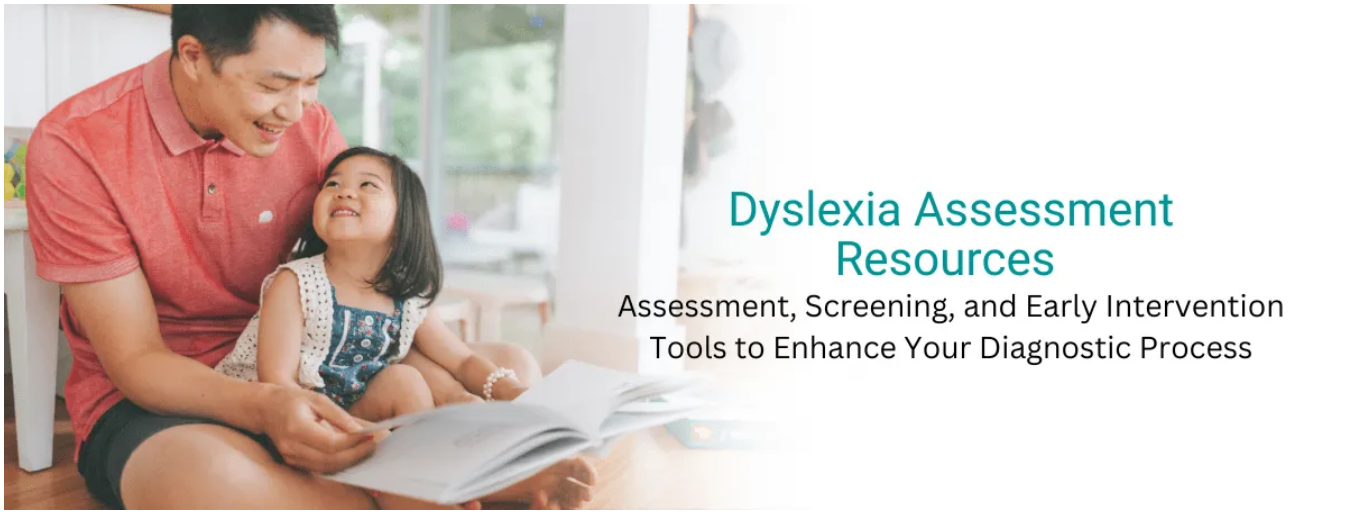

Guide to Dyslexia Assessment Resources

The Yale Center for Dyslexia and Creativity estimates that as much as 20% of the U.S. population has dyslexia. Although some estimates are lower (between 5% and 20%), dyslexia still affects a large number of people. A clear diagnosis can open a world of possibilities—a logical explanation for difficulties; a new understanding of strengths; an individualized intervention plan with evidence-based strategies to help people achieve what they want to achieve.

Research shows that identifying dyslexia and starting research-supported interventions early—in kindergarten or 1st grade—can enable children with dyslexia to:

- make fewer reading mistakes
- increase the speed of word recognition, phonological decoding, and reading
- improve their phonological and phoneme-blending skills (a phoneme is the smallest unit of sound in each word)
- boost phonological short-term memory

Even so, it's important to know that dyslexia interventions can be effective at any age. This means that evaluating adults is as important as evaluating children.

Identifying dyslexia can take time: Dyslexia is a complex neurobiological condition. A reliable dyslexia diagnosis involves the careful collaboration of clinicians and educators who are equipped with the right diagnostic tools for each situation. WPS can be an invaluable partner in the process.

Download the WPS Dyslexia Assessment Tool Kit here.

Research and Resources:

Cancer, A., Bonacina, S., Antonietti, A., Salandi, A., Molteni, M., & Lorusso, M. L. (2020). The effectiveness of interventions for developmental dyslexia: Rhythmic reading training compared with hemisphere-specific stimulation and action video games. *Frontiers in Psychology*, *11*, 1158. https://doi.org/10.3389/fpsyg.2020.01158

Franceschini, S., Trevisan, P., Ronconi, L., Bertoni, S., Colmar, S., Double, K., Facoetti, A., & Gori, S. (2017). Action video games improve reading abilities and visual-to-auditory attentional shifting in English-speaking children with dyslexia. *Scientific Reports*, *7*(1), 5863. https://doi.org/10.1038/s41598-017-05826-8

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Werth R. (2018). Rapid improvement of reading performance in children with dyslexia by altering the reading strategy: A novel approach to diagnoses and therapy of reading deficiencies. *Restorative Neurology and Neuroscience*, *36*(6), 679–691. https://doi.org/10.3233/RNN-180829

What Are the Early Signs of Dyslexia?

Many researchers view dyslexia as a neurologically based condition, which means it is probably present at birth. Its symptoms exist on a mild-to-severe continuum with impacts that vary. Researchers have identified some early signs that preschool students may have dyslexia. Some of these early indicators are:

- a delay in the ability to speak
- trouble learning songs or rhymes
- difficulty understanding questions and instructions
- trouble pronouncing words
- slowness to add new vocabulary words
- problems recalling or retrieving the right word
- trouble learning the alphabet
- avoidance of “following along” when books are read aloud

What Are Dyslexia Symptoms Age by Age?

Dyslexia looks different from one person to the next. Some people experience more symptoms than others. In kindergarten and 1st grade, students with dyslexia may have trouble with:

- recalling the names of letters and their sounds
- breaking words into syllables
- changing sounds in words or syllables
- decoding words
- spelling words phonetically
- remembering how to spell common words in familiar books

For students in 2nd–12th grades, you may want to look for difficulties such as these:

- reading slowly and with great effort
- making lots of mistakes with word reading
- confusing sound-alike words
- avoiding reading, especially out loud
- guessing at unfamiliar words
- spelling words incorrectly
- understanding more of what they hear than what they read
- feeling fatigued and frustrated by reading

People with dyslexia don't always perform poorly in school or the workplace. On the contrary, many students *succeed* in school and at work because they receive targeted interventions or develop creative compensatory strategies.

It's important to know that for some children and young adults, dyslexia can cause emotional symptoms, including:

- anxiety
- shyness
- embarrassment
- sadness
- depression
- loss of self-esteem

Researchers have found that these internalized emotional symptoms often intensify in secondary school—but strong friendships can lessen their severity.

As you're considering symptoms, it's a good idea to look for risk factors that increase the likelihood that someone will develop dyslexia. There's some evidence that the following factors raise the chances:

- **A family history of reading difficulties or dyslexia**. Having a parent or sibling with dyslexia increases the risk from 5% to 26%, studies show. A dyslexia diagnosis need not be present: A student could simply have close relatives who had trouble with reading or with academics.
- **Co-occurring attention-deficit/hyperactivity disorder (ADHD)**. Studies suggest that having ADHD increases the chances of having dyslexia from 5% to 19%.
- **Biological sex**. People assigned male at birth are diagnosed with dyslexia more often than people assigned female. Severe symptoms are more common among those assigned male at birth.
- **Environmental factors**. Although more research is needed to understand the complex interactions between environment and genetics, many different factors contribute to dyslexia. A low-literacy home environment, psychological stress, low income, and birth-parent smoking can all raise the dyslexia risk.

Want to share this information? Download the infographic here.

Research and Resources:

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What Are the Bene ts of Universal Screening?

Universal screening measures are brief tests used to identify students who are at risk of developing reading difficulties, including dyslexia. These measures are a vital part of most Response to Intervention (RTI) programs and multitiered systems of support (MTSS) in K–12 schools. In fact, dozens of states currently mandate universal screening for reading difficulties.

Why Do We Screen for Reading Difficulties?

The aim of universal screening is to identify students who may need extra help so they can begin interventions at a young age, when the brain's plasticity better enables growth. When people learn to read, areas of the brain involved in vision, hearing, and spoken language build new neural connections devoted to reading processes. Over time, these pathways become more efficient in most people. When they don't, early intervention can help. Targeted interventions can actually *prevent* some reading disabilities.

Screening measures can also be used as progress-monitoring tools—quick tests to see whether students are developing specific reading skills and whether interventions are working. Regular progress monitoring can also provide a glimpse of the *rate* of improvement. The International Dyslexia Association (IDA) recommends that screenings take place every 3 months, beginning as early as preschool and continuing through 2nd grade.

Students who are learning English as a second language should be screened, too—though some–

advocates have expressed concern that results for English-language learners may not be interpreted as accurately and could lead to students being mislabeled.

What Skills Are Assessed in Universal Screening?

When you are selecting universal screening tools, it's a good idea to choose tests that are aligned with the developmental stage of the children you'll be assessing. It's also important to assess the specific skills that are predictive of later reading problems.

The National Center on Improving Literacy suggests that kindergarten screenings measure:

- phonological awareness
- rapid automatized naming
- letter–sound association
- phonological memory tasks

The IDA recommends that 1st grade screenings include:

- phonemic awareness, especially blending, segmentation, and manipulation
- letter-naming fluency
- letter–sound association
- phonological memory tasks, especially non-word repetition
- oral vocabulary
- word recognition fluency

Screenings for 2nd grade should evaluate:

- identification of real and nonsense words
- oral reading fluency
- reading comprehension

Screening measures on their own aren't used to identify dyslexia; they are a first step in a much more comprehensive evaluation process.

Research and Resources:

Catts, H. W., Nielsen, D. C., Bridges, M. S., Liu, Y. S., & Bontempo, D. E. (2015). Early identification of reading disabilities within an RTI framework. *Journal of Learning Disabilities*, *48*(3), 281–297. https://doi.org/10.1177/0022219413498115

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What Should a Dyslexia Evaluation Include?

The more comprehensive a dyslexia evaluation is, the more reliable its results are likely to be. Because dyslexia is complex, evaluations should include a variety of assessments that highlight reading capabilities and rule out other explanations for any deficits or difficulties.

Here's a look at the types of skills assessed in a dyslexia evaluation. Your clinical or professional expertise should guide you in selecting the assessments that are best for each person.

Detailed Family, Medical, and Educational Histories

A good dyslexia evaluation—in fact, a good *reading* evaluation—accounts for all the factors that could cause reading difficulties. For example, hearing impairments can affect phonological skills, so it's important to know whether a student has had medical conditions that could cause a hearing impairment.

Because dyslexia has a strong genetic component, it is also important to know whether a student's family members have had reading or educational problems. And evaluators need to know what educational interventions have already been tried and what the results were, since dyslexia can be resistant to many interventions. It's even important to understand whether a child has experienced inherited, prenatal, or childhood trauma, since there is emerging evidence that dyslexia may be a response to stress-system challenges.

Phonological Awareness

Phonological awareness is the ability to perceive and work with the sounds in the words of your language. It refers to an oral language ability. Difficulties with phonological awareness are a core problem with dyslexia, so any evaluation should include measures that test this capability.

When someone has trouble with phonological awareness, it can lead to problems with reading because it's hard to match the sounds in words to the letters in words.

Tests and subtests that measure phonological awareness may ask students to:

- rhyme
- break words into syllables
- count phonemes
- blend phonemes to pronounce a word

Want to know more about Phonological Processes? Download the infographic.

Rapid Automatized Naming (RAN)

RAN is the ability to easily and fluidly retrieve the names of objects, colors, and (with older students) letters, numbers, and sight words. RAN enables people to read fluently and accurately—and problems with RAN are a key predictor of reading difficulties, including dyslexia. RAN often improves as reading skills develop. Sometimes RAN is called *automaticity*.

Processing Speed

Processing-speed tasks ask people to answer questions or make decisions about test items and move to new questions as quickly as they can. The tasks may measure visual perceptual speed, auditory speed, or even motor speed. Processing speed is measured during dyslexia evaluations because there's evidence that some people who process reading tasks more slowly are also slower at other kinds of processing tasks.

Orthographic Awareness

This skill, sometimes called orthographic mapping, is the ability to learn and quickly remember which sounds are associated with written or printed letters. This skill can take time—especially with the English language—because letters can be associated with different sounds. One classic example is *-ough*, which can be pronounced many different ways, as in these words: *through*, *cough*, *bough*, *rough*, and *though*.

People with dyslexia may recognize individual letters easily, but letter patterns and whole words may take longer to process. People with dyslexia may:

- confuse symbols and letters that look similar
- reverse or switch letters and numbers
- have trouble remembering how words are spelled
- have trouble reading words that break familiar spelling patterns
- read more slowly
- leave off word endings

Memory

Memory is an important part of reading. It affects how we recognize and spell words. It affects our ability to understand and summarize what we read. A particular concern can be working memory, the ability to retain and use information for short periods of time, such as while you are completing a task.

Research indicates that some—but not all—children with dyslexia also have problems with working memory. In other words, working memory deficits and dyslexia can intersect, causing extra challenges. Memory tasks can require students to recite or reverse sequences of letters, numbers, or nonsense words.

Word Reading

Dyslexia assessments usually ask students to read single words (both real and nonsense words) to demonstrate their decoding and automatic recognition skills. Many reading assessment experts recommend that these tests be given under both timed and untimed conditions so evaluators can determine which strategies a student uses to read words. Researchers know, for example, that readers typically use five separate strategies to identify words:

- blending letter sounds into words
- articulating spelling patterns and blending them into words
- identifying sight words from memory
- comparing unknown words to known sight words
- predicting words from context cues

The fastest of these methods is identifying sight words from memory. Timed word-reading tests

can clarify whether a student is identifying words automatically or whether they're using a more time-consuming strategy to read.

Reading Fluency

Some dyslexia measures ask students to read sentences or passages to give evaluators insight into their reading fluency. Fluency is often described as the combination of accuracy, rate or speed, and expressiveness. It's considered a very good indicator of reading difficulties, in part because it demonstrates the size of an individual's sight word vocabulary.

Oral reading is generally used to track reading fluency. When an evaluator listens to a student reading aloud, it's easier to measure the rate at which the student reads. It's also possible to gauge prosody—the quality of expressiveness with which someone reads. Prosody includes the ability to read in phrases, to allow the voice to rise and fall in response to punctuation, and to use emphasis to express emotion. Dyslexia can affect accuracy, reading rate, and prosody because so much of a student's focus is consumed with identifying individual words.

Reading and Listening Comprehension

Many dyslexia assessments contain reading comprehension measures that ask students to answer questions after reading a passage. Dyslexia can affect a student's reading comprehension, but it's important to know that many students with dyslexia are able to comprehend passages using a variety of compensatory strategies. Sometimes, reading comprehension deficits have nothing to do with dyslexia.

Some reading assessment experts suggest that comparing a student's reading comprehension to their listening comprehension may be a good way to evaluate a person. If a student's listening comprehension scores are significantly higher than their reading comprehension scores, this difference may show that the student is not reading as accurately and fluently.

Oral Language

People learn to speak and to understand speech long before they are taught to read. Oral language abilities are a stepping-stone for developing the ability to read. Assessing oral language can tell you whether students have built these pre-reading skills:

- phonological awareness, which is the ability to hear the distinct sounds in a spoken word
- expressive vocabulary, which encompasses the words someone can say
- receptive vocabulary, which encompasses the spoken words someone can understand
- grammar, which is an understanding of the rules that govern the formation of sentences

- morphological awareness, which is the ability to recognize separate units of meaning within a word, including prefixes, suffixes, base words, and roots
- pragmatics, which are often described as the practical and social rules that apply to communication
- discourses, which are the structures that dictate how different forms of communication unfold

Deficits in any of these components of oral language can slow the process of learning to read. For that reason, many literacy experts suggest including oral language assessments in a dyslexia evaluation.

Spelling and Writing

During a dyslexia evaluation, many evaluators use standardized measures to check students' ability to spell accurately. These measures can feature lists of individual words, some of which follow predictable spelling patterns and some of which have irregular spellings. It can also be a good idea to include reading and spelling of nonsense words. As with reading fluency tests, it's often useful to see how well people perform under both timed and untimed conditions.

Executive Function

Executive function is the name given to a collection of thinking skills that help us control how we feel and act so that we can reach our goals. These skills usually include

- working memory, or the ability to hold onto visual and verbal information while we complete tasks;
- set shifting, or the ability to change where we are focused; and
- response inhibition, or the ability to start and stop what we're doing as needed.

Executive function is important at every level of reading, whether you're matching sounds to letters or analyzing complex texts. Not every student with dyslexia has executive dysfunction. And dyslexia affects executive function in unique patterns. Mapping the pattern of executive function strengths and needs can help you plan effective interventions.

Additional Assessments as Needed

Part of any thorough evaluation is differential diagnosis: determining whether any other condition might better explain the difficulties being experienced. You may find that some clients or students need additional assessments to rule out conditions—such as attention-deficit/hyperactivity

disorder (ADHD), intellectual disability, or developmental language disorder—that can cause similar reading difficulties. You may also want to screen for anxiety, depression, or behavioral conditions that often accompany dyslexia.

Take a look at what the National Association of School Psychologists recommends for assessing learning disabilities like dyslexia.

Research and Resources:

American Speech-Language-Hearing Association. (n.d.). *Comprehensive assessment for disorders of reading and writing: typical components*. https://www.asha.org/practice-portal/clinical-topics/written-language-disorders/comprehensive-assessment-for-disorders-of-reading-and-writing/

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Mather, N., & Wendling, B. J. (2012). *Essentials of dyslexia assessment and intervention*. John Wiley & Sons.

Snowling, M. J., & Melby-Lervåg, M. (2016). Oral language deficits in familial dyslexia: A meta-analysis and review. *Psychological Bulletin*, *142*(5), 498–545. https://doi.org/10.1037/bul0000037

How to Talk to Parents About Assessments

Screening and assessments create opportunities to build partnerships with parents and caregivers. These tips can help you make the most of these opportunities while minimizing stress for families.

Explain the purpose.

In an era of extensive high-stakes testing, it's important that all stakeholders understand the "why" behind universal dyslexia and reading screenings. You may foster more understanding and buy-in if you explain that screening is brief and targeted, and that the results are used to make sure all children get the specific kinds of instruction they need to grow as readers.

Explain the cadence.

"When" can be as important as "why." You may want to share that initial screenings will take place early in the year so problems can be prevented with evidence-based, differentiated instruction. Parents and caregivers may also be glad to know that you'll be tracking each student's progress regularly and adjusting instructional targets as needed.

Use acronyms and jargon sparingly.

Educational and clinical terminology is useful for professionals communicating day-to-day, but for parents and caregivers the terms can sound like a language of its own—one they need to learn urgently and quickly for their child's sake. Consider carefully whether you need to use acronyms such as MTSS, RTI, or those that refer to learning disabilities. When you do use these acronyms, take a moment to define them and explain how they help students. Before a meeting, spend a few minutes thinking about which terms are likely to be in use, and whether it might be a good idea to prepare a brief glossary written in easy-to-understand language.

Consider using trauma-sensitive communication strategies.

It's hard to know in advance whether parents, caregivers, or students have experienced trauma. For that reason, it may be wise to incorporate trauma-informed practices into your communications with families from the beginning. These steps may help you establish and maintain trust:

- Carefully safeguard the privacy of all personal information.
- Ask parents how they would like to receive information from you.
- Provide information in the family's home language.
- Make information available lots of different ways, such as in print, on websites, and via text messaging—through whatever channels help you reach families.
- Communicate with sensitivity and respect.
- Set up formal procedures for receiving feedback from families.

- Create opportunities for students and families to exercise choice whenever possible.
- Honor schedules and let people know about any necessary changes well in advance.
- Be sensitive to cultural differences in how test results, school communications, and learning disabilities may be perceived.

Emphasize strengths.

Dyslexia can prompt people to develop creative strategies for reading and dealing with information. Researchers have found, for example, that people with dyslexia may miss some details but are adept at seeing "the big picture." Many assessments highlight strengths in addition to difficulties, and it may help people reframe their experience if you begin by discussing students' positive attributes and abilities.

Build in actionable steps.

Identifying dyslexia can be liberating for some people because it explains why reading difficulties exist. Even so, it's important for people to leave an evaluation feeling empowered. Explain next steps. Make sure to state clearly who is responsible for which actions. Invite parents to participate in forming and monitoring the educational plan. Set follow-up dates, and make sure stakeholders have your contact information for any questions they think of after a meeting has concluded. It's especially important to provide information about support networks, so parents and students feel they aren't alone in adjusting to the diagnosis.

Read more about How to Communicate with Families to Build Trust, Connection, and Engagement.

Research and Resources:

Menschner, C., & Maul, A. (2016). *Key ingredients for successful trauma-informed care implementation*. Center for Health Care Strategies, Inc. https://www.samhsa.gov/sites/default/files/programs_campaigns/childrens_mental_health/atc-whitepaper-040616.pdf

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Who Can Diagnose Speci c Learning Disabilities?

Identifying dyslexia is likely to involve a multidisciplinary assessment team that includes any of the following professionals: psychologists, classroom teachers, special education professionals, neuropsychologists, school psychologists, speech–language pathologists, and medical professionals such as neurologists, pediatric specialists, or psychiatrists.

Generally speaking, classroom teachers provide vital information about reading achievement and conduct screenings or assessments but do not identify dyslexia. Dyslexia can be identified in either a school or clinical setting. In a school setting, dyslexia is usually diagnosed by a team that may include a psychologist, psychiatrist, speech–language pathologist, or special education professional. The diagnosis is based on an interpretation of all the data collected during the evaluation process. In a clinical setting, an evaluator makes a diagnosis based on the aggregate data.

Want to learn more about how clinicians and educators can work together? Explore our School Resource Guide.

Research and Resources:

International Dyslexia Association. (n.d.). Testing and evaluation. https://dyslexiaida.org/testing-and-evaluation/

Dyslexia and Reading Assessments

No single test can be used to identify dyslexia conclusively; instead, dyslexia is identified by measuring deficits in individual skills involved in reading. When you are selecting assessments, it's important to choose tests that are:

- **Sensitive**: The assessment correctly identifies a problem with the specified skill.
- **Specific**: It rules out a problem with the targeted skill.
- **Reliable**: If the assessment is repeated, the results are the same.
- **Valid**: It accurately measures the targeted skill.

It's also important to look for tests that are available in the language you need, right for the population you're testing, affordable, and practical to use in your setting. WPS is proud to offer a

wide range of reading and dyslexia assessments, as well as assessments that can help you identify comorbid conditions. Our Assessment Consultants are experienced educators and clinicians who can help you select the best assessments for your needs.

- Phonological and Print Awareness Scale (PPA Scale™)
- Tests of Dyslexia (TOD®)—**now available**
- Oral Passage Understanding Scale (OPUS™)
- Oral and Written Language Scales, Second Edition (OWLS™-II)
- Comprehensive Assessment of Spoken Language, Second Edition (CASL®-2)
- Comprehensive Test of Phonological Processing, Second Edition (CTOPP-2)
- Test of Word Reading Efficiency, Second Edition (TOWRE-2)
- Gray Diagnostic Reading Tests, Second Edition (GDRT-2)
- Gray Oral Reading Test, Fifth Edition (GORT-5)
- Test of Early Reading Ability, Fourth Edition (TERA-4)
- Early Reading Assessment (ERA)
- Test of Reading Comprehension, Fourth Edition (TORC-4)
- Nelson-Denny Reading Test, Forms I & J
- Test of Silent Contextual Reading Fluency, Second Edition (TOSCRF-2)

Find out more about Assessing the Five Components of Reading This School Year.

A Word About the Benefits of Online Assessments

The COVID-19 pandemic prompted a surge in the use of telehealth services, including online psychological and educational assessments. Recent research indicates that online reading assessments can be as effective as in-person assessments. For example, one study recently noted that a standardized bilingual receptive vocabulary assessment provided comparable results for both online and in-person delivery methods. Online assessments can improve access to services in rural areas, and studies show that online assessments increase convenience for educators, clinicians, students, and families.

As part of WPS's ongoing commitment to improving sustainable assessment practices, a growing number of assessments are available through our Online Evaluation System™ (OES).

Read more about how to choose the right dyslexia assessment for each student.

Research and Resources:

Castilla-Earls, A., Ronderos, J., McIlraith, A., & Martinez, D. (2022). Is bilingual receptive vocabulary assessment via telepractice comparable to face-to-face? *Language, Speech, and Hearing Services in Schools*, *53*(2), 454–465. https://doi.org/10.1044/2021_LSHSS-21-00054

Hodge, M. A., Sutherland, R., Jeng, K., Bale, G., Batta, P., Cambridge, A., Detheridge, J., Drevensek, S., Edwards, L., Everett, M., Ganesalingam, C., Geier, P., Kass, C., Mathieson, S., McCabe, M., Micallef, K., Molomby, K., Pfeiffer, S., Pope, S., Tait, F., Williamsz, M., Young-Dwarte, L., & Silove, N. (2019). Literacy assessment via telepractice is comparable to face-to-face assessment in children with reading difficulties living in rural Australia. *Telemedicine Journal and E-health*, *25*(4), 279–287. https://doi.org/10.1089/tmj.2018.0049

What Challenges Can Complicate a Dyslexia Evaluation?

Identifying dyslexia takes skill, collaboration, and patience. Here's an overview of some of the factors that can make the process more challenging for clinicians and educators.

Differing Definitions

Reading difficulties can be evaluated in different settings, so terminology and diagnostic criteria can vary. In medical and clinical settings, the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition Text Revision* (DSM-5-TR) is generally the standard. The DSM-5-TR uses a broad category of *specific learning disorder* to encompass dyslexia, developmental aphasia, dysgraphia, dyscalculia, and similar learning problems.

The DSM-5-TR describes a specific learning disorder with impairment in reading as difficulties with:

- reading, including reading that's slow or inaccurate
- understanding the meaning of written communications
- expressing ideas in writing, including problems with grammar, organization, and punctuation

These difficulties should be present for at least 6 months and should persist even if targeted interventions take place. The DSM-5-TR states that dyslexia is "an alternate term used to refer to a pattern of learning difficulties characterized by problems with accurate or fluent word recognition, poor decoding, and poor spelling abilities."

The *International Classification of Diseases 11th Revision* is another well-respected diagnostic manual. The ICD-11 does not contain the term *dyslexia* but refers instead to a developmental learning disorder with a specific impairment in reading. It describes difficulties with word reading accuracy, reading fluency, and reading comprehension.

The International Dyslexia Association (IDA) offers a slightly different definition. It defines dyslexia as a "specific learning disability that is neurobiological in origin" and that causes "difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities." The IDA says dyslexia:

- often comes from a deficit in the phonological aspect of language
- is unexpected in relation to other cognitive abilities
- does not stem from the quality of classroom instruction
- can result in problems with reading comprehension, vocabulary development, and background knowledge

School settings often rely on definitions and diagnostic criteria set forth in the Individuals with Disabilities Education Act (IDEA). The IDEA categorizes dyslexia as "one of the specific learning disabilities." These variations in definitions and diagnostic criteria aren't just a matter of semantics. They inform decisions about whether a person receives interventions, treatments, and services. A person identified as having dyslexia under one set of criteria may not "qualify" under a different set.

In addition, using the term *dyslexia* is discouraged in some settings. Evaluators may worry that identifying dyslexia will create specific legal obligations. It's important to note that in 2015, the U.S. Department of Education issued a "Dear Colleague" letter that urged clinicians and educators to use the term *dyslexia* when appropriate in evaluation, eligibility, and individual education plan documents.

Reliance on a Sole Measure

Researchers have found that relying too much on a single factor to identify dyslexia can yield unreliable results. In some settings, evaluators place heavy emphasis on a discrepancy between someone's aptitude and their achievement. In others, dyslexia is measured by whether or not reading improves in response to interventions. Some evaluators use performance on phonological awareness assessments as the primary indicator of dyslexia.

Using a comprehensive assessment model—one that can identify dyslexia even when compensatory strategies and high intelligence are factors—can make the identification process more reliable. Comprehensive assessments measure multiple reading skills and take into consideration comorbidities as well as the effects of environmental factors such as trauma and poverty.

Testing Multilingual Students for Dyslexia

Dyslexia and other reading difficulties occur across all populations, yet much of the dyslexia research and many assessments are produced for English readers. English is an alphabetic language. In English, learning to read involves mapping letters (graphemes) to speech sounds (phonemes). If a student's home language isn't English, they may have learned to map differently. For example, neuroscientist Nandini Chatterjee Singh points out that reading Chinese, which is a morpho-syllabic language, involves mapping graphic forms to syllables that represent morphemes or units of meaning.

Because reading processes can differ between languages, a student who hasn't yet learned orthographic mapping in English may not score well on assessments in English. When students are assessed in a language they're still learning, false positives and false negatives can sometimes happen.

Overlapping Symptoms and Comorbidities

Dyslexia occurs across the full range of intellectual abilities, and it can co-occur with other health conditions. Either the symptoms of dyslexia can overlap with symptoms of these conditions, or symptoms of other conditions can look similar to dyslexia symptoms. These complexities can make identifying dyslexia all the more difficult.

A comprehensive medical, cognitive, educational, and psychological evaluation can help you determine whether symptoms are related to dyslexia or to other causes, such as:

- attention-deficit/hyperactivity disorder (ADHD)
- auditory or visual processing problems
- developmental language disorder
- specific language impairment
- atypical sensory perception
- other learning disabilities

Collaborating with a multidisciplinary team can bring varied expertise to the diagnostic process as well.

Dyslexia researcher Nancy Mather, PhD explains more about the challenges of assessing for dyslexia.

Research and Resources:

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Best Practices for Assessment

Becoming a highly skilled evaluator is a lifelong endeavor, partly because dyslexia is complex and affects people differently, and partly because the body of reading research is growing so rapidly. As new research leads to evidence-based changes in assessments and best practices, clinicians and educators will need ongoing professional development.

These guidelines are based on recommendations of the American Psychological Association, the American Speech-Language-Hearing Association, and the International Dyslexia Association:

- Adhere to universal safety and health precautions during in-person assessments and evaluations.

- Seek out training opportunities, including mentorships with seasoned evaluators.
- Stay up-to-date with advancements in the assessments you select.
- Make sure the assessments you select are valid, reliable, and well suited to the population you serve.
- Understand the procedures, professional roles, and purposes of using assessments in the setting where you practice (i.e., the courtroom vs. the classroom vs. the clinic).
- During the evaluation process, integrate multiple sources of information, derived from multiple measures and in multiple settings.
- Seek deeper knowledge of the cultures of your students and clients, adapting your assessment measures and processes to meet individual needs.
- Identify and reduce your own biases, and work with your colleagues to revise organizational policies and processes that may disadvantage minoritized populations.
- Stay abreast of technological advances relevant to assessment and evaluation, including telehealth opportunities and best practices.
- Prepare and educate individuals, families, and other professionals by sharing background information, assessment results, interpretations, and recommendations, and write these in accessible language.
- Ensure that client and student data and personal information are protected by appropriate security measures in compliance with the Health Insurance Portability and Accountability Act (HIPAA), the Family Education Rights and Privacy Act (FERPA), and other local, state, and federal laws.

WPS is pleased to partner with you in individual and group training opportunities through webinars, workshops, and our online learning management system.

Research and Resources:

American Psychological Association. (2020). *APA guidelines for psychological assessment and evaluation*. https://www.apa.org/about/policy/guidelines-psychological-assessment-evaluation.pdf

American Speech-Language-Hearing Association. (2004, March). *Preferred practice patterns for the profession of speech-language pathology*. https://www.asha.org/policy/pp2004-00191/ -sec1.3.17

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Screening for Common Comorbidities/Co-occurring Conditions

A complete dyslexia evaluation includes assessments that identify other health conditions that frequently co-occur with reading difficulties. It's a good practice to screen for comorbidities and to plan for their treatment with a multidisciplinary team. Some of the most common comorbidities are:

- **Attention-deficit/hyperactivity disorder (ADHD)**. An estimated 25%–40% of people with dyslexia also have ADHD. In fact, it can be challenging to determine whether reading problems stem from the inability to focus or pay attention, or whether the reverse is true.
- **Autism spectrum disorder (ASD)**. Around 12% of those with dyslexia have significant autism symptoms. It's important to note that many autistic people are exceptionally good readers. It's often where language difficulties exist that there's an overlap with reading difficulties.
- **Atypical sensory processing**. When students have difficulty perceiving, filtering, and organizing sensory information, problems with reading and learning can develop. There's evidence that close to 19% of those with dyslexia also have atypical sensory processing.
- **Specific learning disabilities**. It's often the case that individuals with dyslexia also have other learning disorders. In studies, roughly 30% also have dysgraphia symptoms, and 26% have dyscalculia symptoms.
- **Anxiety and depression**. People with dyslexia and other learning disorders have higher rates of anxiety and depression. Having learning difficulties in more than one area further raises the risk of mental health complications.
- **Developmental coordination disorder (DCD)**. Between 3% and 13% of those with reading disorders also have DCD, which has led researchers to recommend that students be screened for movement problems—especially difficulties with fine motor skills.

Research and Resources:

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Hendren, R. L., Haft, S. L., Black, J. M., White, N. C., & Hoeft, F. (2018). Recognizing psychiatric comorbidity with reading disorders. *Frontiers in Psychiatry*, *9*, 101. https://doi.org/10.3389/fpsyt.2018.00101

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Addressing Implicit Bias and Barriers to Accurate Assessment

Decades of research confirm that students from diverse racial, cultural, and linguistic backgrounds are not represented proportionally in special education. Gender and socioeconomic status can also disproportionately affect dyslexia diagnoses, studies show. In some cases, students are overrepresented and in others, underrepresented.

Some researchers have pointed out that teacher preparation programs may not focus enough on culturally responsive practices, which may explain part of the disproportionality. Other researchers suggest deeper policy reforms may be necessary to solve the problem.

Then there is the question of sex and gender and their impact on the identification of dyslexia. Research shows that those assigned female at birth are far less likely to be diagnosed with dyslexia than those assigned male.

Though more research is needed to understand all the reasons for such disparities, there is *little* disagreement on the repercussions of misdiagnosis. Reading difficulties can lead to lifelong differences in income, opportunity, and even health outcomes. For that reason, it's imperative that we work toward equity and inclusion in identifying and responding to dyslexia.

To reduce the effects of implicit bias in dyslexia evaluations, consider implementing these practices:

Examine expectations closely.

Dyslexia is often defined as difficulty with reading that is *unexpected* in relation to a student's other intellectual abilities. Unexpectedness can be problematic because it's tied to what educators *believe* a student can achieve. Research shows that bias causes some educators to have lower expectations for some students based on their race, ethnicity, or socioeconomic status. Gender and special needs status can also influence a teacher's expectations. If an educator's expectations aren't high enough, there may not be a large enough discrepancy to warrant referral for a full evaluation.

Be aware of differences in interpreting behavior.

Bias can alter how we perceive the behavior of others. For example, studies have shown that some White teachers and evaluators are more likely to characterize the behavior of Black students as emotional disturbance. Dyslexia can amplify these misinterpretations, especially because learning difficulties often lead to heightened emotion—more anxiety, frustration, and depression.

Value parent voices and choices.

Implicit bias shapes how schools interact with low-income parents and parents in minoritized racial, cultural, and ethnic groups. For example, an evaluator may have stereotyped assumptions about whether parents want to be or are able to be involved with their children's education. Research shows that parents engage more when the school climate is welcoming and open.

Identify your biases.

While systemic change is necessary to correct large-scale inequities, each of us can begin closer to home by examining our own attitudes and beliefs about "other" groups. A number of implicit bias self-tests, such as the Implicit Associations Test developed by Harvard University researchers, can be found online. Understanding your own biases is the first step to changing them.

Consider diversity, equity, and inclusion training part of your professional development.

If your school district or workplace offers implicit bias reduction training, you may find it helpful—especially if it takes place in an environment that feels positive, empowering, and safe. No training where you are? You may benefit from this implicit bias training module, developed by the National Institutes of Health.

Use evidence-based strategies to build your cultural competence.

Research supports strategies like these for reducing implicit bias:

- Participate in diversity workshops and other opportunities to increase your interactions with people whose backgrounds are different from yours.
- Practice perspective-taking by learning what it's like to experience life as a stereotyped person. Books, movies, and podcasts can give you valuable insights into the experiences of others.
- Slow down and reflect. We're more likely to resort to unthinking behaviors when we're rushed or stressed.
- Work with your peers to develop procedures and processes that promote equity, inclusion, and accountability. Share and review data from your processes regularly.

WPS is committed to supporting underrepresented populations and reducing disparities in health care and education.

Research and Resources:

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Barry, C. S., Davies, N. M., & Morris, T. T. (2022). Investigating how the accuracy of teacher expectations of pupil performance relate *[sic]* to socioeconomic and genetic factors. *Scientific Reports*, *12*, 7120. https://doi.org/10.1038/s41598-022-11347-w

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Learn more about how WPS is working to support equity, diversity, and inclusion.

Evidence-Based Interventions and Accommodations

There is strong evidence that research-based intervention and explicit instruction can prevent or reduce many reading difficulties—including some of those associated with dyslexia—so readers can catch up to their peers. Researchers have found that brain structures and brain connectivity *change* as people grow their reading skills.

People learn to read in a specific developmental sequence. To be effective, reading instruction must follow that sequence in systematically building skills and then integrating them so reading becomes more automatic. While research is always expanding our knowledge of what works best, here's what we know now about effective dyslexia interventions.

Interventions for people with reading difficulties should begin with explicit, systematic instruction in:

- phonological and phonemic awareness, including phoneme blending, segmentation, and manipulation to build phonemic proficiency
- phonics (letter–sound skills) and word recognition skills, including instruction in basic decoding and spelling as well as practice so that a person can build a bank of remembered, recognized sight words
- morphological skills, including prefixes, suffixes, base words, and roots

These skills, when combined with practice reading texts, have been shown to improve word-level reading and to increase fluency and accuracy. Research also supports the use of small-group instruction with students of similar skill levels.

There's some evidence that multisensory approaches—such as training in music, drawing letters in sand, or shaping letters from craft materials—can also help to reinforce instruction and spark interest.

In addition to evidence-based instruction, students with dyslexia also benefit from accommodations that adjust the ways students access instructional information, allow them to show what they've learned in a variety of ways, change the environment in which they learn or test, or extend the time they have to complete assignments or tests. Some common accommodations include:

- extended time to complete tests or assignments that involve reading
- extra breaks to help students pace themselves
- assistive tools such as graph paper, timers, graphic organizers, text-to-speech or speech-to-text programs, or large-print texts
- verbal instructions
- oral presentations and oral responses to test items
- quiet or less visually distracting learning or testing spaces

Read more about how to make sure your assessments are equitable for people with disabilities.

Research and Resources:

Frey, A., François, C., Chobert, J., Velay, J. L., Habib, M., & Besson, M. (2019). Music training positively influences the preattentive perception of voice onset time in children with dyslexia: A longitudinal study. *Brain Sciences*, *9*(4), 91. https://doi.org/10.3390/brainsci9040091

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Munzer, T., Hussain, K., & Soares, N. (2020). Dyslexia: Neurobiology, clinical features, evaluation, and management. *Translational Pediatrics*, *9*(Suppl 1), S36–S45. https://doi.org/10.21037/tp.2019.09.07

WPS offers live and on-demand videos and webinars to deepen your knowledge of dyslexia. We invite you to explore them.
