematic decoding strategies to accurately identify and pronounce real words through grapheme–phoneme association.</p> <p>Decoding of nonwords (pseudo-words) is the ability to automatically identify (pronounce) predictable pseudo-words correctly when presented with a list.</p> <p>Examples: <op> <mest> <plig> <greb>.</p>	Dyslexia involves a specific difficulty in word and nonword (pseudo-word) decoding that is based on a weakness in the phonological aspect of language. There is a direct relationship between difficulties in grapheme–phoneme and phoneme–grapheme associations and these decoding abilities.
Reading Comprehension	The understanding of what is read aloud or silently. Should consider both narrative and expository texts and assess both literal (explicit) and inferential (implicit) understanding. A variety of types of assessments (e.g., multiple-choice, open-ended, closure) should be considered since each type measures different skills within reading comprehension.	Students with dyslexia may have difficulty in reading comprehension with strengths in listening comprehension. The challenges with reading comprehension may be the result of deficits related specifically to reading (e.g., inaccurate word identification-decoding, limited syntactic awareness, limited morphological awareness, etc.).
Oral Reading Fluency	The accuracy, speed, and prosody (intonation and meaningful phrasing) of a student’s reading of text at an instructional level.	Many students with dyslexia have difficulty with reading fluency due to a number of factors (e.g., poor decoding; limited awareness of syntax, including grammar; an underlying processing speed deficit). In adults with dyslexia, students who have been successfully remediated, and in students using efficient compensatory strategies, the rate aspect of reading fluency may remain as a difficulty (unexpectedly slower rate with intact accuracy and comprehension).

Table 9.1. (continued)

SKILL	DEFINITION AND EXAMPLES	HOW IT LOOKS IN DYSLEXIA
Encoding (Spelling)	<p>Both the ability to spell individual words in isolation and in the context of written expression must be assessed.</p> <p>Individual words are dictated and the student writes words on paper. Students may also be asked to spell predictable pseudo-words, which removes visual memory from the task. Spelling accuracy must also be assessed within context of students’ independent written expression.</p>	<p>Spelling is most often impaired in students with dyslexia because spelling (encoding) and reading (decoding) have a reciprocal relationship. For adults with dyslexia, students who have been successfully remediated, and in students using efficient compensatory strategies, spelling deficits are easier to identify than reading deficits.</p>
ADDITIONAL MEASURES ESSENTIAL FOR COMPREHENSIVE ASSESSMENT		
Phonological Memory	<p>Also known as verbal short-term memory, phonological memory is the capacity to store small amounts of phonological information for brief periods of time. It is distinguished from verbal working memory, verbal long-term memory, or spatial short-term memory.</p> <p>Examples:</p> <p>Memory for Digits: Repeating a sequence of digits such as “seven, five, three, nine” presented orally.</p> <p>Nonword Repetition: Repeating a nonword (simulates pronunciation of an unfamiliar word or a word from a foreign language).</p>	<p>Many students with dyslexia have difficulty with phonological memory. However, poor phonological memory not only predicts long-term phonological memory and decoding, but it also predicts vocabulary acquisition and oral language comprehension.</p>
Oral Language (Receptive, Expressive)	<p>Oral language is the system through which we use spoken words to express ourselves (expressive language—speaking), and understand others (receptive language—listening). Oral language is the foundation of written language.</p>	<p>Some students with oral language (speaking and listening) deficits may also have dyslexia; however, there are many students with dyslexia with average to superior oral language skills. Strong abilities in oral language may lessen the effects of dyslexia so that symptoms are less severe.</p> <p>Expressive language issues sometimes seen in students with dyslexia can include difficulty with specific word retrieval and oral fluency.</p> <p>Receptive language issues seen in some students with dyslexia can include difficulty with being able to accurately recall and retell a story or a list of words presented verbally.</p>

Table 9.1. (continued)

SKILL	DEFINITION AND EXAMPLES	HOW IT LOOKS IN DYSLEXIA
Syntactic Processing	<p>The ability to combine and manipulate the order of words or the smallest meaningful chunks within a word (morphemes) in order to construct sentences.</p> <p>Example. One hears the sentence “The boy being pushed by the girl is sad.” Chooses the appropriate picture to match the sentence. In this case, the correct picture could show a sad-looking boy on a swing being pushed by a girl. An incorrect picture could show a sad-looking girl on a swing being pushed by a boy.</p>	<p>Students with dyslexia do not typically have difficulty with syntactic processing. Problems with awareness and understanding of syntax often affect language comprehension (e.g., listening, reading).</p>
Morphological Processing	<p>Morphological processing is the ability to take the smallest meaningful units (chunks) within a word and manipulate them to form other words. Manipulation of morphemes can create words that differ in several ways:</p> <ul style="list-style-type: none"> ▪ different part of speech (derivational) happy → happiness finish → finite → infinite → finality ▪ grammatical change (inflectional) small → smaller → smallest march → marches → marched boy → boys 	<p>Students with dyslexia do not typically have difficulty with morphological processing. However, some students with dyslexia do lack morphological awareness.</p>
Orthographic Processing	<p>Orthography is the writing system of a language (i.e., spelling) and includes conventions, punctuation, and capitalization. Knowledge of orthography is stored in memory in the form of rules and representations of words or parts of words—and used to read and spell words.</p>	<p>Orthographic processing is one of several cognitive factors, along with phonological processing, that contribute to the ability to read words.</p>
Handwriting	<p>The process of writing consists of text generation and transcription skills; transcription skills can further be broken down into handwriting and spelling. Handwriting for written expression requires the integration of orthographic knowledge (see above) with the physical act of letter formation. It is often assessed by the quality of the written letters (e.g., consistency and accuracy of letter formation, size, spacing, alignment—ability to anchor letters on lined paper) and also by fluency (e.g., writing letters of the alphabet or copying text under timed conditions).</p> <p>Example. There is no consensus on how handwriting is best assessed. Methods of assessment range from measuring fluency (e.g., having children copy a sentence containing all of the letters of the alphabet as many times as possible in one minute) to careful examination of handwriting quality.</p>	<p>Handwriting (automatic letter formation) has been shown to be causally related to quality of written expression (e.g., text length and text quality), especially for younger children.</p>

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SKILL	DEFINITION AND EXAMPLES	HOW IT LOOKS IN DYSLEXIA
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Written Composition, Writing Mechanics, and Writing Fluency</p>	<p>Broadly defined, written expression includes a complex set of abilities (e.g., idea generation; organization of ideas; ability to generate topic sentences, supporting sentences, and concluding sentences; and editing and revision; mechanics—capitalization, punctuation, handwriting and keyboarding). Additional factors to assess include vocabulary, spelling, grammar, and syntax (e.g., sentence structure).</p> <p>Writing fluency is the ability to smoothly and effortlessly compose written texts.</p>	<p>Although students with dyslexia often have poor written expression, writing mechanics, and writing fluency, currently there is no established evidence that these are important signs of dyslexia. These are seen in students with dysgraphia (writing disorder) and are a highly comorbid condition (coexisting) in students with dyslexia.</p>

Source: Dyslexia Guidelines Work Group.