Reading Assessments
Early Interventions and Resources for Dyslexia and other Reading Challenges

Learning to read is the foundation of a successful, meaningful, and healthy life. It's the key to a good education for children, and its effects last long into adulthood. The ability to read has been linked to higher income as well as better mental and physical health in adults.

That's why it's so important to identify those who may be at risk for reading difficulties. Over 50 years of scientific research confirm that with the right assessments, early intervention, and evidence-based teaching, many reading difficulties can be prevented, improved, or corrected.

Research and Resources:

Francis, D. A., Caruana, N., Hudson, J. L., & McArthur, G. M. (2019). The association between poor reading and internalising problems: A systematic review and meta-analysis. *Clinical Psychology Review*, *67*, 45–60. https://doi.org/10.1016/j.cpr.2018.09.002

Lundetræ, K., & Gabrielsen, E. (2016). Relationship between literacy skills and self-reported health in the Nordic countries. *Scandinavian Journal of Public Health*, *44*(8), 758–764. https://doi.org/10.1177/1403494816668082

Nyarko, K., Kugbey, N., Kofi, C. C., Cole, Y. A., & Adentwi, K. I. (2018). English reading proficiency and academic performance among lower primary school children in Ghana. *SAGE Open*. https://doi.org/10.1177/2158244018797019

Ritchie, S., & Bates, T. C. (2013). Enduring links from childhood mathematics and reading achievement to adult socioeconomic status. *Psychological Science, 24*(7). https://doi.org/10.1177/0956797612466268

Smart, D., Youssef, G. J., Sanson, A., Prior, M., Toumbourou, J. W., & Olsson, C. A. (2017). Consequences of childhood reading difficulties and behaviour problems for educational achievement and employment in early adulthood. *British Journal of Educational Psychology, 87*(2), 288–308. https://doi.org/10.1111/bjep.12150

What Is the "Science of Reading"?

We read to understand ourselves. We read to connect with and comprehend the world around us. One core finding in the "Science of Reading" is that understanding what we read is based on our ability to decode words *and* to grasp how our language works. This relationship is so basic that it's sometimes shown as a simple equation:

Word Recognition x Language Comprehension = Reading Comprehension

That formula is known as the "Simple View of Reading." The formula was presented in 1986 by two researchers: Phillip Gough and William Tunmer. The "Simple View of Reading" has since been confirmed and explained by dozens of studies.

Researchers define the parts of the equation this way:

- **Word recognition** is the ability to instantly and correctly understand the words you see. Sometimes this skill is called *decoding*.

- **Language comprehension** is the ability to understand how a language works—skills such as how words sound, what they mean, how sentences are built, and how stories are told.

- **Reading comprehension** is the ability to understand what a piece of writing means. You can understand the literal meaning, and you can understand the inferences—a skill known as "reading between the lines."

One part of this equation—language comprehension—comes naturally to most people. You don't have to go to school to learn to communicate. You can learn by watching and listening to the way people speak to each other.

Word recognition, on the other hand, has to be taught. Someone must explain to you that words are made of sounds (*phonemes*). Someone must teach you that sounds are represented by letters (*graphemes*) that can be blended to form words. Someone must show you that words can come apart into pieces that have meanings (*morphemes*)—such as prefixes and suffixes that we add to root words.

For people with reading difficulties, learning to recognize words isn't quick or easy—even with good teachers. When that's the case, it may be because of differences in the way the brain processes sounds or written symbols.

The Brain's Reading Pathways

Researchers are still discovering the many ways that people process spoken language and written words. Below is a brief look at what happens in the brain when people read. Keep in mind that this process isn't a one-way street. It's a multidirectional, multisensory, and—eventually—*speedy* experience.

Reading starts with the eye.

The tiny center part of the retina in your eye (the fovea) takes in the shape of a few letters at a time. That image travels to an area at the back of your brain (the occipital pole) that processes visual signals. This functional area has been part of the human brain for a really long time, because early humans also needed to process what they saw.

The image moves to sound and meaning centers in the brain.

From the occipital pole, signals quickly spread to two different areas of the brain. One of them processes how we pronounce words. The other interprets what words mean. These areas of the brain, like the one that interprets visual images, have been developed in human brains for a long time. People use these two areas to process spoken language.

New connections are forged.

Reading is a much newer capability for humans than seeing images and understanding speech. When someone learns to read, their brain builds connections *between* the visual- and speech-processing areas of the brain. A new set of circuits develops so people can store and interpret

information about letters and the sounds they represent. Neurologist and reading researcher Stanislas Dehaene calls this network "the brain's letterbox."

Research and Resources:

Dehaene, S. (2010). *Reading in the brain*. Penguin Books.

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, *7*(1), 6–10. https://doi.org/10.1177/074193258600700104

Hoover, W. A., & Tunmer, W. E. (2022). The primacy of science in communicating advances in the science of reading. *Reading Research Quarterly*, *57*(2), 399–408. https://doi.org/10.1002/rrq.446

The Role of Assessments in Learning to Read

Assessments are powerful tools. Quick, easy-to-use screeners can help clinicians and educators identify which students already have reading difficulties and which students are likely to have them later. In-depth diagnostic tools can help practitioners answer questions like these:

- Can this student read words quickly and accurately?

- Which reading skill causes this student the most trouble?

- Are this student's reading difficulties connected to another health condition?

- Does this student understand the social norms and practical uses of language?

- Can this student read out loud with expression, appropriate pacing, and a good understanding of how punctuation works?

- Does this student understand what a text means?

- Can this student explain what *isn't* stated explicitly—such as an author's purpose, a character's motivations, a text's mood and tone, or the logical conclusions a reader could draw from a text?

- How does this student's vocabulary compare to that of peers?

- Has this student transitioned from "learning to read" to "reading to learn"?

- What strengths and capabilities help this student function in class and at home?

Addressing a reading difficulty is rarely a one-and-done process. Ongoing assessments can help you track whether a student is gaining ground and whether interventions and instruction are working. Regular monitoring creates opportunities to

- motivate and encourage students

- keep caregivers informed

- make decisions about teaching methods and materials

- revise intervention plans when needed

- screen for learning disabilities by determining whether deficits respond to interventions

What Comprehensive Reading Assessments Include

Because reading involves a complex set of interactive, interdependent skills, reading assessments are also multifaceted. Here's a brief look at the five separate skill areas often included in a reading assessment.

Assessing Phonological and Phonemic Awareness

A student who is learning to read must become aware of the 44 sounds of English and how they can be combined to make different words. That process, known as *phonological awareness*, includes skills like these:

- breaking words into syllables

- rhyming

- recognizing when words start or end with the same sounds

- separating *onset* (the first consonant or consonant blend in a word) from *rime* (a vowel and final consonants)

- identifying the first and last sounds in a word

- blending separate sounds into words

- analyzing separate sounds within a word

- manipulating sounds, such as swapping one sound for another to make a new word

The skills at the bottom of this list are more difficult than the skills at the top. The last four skills, together, are known as *phonemic awareness*.

Phonemic awareness involves two different types of activities: *synthesis* (the ability to blend separate phonemes into words) and *analysis* (the ability to take apart and work with the sounds in a word). Phonemic synthesis and phonemic analysis build reading ability in different ways.

Why assess phonological and phonemic awareness?

Educators assess phonological and phonemic awareness skills as early as preschool or kindergarten. That's because assessing these skills helps predict which students are likely to have reading difficulties later.

When should phonemic awareness be assessed?

Reading researchers recommend that teachers assess phonemic awareness at least three times in both kindergarten and Grade 1. Comparing data from multiple assessments gives teachers a chance to adjust instruction and to start early interventions for students who need them.

How is phonemic awareness assessed?

Readers develop phonemic awareness skills gradually. The earliest skills to develop are often phoneme matching skills, which emerge near the midpoint of the kindergarten school year. The last skill to develop is the ability to swap phonemes to make a new word.

Phonemic awareness tests usually involve tasks such as these:

- Matching: Which words have the same sound? (*dip/hit/wet*)
- Identifying the first sound: What's the first sound in *pig*?
- Identifying the last sound: What's the last sound in *sat*?
- Identifying the center sound: What's the middle sound in *dog*?
- Blending sounds: What word has the sounds /h/ /a/ /t/?
- Segmenting sounds: What sounds make up the word *chair*?
- Manipulating starting sounds: Can you say *sport* without the /s/?
- Manipulating ending sounds: Can you say *rant* without the /t/?
- Swapping sounds: Can you change the /b/ in *brick* to /t/?

Assessing Phonics

Phonics means matching *phonemes* (units of sound) with *graphemes* (letters in written language). Understanding letter–sound associations helps students to decode words.

Why assess phonics?

The ability to link sounds to letters quickly and efficiently is known as *orthographic mapping*. Orthographic mapping is the process of storing letter–sound associations and spelling patterns in memory, where they can be retrieved automatically. Orthographic mapping makes words instantly familiar. A reader with well-developed orthographic mapping skills doesn't have to sound out words each time they see them.

When should phonics skills be assessed?

Typically, teachers and literacy specialists assess phonics skills formally and informally at regular intervals throughout Grades 1–3.

How are phonics skills assessed?

Phonics assessments often focus on

- letter-naming tasks

- real word identification tasks

- nonsense word (pseudoword) decoding tasks

Tests use nonsense words because readers have to decode them—they can't rely on other skills like memorizing sight words. For that reason, some researchers think using nonsense words may be a more effective way of measuring decoding ability (Levlin & Nakeva von Mentzer, 2020). As readers become more experienced, words get longer and texts become more complicated. Students with reading difficulties are likely to slow down and make more mistakes. That's because the phonological processing issues have not yet been addressed (Kilpatrick, 2015).

Some assessments, such as the Test of Word Reading Efficiency, Second Edition (TOWRE-2), include timed nonsense word decoding subtests. Timed measures are important because they reveal slow letter–sound decoding—which could mean a student is having trouble with orthographic mapping.

Assessing Fluency

Fluency isn't just how quickly someone reads. It's also

- how accurately someone reads

- how effortlessly and automatically someone reads

- how expressively someone reads

Why assess . uency?

Fluency improves with experience. Good readers steadily grow the number of words they can instantly identify. When they encounter a new word, they immediately apply what they know about letter–sound connections and spelling patterns. Slow, laborious reading can be a sign that a reader isn't building automaticity. Some reading specialists have compared fluency to the canary in the coal mine—an early warning that reading difficulties could emerge later on.

It's important to look closely at prosody as you're assessing fluency. *Prosody* is a separate ability to read a text with emphasis, pauses, and pacing that make sense. Prosody and reading comprehension go hand in hand. As people read, they break the text into logical chunks. Those text bits are easier to remember.

When readers understand a text, they know where to pause and where to change the pitch or tone of their voice to match the meaning. They know when to speed up or slow down for emphasis (Veenendaal et al., 2016). If a student's reading keeps the same tone and pace, it may be because they're working hard to decode the words, with little leftover energy to focus on prosody (Kang & Shin, 2019).

When should fluency be assessed?

Students take oral reading fluency tests several times during each school year in Grades 1–6. Fluency measures are usually included in formal reading assessments. Sometimes fluency is assessed in upper grades, too.

How is fluency assessed?

Literacy specialists use a words-correct-per-minute formula. It is usually represented as a percentage of the words a student reads correctly out of the total words in the passage. The percentage is then compared to oral reading fluency norms or to the student's earlier scores.

Fluency tests include

- rapid automatized naming (RAN) tasks, which involve identifying numbers, letters, colors, or objects

- word-level tasks, which involve pronouncing real and nonsense words

- sentence-level tasks, which involve reading sentences aloud

- passage-level tasks, which involve reading longer texts

Sentence- and passage-level texts can pose some problems. That's because some students will be able to use context cues to identify words (Kilpatrick, 2015). Older students may have enough background knowledge or reading experience to guess at words, which means longer texts may not actually be measuring reading ability. Using word lists may be a better measure of word-reading ability.

Assessing Vocabulary

Vocabulary is the bank of words a person recognizes and understands. At first, our vocabularies are oral. We learn words by hearing them spoken. As we learn to read, we transfer what we know about spoken language to the written words we encounter. We connect what a word sounds like to what a word looks like.

Why assess vocabulary?

Each of us has different vocabularies. Together, those vocabularies enable us to read efficiently and to understand what we are reading (Elleman & Oslund, 2019). Vocabulary is both the words we *recognize* and the words we *comprehend*.

Sight vocabulary. These are the words a reader instantly recognizes without having to sound them out. The larger someone's sight vocabulary is, the more words they can identify without having to sound them out—and that means reading is faster and more efficient.

Word-structure vocabulary. These are the prefixes, suffixes, roots, and word families we learn over time. Understanding how words are built enables us to quickly decode, pronounce, and understand new words. Knowing the word *ink*, for example, means you can instantly pronounce other words in the *-ink* family, such as *drink*, *think*, and *sink*.

Background knowledge. As we read, we learn the meanings of many thousands of words. We develop vocabularies related to certain topics. The greater our background knowledge, the easier it will be to comprehend different types of texts. One type of background knowledge is content area vocabulary. These are the words we learn in different subjects, such as civics or mathematics vocabularies, at school.

Expressive vocabulary. These are the words we use when we speak or write.

Receptive vocabulary. These are the words we understand when we hear or read them.

Receptive vocabularies are often larger than expressive vocabularies in people with typical development, but that isn't true for everyone. For example, studies show that for some autistic people, receptive and expressive vocabularies may be about the same size, or the expressive vocabulary may be larger than the receptive vocabulary (Haebig & Sterling, 2017).

When should vocabulary be assessed?

When and how often vocabulary is assessed depends on

- the type of vocabulary
- the type of assessment
- the needs of students

Vocabulary tests are included in some screeners. A vocabulary test may also be included in diagnostic and progress-monitoring assessments.

How is vocabulary assessed?

How vocabulary is assessed depends on the purpose for testing. For example, classroom teachers check students' knowledge of content area vocabulary through curriculum-based measures. Educators and other practitioners may assess different types of vocabulary in evaluations for language or learning disorders, cognitive abilities, and neurodevelopmental disorders. Vocabulary is often part of measures like these:

- reading inventories
- fluency assessments
- comprehension tests

- other formal and informal reading assessments

Assessing Reading Comprehension

Reading comprehension is the product of two different abilities: recognizing or decoding words and understanding how a language works. This relationship is often described as a simple formula:

Word Recognition x Language Comprehension = Reading Comprehension

A number of factors can influence these two abilities, including an individual's working memory, motivation, engagement, cultural context, and familiarity with reading strategies.

Why assess reading comprehension?

We read to understand ourselves, each other, and the world around us. We read to grow our knowledge and empathy. Comprehension is the *reason* we read. When health and education professionals assess reading comprehension, they do so to find out whether someone understands

- what has been stated

- what can be inferred

- what logical conclusions can be drawn

When someone doesn't seem to understand what they've read, we can assess other components of reading to determine *where* deficits exist. Those insights can be used to create targeted intervention plans (Farrell et al., 2019).

When should reading comprehension be assessed?

Teachers and other practitioners start assessing reading comprehension as early as kindergarten. If a reader doesn't understand age-level texts, it may be that they're devoting much of their effort to decoding. Comprehension difficulties could be a sign that other basic reading skills need to be improved. Phonological awareness, phonics skills, vocabulary, and fluency all affect reading comprehension.

Throughout grade school, reading comprehension is assessed formally and informally with a variety of measures. As readers mature, tests measure increasingly challenging comprehension skills such as making inferences and drawing conclusions from multiple texts.

How should reading comprehension be assessed?

In a reading comprehension assessment, students may

- retell a story to show how well they can describe key ideas, details, and text structures

- answer multiple-choice or open-ended questions about facts

- make logical inferences

- add missing words (cloze tasks) or choose words that clarify the meaning of a sentence (maze tasks)

- select sentences with similar meanings (sentence-verification tasks)

- explain figurative language expressions

- communicate in socially appropriate ways (pragmatic language)

- describe an author's intent or purpose

- list events in sequential or chronological order (Cao & Kim, 2021)

Grammar, syntax, and vocabulary may also be measured since they influence comprehension as well. In some cases, evaluators also include a listening comprehension assessment. That's to help clarify whether a student's reading comprehension issues are caused by word recognition or by an underlying language comprehension issue.

Executive function

Executive function is an umbrella term for skills that help people plan, prioritize, and regulate their thoughts, feelings, and actions. When people read, they rely on executive functions to

- plan and set goals for their reading

- use abstract reasoning and problem-solving to understand texts

- determine what information is important and what is irrelevant

- hold necessary information in working memory

- resist distractions as they're reading

- shift between tasks (such as reading and note-taking)

- update their ideas and strategies as needed

If a student's executive function is impaired, their reading skills (especially comprehension) may need special attention.

Research and Resources:

Cao, Y., & Kim, Y. G. (2021). Is retell a valid measure of reading comprehension? *Educational Research Review*, 32, 100375. https://doi.org/10.1016/j.edurev.2020.100375

Duke, N. K., & Cartwright, K. B. (2021). The science of reading progresses: Communicating advances beyond the simple view of reading. *Reading Research Quarterly*, *56*(S1), S25–S44. https://doi.org/10.1002/rrq.411

Elleman, A. M., & Oslund, E. L. (2019). Reading comprehension research: Implications for practice and policy. *Policy Insights from the Behavioral and Brain Sciences*, *6*(1), 3–11. https://doi.org/10.1177/2372732218816339

Farrell, L., Hunter, M., Davidson, M., & Osenga, T. (2019). *The simple view of reading*. Reading Rockets. https://www.readingrockets.org/article/simple-view-reading

Franchi, V. M., Guerra, M., Novaes, B., Favero, M. L., & Pirana, S. (2021). Reading and comprehension: Phoniatric assessment in students with reading difficulties. *Brazilian Journal of Otorhinolaryngology*, S1808-8694(21)00125-7. Advance online publication. https://doi.org/10.1016/j.bjorl.2021.05.014

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *RASE: Remedial & Special Education*, *7*(1), 6–10. https://doi.org/10.1177/074193258600700104

Haebig, E., & Sterling, A. (2017). Investigating the receptive-expressive vocabulary profile in children with idiopathic ASD and comorbid ASD and fragile X syndrome. *Journal of Autism and Developmental Disorders*, *47*(2), 260–274. https://doi.org/10.1007/s10803-016-2921-3

Kang, E. Y., & Shin, M. (2019). The contributions of reading fluency and decoding to reading comprehension for struggling readers in fourth grade. *Reading & Writing Quarterly*, *35*(3), 179–192. https://doi.org/10.1080/10573569.2018.1521758

Kilpatrick, D. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties*. John Wiley & Sons.

Levlin, M., & Nakeva von Mentzer, C. (2020). An evaluation of systematized phonics on reading proficiency in Swedish second grade poor readers: Effects on pseudoword and sight word reading skills. *Dyslexia*, *26*(4), 427–441. https://doi.org/10.1002/dys.1669

Sharfi, K., Rosenblum, S., & Meyer, S. (2022). Relationships between executive functions and sensory patterns among adults with specific learning disabilities as reflected in their daily functioning. *PLoS ONE*, *17*(4), e0266385. https://doi.org/10.1371/journal.pone.0266385

Veenendaal, N. J., Groen, M. A., & Verhoeven, L. (2016). Bidirectional relations between text reading prosody and reading comprehension in the upper primary school grades: A longitudinal perspective. *Scientific Studies of Reading*, *20*(3), 189–202. https://doi.org/10.1080/10888438.2015.1128939

Factors That Impact Reading and Reading Assessment

How well a person reads, and consequently how well they perform on reading assessments, can be affected by genetics, illness, injury, developmental differences, learning disabilities, health conditions, and environmental factors like those explained below. Reading ability doesn't exist in a silo. It can be affected in complex ways by multiple factors.

For example, researchers know that *sensory processing* (how a person perceives and responds to sights, sounds, and other stimuli) works differently in people with dyslexia. It's also clear that attention-deficit/hyperactivity disorder (ADHD) often involves differences in sensory processing. A practitioner evaluating an individual with ADHD, dyslexia, and sensory processing differences would have several different contributing factors to consider.

Specific Learning Disorders

The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition Text Revision* (*DSM-5-TR*) describes several specific learning disorders, including dyslexia, dyspraxia, dyscalculia, and dysgraphia. These conditions are considered neurodevelopmental, meaning that differences in learning abilities emerge during childhood. They can overlap or co-occur with other health conditions that also affect reading ability.

Learn more: WPS Dyslexia Assessment Tool Kit

Specific Language Impairment (SLI)/Developmental Language Disorder (DLD)

SLI is a delay in the development of oral language skills. That is, a child learns to speak or to understand speech later than is typical. The delay is not related to cognitive difficulties or to sensory conditions such as deafness. This condition is not the same as a learning disability, but having SLI raises the chances of developing a learning disability.

Children with SLI or DLD generally have trouble learning to read. They may read more slowly and with less accuracy. Researchers note that these difficulties may be rooted in *phonological awareness* (the ability to recognize and work with the sounds that make up words).

Autism

Autism is a neurodevelopmental difference. Autistic children are at risk for reading difficulties, but reading profiles differ from child to child. Some children (around 35%, studies suggest) have trouble with reading at the word level. Others have difficulty with comprehension. Roughly 18% of autistic children have average word reading and comprehension abilities.

Attention-Deficit/Hyperactivity Disorder (ADHD)

ADHD doesn't necessarily cause reading difficulties. Still, many children with ADHD also have trouble reading. Researchers think that some skills necessary for reading (such as sustained attention, verbal working memory, and processing speed) are often affected by ADHD. This condition can affect reading fluency, decoding, and reading comprehension—though it's important to know that reading profiles can vary widely. Some students with ADHD have trouble organizing events as they retell a story. Some have difficulty recalling details and drawing inferences based on their reading. ADHD treatment and science-based direct instruction can help students build their reading abilities.

Epilepsy Disorders

Children and adolescents with neurological conditions like epilepsy can sometimes have difficulty with language, which can later lead to reading difficulties as well. For some people, language difficulties decrease if seizures stop. For others, the effects of seizures can worsen language difficulties over time.

Traumatic Brain Injury

People who have had a traumatic brain injury, whether the injury happens in childhood or later in life, often have trouble with reading speed and reading comprehension, studies show. Whether reading abilities can rebound with intervention may depend on the nature, extent, and location of the brain injury.

Stroke

A stroke can damage areas of the brain involved in different aspects of reading. Health experts sometimes refer to these changes as "acquired dyslexia" or "alexia." Recovery depends on the degree and location of the damage. In some cases, people who have had a stroke can relearn some reading skills or can compensate by listening to audio texts to access the information they need.

Mental Health Conditions

Anxiety, depression, and post-traumatic stress can all affect fundamental reading skills. Research has shown that attention, working memory, processing speed, and motivation can be altered by many different mental health conditions. In many cases, reading difficulties can be improved by treating the underlying health condition and working with reading professionals.

Environmental Factors

The skills involved in learning to read can be impacted by factors in a person's environment. Research shows an association between reading achievement and factors like

- poverty

- exposure to crime and violence

- experience of adverse childhood events

- quality of classroom environments and reading instruction

- access to community resources such as libraries and museums

Research and Resources:

Adlof, S. M. (2020). Promoting reading achievement in children with developmental language disorders: What can we learn from research on specific language impairment and dyslexia? *Journal of Speech, Language, and Hearing Research*, *63*(10), 3277–3292. https://doi.org/10.1044/2020_JSLHR-20-00118

Baumer, F. M., Cardon, A. L., & Porter, B. E. (2018). Language dysfunction in pediatric epilepsy. *The Journal of Pediatrics*, *194*, 13–21. https://doi.org/10.1016/j.jpeds.2017.10.031

Denton, C. A., Tamm, L., Schatschneider, C., & Epstein, J. N. (2020). The effects of ADHD treatment and reading intervention on the fluency and comprehension of children with ADHD and word reading difficulties: A randomized clinical trial. *Scientific Studies of Reading*, *24*(1), 72–89. https://doi.org/10.1080/10888438.2019.1640704

Lara-Díaz, M. F., Mateus-Moreno, A., & Beltrán-Rojas, J. C. (2021). Reading and oral language skills in children with developmental language disorder: Influence of socioeconomic, educational, and family variables. *Frontiers in Psychology*, *12*, 718988. https://doi.org/10.3389/fpsyg.2021.718988

Little, C. W., Hart, S. A., Phillips, B. M., Schatschneider, C., & Taylor, J. E. (2019). Exploring neighborhood environmental influences on reading comprehension. *Journal of Applied Developmental Psychology*, *62*, 173–184. https://doi.org/10.1016/j.appdev.2019.02.009

National Institute of Deafness and Communication Disorders. (2022). *Specific language impairment*. https://www.nidcd.nih.gov/health/specific-language-impairment#:~:text=Specific%20language%20impairment%20(SLI)%20is,language%20delay%2C%20o

Pei, Y., & O'Brien, K. H. (2021). Reading abilities post traumatic brain injury in adolescents and adults: A systematic review and meta-analysis. *American Journal of Speech-Language Pathology*, *30*(2), 789–816. https://doi.org/10.1044/2020_AJSLP-20-00213

Sharfi, K., Rosenblum, S., & Meyer, S. (2022). Relationships between executive functions and sensory patterns among adults with specific learning disabilities as reflected in their daily functioning. *PLoS ONE*, *17*(4), e0266385. https://doi.org/10.1371/journal.pone.0266385

Vale, A. P., Fernandes, C., & Cardoso, S. (2022). Word reading skills in autism spectrum disorder: A systematic review. *Frontiers in Psychology*, *13*, 930275. https://doi.org/10.3389/fpsyg.2022.930275

Reading Assessments

Reading assessments are powerful tools. Used effectively, they can help you

- identify those who are at risk for reading difficulties

- discover what's behind any delays or deficits

- recognize and build on each student's strengths and skills

- create an intervention plan based on the unique profile of strengths and needs

- monitor individual progress

- determine which interventions and strategies are working and which need to be changed

WPS provides a wide range of assessments to help you and your team evaluate students at each point in their reading journey.

Early Literacy & Reading Readiness

Comprehensive Test of Phonological Processing, Second Edition (CTOPP-2)

Phonological and Print Awareness Scale (PPA Scale™)

Test of Early Reading Ability, Fourth Edition (TERA-4)

Early Reading Ability (ERA)

Reading & Language Comprehension

Oral and Written Language Scales, Second Edition (OWLS™-II)

Test of Reading Comprehension, Fourth Edition (TORC-4)

Comprehensive Assessment of Spoken Language, Second Edition (CASL®-2)

Comprehensive Reading

Tests of Dyslexia (TOD®)—Now available!

Gray Diagnostic Reading Tests, Second Edition (GDRT-2)

Gray Oral Reading Tests, Fifth Edition (GORT-5)

Nelson-Denny Reading Test, Forms I & J (NDRT)

Fluency

Test of Word Reading Efficiency, Second Edition (TOWRE-2)

Test of Silent Contextual Reading Fluency, Second Edition (TOSCRF-2)

Learn more: WPS School Resource Guide

Addressing and Reducing Implicit Bias in Assessment

Each of us brings beliefs, assumptions, and associations—many of which we aren't aware of—to the tasks we perform every day. Implicit or unconscious biases (those we don't realize we have) can shape how we give, support, and interpret reading assessments. We can take practical, concrete steps to identify and reduce bias in ourselves and in our work environments.

Here are a few evidence-based suggestions:

- **Consider taking an implicit bias awareness test like the one prepared by Harvard University's Project Implicit**. This free test is designed to make people aware of some of their social associations. The test is one of the most widely used implicit bias measures available.

- **Understand the impacts of implicit bias**. Decades of research confirm that discrimination—even when it isn't intentional—leads to marked inequities in education, health care, housing, income, and many other outcomes. For example, a 2020 research review noted that health

care providers with stronger implicit biases prescribed different amounts of painkillers to children of different races following surgery. Similarly, in school districts with a higher rate of implicit bias among educators, bigger gaps existed between the test scores of students of different races.

- **Interrupt automatic thinking**. When we are stressed or pressed for time, we often resort to shortcuts in our decision-making. Without realizing it, we can fall back on stereotypes and quick judgments. It may help to work with colleagues to create careful, inclusive processes, checklists, and other tools to help you act with intention and clarity, even when your time is limited.

- **Expand your circle**. Getting to know people whose backgrounds and identities differ from your own can build empathy, change misconceptions, and broaden your understanding of the lived experience of your colleagues, clients, students, and families.

- **Enhance your perspective-taking ability**. "Perspective-taking" is a mental strategy. It's imagining what it's like to walk in someone else's shoes. You can practice perspective-taking by reading books, listening to podcasts, watching videos, using virtual reality, or having conversations in which you learn about the lived experience of people who have faced race-, age-, or gender-based discrimination and/or ableism. The results of studies tracking the effectiveness of perspective-taking are mixed: At least one study found that perspective-taking increased empathy when it was practiced along with mindfulness exercises.

- **Participate in workshops and training opportunities**. Your workplace may offer diversity, equity, and inclusion training. If not, you may be able to find a webinar or podcast to help you identify practical actions you can take. When people are internally motivated to understand and reduce their own biases, diversity training is more effective than when they are required to attend diversity training in which they have no personal interest.

In doing the difficult work of addressing and reducing bias, you're helping to ensure that the results of reading assessments are as accurate as they can be.

Research and Resources:

Edwards, D. J., McEnteggart, C., Barnes-Holmes, Y., Lowe, R., Evans, N., & Vilardaga, R. (2017). The impact of mindfulness and perspective-taking on implicit associations toward the elderly: A relational frame theory account. *Mindfulness*, *8*(6), 1615–1622. https://doi.org/10.1007/s12671-017-0734-x

National Institutes of Health. (2022). *Implicit bias*. https://diversity.nih.gov/sociocultural-factors/implicit-bias

Staats, C. (2016). *Understanding implicit bias: What teachers should know*. American Federation of Teachers. https://www.aft.org/ae/winter2015-2016/staats

Thériault, R., Olson, J. A., Krol, S. A., & Raz, A. (2021). Body swapping with a Black person boosts empathy: Using virtual reality to embody another. *Quarterly Journal of Experimental Psychology*, *74*(12), 2057–2074. https://doi.org/10.1177/17470218211024826

Vela, M. B., Erondu, A. I., Smith, N. A., Peek, M. E., Woodruff, J. N., & Chin, M. H. (2022). Eliminating explicit and implicit biases in health care: Evidence and research needs. *Annual Review of Public Health*, *43*, 477–501. https://doi.org/10.1146/annurev-publhealth-052620-103528

Considerations for English-Language Learners

When a student's primary language is different from the language of the reading assessment, results may not be as accurate as when students take a test in their primary language. For example, in one Dutch study, researchers found that reading subtests had differing levels of accuracy for multilingual students. The least accurate subtests had tasks that involved

- naming pictures

- backward digit span

- verbal fluency

- semantic fluency

In that study, the reading subtests that were most accurate for multilingual students included

- word reading

- nonsense passage reading

- nonsense word reading

The U.S. Department of Education has provided some guidelines to help practitioners clarify whether reading difficulties are related to learning a new language or to having an underlying disorder or disability. Here's a quick recap of those guidelines:

A student has difficulty with	Signs the difficulty is related to differences between first and second languages	Signs the difficulty is related to a potential learning disorder or cognitive deficit

recalling letter–sound combinations	After some initial difficulty, the student improves with repeated practice.	After first and follow-up instruction, the student still does not remember letter sounds.
blending letter sounds	After direct instruction, the student can improve.	The student substitutes letters that aren't accurate in either language. The student can decode individual sounds but has trouble blending them to form words.
decoding words	The student has trouble pronouncing sounds that aren't part of their first language.	The student mixes up look-alike letters and words or switches letters in ways that aren't correct in either language.
understanding what a passage means	As the student's background knowledge in their first language improves, so does their comprehension.	After instruction, the student still has difficulty remembering and understanding texts in either language.

If you are using a reading assessment as part of an evaluation to determine whether an English-language learner has a disability, the U.S. Department of Education suggests these strategies:

- Ensure that assessments measure the student's abilities and not their English-language skills.
- Administer assessments in the student's primary language to avoid misidentifying a learning disorder.
- If possible, allow the student to show knowledge and skills in different ways (i.e., oral *and* written assessments).
- In your evaluation, include information from multiple sources (students, parents, documentation of previous school performance, and multiple assessments).
- Carefully consider which accommodations and supports a student might need as well as which are appropriate given the standardization of the specific assessments you're using.

Research and Resources:

U.S. Department of Education. *Tools and resources for addressing English learners with disabilities*. In: *English Learner Tool Kit*. (2016). https://www2.ed.gov/about/offices/list/oela/english-learner-toolkit/chap6.pdf

Verpalen, A., Van de Vijver, F., & Backus, A. (2018). Bias in dyslexia screening in a Dutch multicultural population. *Annals of Dyslexia*, *68*(1), 43–68. https://doi.org/10.1007/s11881-018-0155-0

Evidence-Based Interventions for Reading Difficulties

Decades of evidence make it clear that many reading difficulties can be repaired, improved, and—often—prevented. While not every reading difficulty can be eliminated, substantial research supports the use of these effective strategies:

Early Intervention and Regular Monitoring

Early intervention can lead to lasting improvement of some reading skills, research shows. The good news is that when educators intervene early, reading outcomes improve even for those who are already experiencing reading difficulties in kindergarten through Grade 3.

One important part of early intervention is progress monitoring: regularly checking reading skills to see whether these skills are improving, how fast they're improving, and which interventions are working. You can monitor with quick screeners, curriculum-based measures, or both. With the data you collect, you can make informed decisions about how to tailor interventions to the needs of each student. You can also use progress-monitoring data as one factor in deciding whether a student needs a full evaluation for a learning disorder.

Direct, Explicit Instruction

Reading difficulties rarely resolve themselves. It is vital that students receive direct, explicit instruction if they are to become good readers. But what exactly is direct, explicit instruction?

Reading researchers say that these five components are involved:

1. breaking complex skills into small tasks a student can learn more easily

2. modeling, demonstrating, or "thinking aloud" to address important points

3. scaffolding and supporting learning—and gradually reducing supports as students improve

4. providing specific, task-related feedback

5. giving students opportunities to practice what they have learned

Without explicit instruction, studies show, readers develop their skills much more slowly—and may not learn some skills at all.

It's a good idea to approach reading instruction *systematically*, ensuring that basic skills are in place before moving to more complex tasks. Phonological awareness, phonemic awareness, and phonics instruction lay the groundwork. That's because strong decoding skills are the base on which other reading skills are built.

In *Essentials of Assessing, Preventing, and Overcoming Reading Difficulties*, author and reading researcher David Kilpatrick summarizes the research into the most effective reading interventions. He reports, "Every study in this highly successful category contained the three key elements of (1) training phonemic awareness to the advanced level, (2) phonics instruction and reinforcement, and (3) opportunities for reading connected text."

A 2022 meta-analysis that synthesized 40 years of reading intervention research states that the biggest improvements in reading difficulties are associated with direct instruction in phonological awareness, phonics knowledge, word reading, spelling, and connected-text reading, combined with instruction focused on understanding word meanings and text meanings.

Research and Resources:

Hall, C., Dahl-Leonard, K., Cho, E., Solari, E. J., Capin, P., Conner, C. L., Henry, A. R., Cook, L., Hayes, L., Vargas, I., Richmond, C. L., & Kehoe, K. F. (2022). Forty years of reading intervention research for elementary students with or at risk for dyslexia: A systematic review and meta-analysis. *Reading Research Quarterly*. https://doi.org/10.1002/rrq.477

Kilpatrick, D. A. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties*. John Wiley & Sons.

Rastle, K., Lally, C., Davis, M. H., & Taylor, J. S. H. (2021). The dramatic impact of explicit instruction on learning to read in a new writing system. *Psychological Science*, *32*(4), 471–484. https://doi.org/10.1177/0956797620968790

Shanahan, T. (2022). *What do you think of "phonics first" or "phonics only" in the primary grades?* https://www.shanahanonliteracy.com/blog/what-do-you-think-of-phonics-first-or-phonics-only-in-the-primary-grades#sthash.laLTbI0O.dpbs

Vaughn, S., & Fletcher, J. (2021). Explicit instruction as the essential tool for executing the science of reading. *The Reading League Journal*, *2*(2), 4–11. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9004595/

Yao, M., Wang, J., Liu, P., Guo, Y., Xie, Y., Zhang, L., Su, N., Li, Y., Yu, D., Hong, Q., & Chi, X. (2022). Development, reliability, and validity of the preschool learning skills scale: A tool for early identification of preschoolers at risk of learning disorder in Mainland China. *Frontiers in Neurology*, *13*, 918163. https://doi.org/10.3389/fneur.2022.918163

Professional Development and Training

The body of research supporting the "Science of Reading" is ever advancing. In response, reading assessments are always being revised and refined, and best practices continuously evolve.

WPS invites you to participate in ongoing continuing education as well as training and workshops to ensure that your evaluations are efficient and as accurate as possible.