

Diagnosing Dyslexia: Signs, Steps, and Assessment Measures

Compiled by Roots to Learning

What is Dyslexia?

“Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by **difficulties with accurate and/or fluent word recognition** and by **poor spelling and decoding** abilities. These difficulties typically result from **a deficit in the phonological component of language** that is often **unexpected** in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth in vocabulary and background knowledge.”

--International Dyslexia Association, 2002

Individuals with dyslexia do not process sound and symbols as effectively or efficiently as typically developing readers because they have structural and functional brain differences; there is a phonologic basis for dyslexia.

Like most learning or emotional/behavioral disorders, there is a spectrum from mild to severe impairment with dyslexia. Shaywitz indicates that “reading difficulties occur along a continuum” and this affects how intervention will proceed. Some individuals will present with more profound or significant symptoms; others will have greater phonological awareness and stronger decoding skills, but continue to read slowly and struggle with spelling (encoding). Individuals with early, intensive intervention tend to experience more success as readers than those who do are not exposed to systematic, multi-sensory, intensive early intervention.

Dyslexia is referred to as a reading disorder (315.00) in the Diagnostic and Statistical Manual that psychologists use to diagnose disorders. The public school system typically does not use the same language when evaluating students for learning problems; schools follow guidelines established by IDEA (Individuals with Disabilities Education Act) which has outlined 13 categories for students with disabilities eligible for special education; dyslexia/reading disorder falls under Specific Learning Disability. School districts may also use a model of severe discrepancy to determine eligibility for services; therefore, even if a student has dyslexia, he or she may not meet criteria for eligibility. **This does not mean there isn't a problem with the student's language processing skills.** Ineligibility for services does not necessarily mean ineligibility for meeting diagnostic criteria.

How might dyslexia appear in an individual at different stages?

One important sign to consider before all else is a family history of reading difficulties or diagnoses. Dyslexia is heritable and there are multiple genetic risk factors involved. Research shows that “roughly between 30% and 50% of the children of a parent with RD will develop RD” (Pennington, 2008).

Early

- Difficulty with phonological tasks, in particular rhyming
- Mispronounced words (“posed to”, “pusghetti”, “aminal”); mushy or slurry speech
- Difficulty with letter names (learning and remembering)
- **NOTE:** Difficulty with directionality (reversals) is not a sign necessarily at this time, as young children typically reverse letters as they learn to write.

K-1

- Not understanding that words are made up of syllables and phonemes, or difficulty identifying syllables or individual phonemes in a word
- Difficulty with directionality (numbers and letters, specifically b/d, p/q, b/p, g/q); this can also include left and right
- Difficulty matching sound with letters, specifically similar sounds (ch/j; v/f; th/f)
- Difficulty reading one-syllable words (CVC words like “cat”)
- Difficulty especially learning vowels and identifying short vowel sounds/medial vowels in CVC words
- Emotional, verbal or somatic complaints about reading (saying it is too hard; avoiding reading tasks; having stomachaches or headaches or tantrums when asked to read)
- Continuing speech issues

2nd Grade-Adult

- **Speaking/Memory Issues:**
 - Difficulty segmenting increasingly multisyllabic words (leaves out syllables; transposes letters)
 - Difficulty segmenting words orally sound by sound
 - Dysfluent speech (pauses, hesitates)
 - Difficulty with automatic word retrieval—uses imprecise language such as stuff or thing/thingy; often says “it’s on the tip of my tongue”
 - Confuses similar words: tornado for volcano; horse for house; think for thing
 - Difficulty remembering telephone number, address, dates, lists

- Mixed or left-ear dominance (some individuals with dyslexia will prefer using left ear; research has shown that most people show right ear dominance and that sounds processed by the right ear travel directly to the left hemisphere, which is responsible for most of our language processing)
- **Reading Issues**
 - Slow or no progress in reading skills; stalled at a level below grade level
 - Watch for significant challenges in 3rd and 4th grade when reading expectations change; student may have been able to somewhat compensate until this point.
 - Despite repeated exposure to certain words, specifically sight words, individual may not recall word or may only get it inconsistently
 - Does not know, recall or apply decoding strategies to new words or nonsense words
 - Dysfluent oral reading—stumbles over multisyllable words, choppy reading, lack of expression
 - Inaccurate word reading in or out of context; substitution of words, omission of words, specifically function words (as, if, the, a, that), transposition of letters, guessing based on shape of word or context of story
 - Despite issues with oral reading, comprehension may be intact; surprising discrepancy between oral reading skills and ability to comprehend what was read
 - Relies on pictures accompanying text to figure out words
 - Avoids oral reading and silent reading
 - Complains of exhaustion after reading for even a short time
- **Spelling Issues**
 - Phonetic, partially phonetic or dysphonetic spelling (may spell “said” as “sed” or “sd”)
 - Cannot retain or retrieve visual form of words for spelling, even words used on a daily basis
 - Inconsistent spelling
 - Does not know or retain specific spelling rules
- **Homework/Testing Issues**
 - Difficulty completing homework in a reasonable amount of time
 - Exerts much more effort but gets much less done than peers his/her age
 - Difficulty with studying, specifically memorizing information
 - Difficulty with multiple choice and reading/writing intensive tests

- **Organizational Issues**

- Difficulty with materials management at home and school
- Difficulty remembering necessary materials
- Difficulty organizing time

Since the definition of dyslexia states that it is “unexpected” in relation to other cognitive abilities, what are strengths to look for in a dyslexic individual?

- Curiosity and imagination; able to think “outside the box”
- Ability to get the big picture or main idea of something easily; intuitive
- Large vocabulary compared to peers, specifically receptive vocabulary
- Excellent comprehension of stories/materials read or told to him/her
- Strengths in visual-spatial reasoning, visual arts, music, engineering tasks
- Oral communication can be very advanced compared to peers
- Excels at oral testing

Do I really need to have my child tested? The teacher says he “will catch up” and to just wait.

- While there are developmental differences among people, when it comes to language development, if you recognize a significant number of the above signs in your child, **you should not wait!**
- “Scientific data show that reading problems are persistent; they do not represent a temporary lag in development” (Shaywitz, 2005).
- The earlier the intervention (prior to 3rd grade), the better!

Differential Diagnosis & Comorbidity

- Dyslexia is a language disorder, and since reading builds on the earlier development of oral language skills, students with dyslexia may have comorbid language disorders.
- There is a high comorbidity between dyslexia and dysgraphia, as well as dyslexia and ADHD; some students with dyslexia will also exhibit symptoms of a speech disorder and struggle with articulation as they share risk factors.
- Individuals referred for testing because of reading, writing or general learning difficulties may have a learning disorder other than dyslexia; students with language learning difficulties may be diagnosed with a **speech disorder** (phonological deficits & articulation issues); **disorder of written expression/dysgraphia**; **language impairment/language learning disorder/oral-written language learning disorder** (challenges in phonology, orthography, morphology, and comprehension; poor grammar development and syntax)
- Some students are misdiagnosed with ADHD when they are dyslexic; students with dyslexia can exhibit symptoms of ADHD such as memory deficits, difficulty

concentrating, procrastination, inability to follow directions, inattentiveness because reading and writing tasks require so much more effort; as mentioned previously, they might have both ADHD and dyslexia due to the high comorbidity and shared risk factors.

- Likewise, a student may look like he or she has a reading disorder/dyslexia due to reading difficulties; however, if his/her phonological processing skills are intact, the reading difficulties may be the result of working memory and processing speed deficits, indicated in ADHD. Students with ADHD may exhibit slow reading rate, difficulty with comprehension, needing to reread often to get the meaning of a text, difficulty holding onto material read multiple times. This is not dyslexia, but rather reading difficulties affected by ADHD.

TESTING

What tools are used to diagnose dyslexia?

There is no single test that can be used to diagnose dyslexia or any learning disorder. Rather good diagnosticians will use a variety of measures and consider qualitative data (verbal and written reports about early history and academic history from parents, specialists, teachers, student) and differential diagnosis. Research shows that nonsense word tests, single word reading, phonological awareness measures, rapid automatic naming (RAN) and rapid automated stimulus (RAS), and oral reading fluency passages are key evaluation pieces for identifying dyslexia.

A qualified psychologist with experience evaluating children and adolescents for learning disabilities (who is knowledgeable about dyslexia, dysgraphia and the broader oral-written language learning disability and able to differentiate among the three) should use a combination of the following measures to determine or rule out a reading disorder.

Dyslexia Help at the University of Michigan has a great resource that explains assessments and identifies ones clinicians like: <http://dyslexiahelp.umich.edu/professionals/learn-about-dyslexia/diagnosing-dyslexia/tests>

*****Please note that not all psychologists will have access to or have been trained in using all of these assessments. Ask which tests will be used to specifically evaluate phonology, oral language, oral reading fluency, comprehension, vocabulary, memory (including verbal memory), verbal processing speed, handwriting, written expression, and spelling.***

- **Interview** about family history, early development (meeting milestones for speech, motor skills) and school history/academic experience particularly with oral & written language
- **Cognitive assessment:** WISC-IV (Wechsler Intelligence Scale for Children)

- **Academic skills assessments:** General academic tests in reading, spelling, writing, and math include **W-J III; WIAT-II; WRAT-IV; KTEA-II**
- **Special Assessments/Subtests:**
 - **Phonological Awareness:** (awareness, memory and access of sounds)
 - **CTOPP** (Comprehensive Test of Phonological Processing; ages 5-adult)
 - **TOPA** (Test of Phonological Awareness; grades K-2)
 - **PAT** (Phonological Awareness Test; ages 5-7)
 - **Oral Reading:** this should be a combination of single real-word reading, pseudo-word reading and passage reading.
 - **GORT** (Gray Oral Reading Test): accuracy, rate and comprehension
 - **TOWRE** (Test of Word Reading Efficiency): real and pseudo-single word reading fluency; phonological coding fluency
 - **WJ III:** Word Attack & Letter Word ID—single word reading
 - **Oral Language**
 - **CELF:** Clinical Evaluation of Language Fundamentals (measures syntax, semantics, expressive & receptive language)
 - **TOLD:** Test of Language Development (sentence combining, word ordering)
 - Test of Adolescent Language
 - **Comprehension**
 - **WJ III or WIAT II** Reading Comprehension tests
 - **PAL-II** (Process Assessment of Learner Reading and Writing Diagnostic, developed by Virginia Berninger, UW)
 - **Vocabulary: Expressive/Receptive**
 - **PPV** (Peabody Picture Vocabulary Test): student points to a picture that has been named
 - **Boston Naming Test:** student has to use expressive vocabulary skills to come up with name of an object (much harder for dyslexics as it tests word retrieval)
 - **Memory/Processing Speed**
 - **Verbal Memory:** Wide Range Assessment of Memory & Learning: Sentence Memory & Story Memory
 - **Verbal Processing Speed:** CTOPP Rapid Naming Composite
 - **Written expression, including spelling**
 - **Test of Written Spelling**
 - **WIAT-II Written Expression** including **Spelling Subtest**
 - **W-J III Spelling subtest** (part of the written language subtest)
 - **Handwriting/motor skills**
 - **Bender Visual-Motor Gestalt Test, 2nd ed**
 - **Developmental Test of Visual Motor Integration (VMI) 5th Ed.**

In reviewing the results of administered assessments and individual's history to make a diagnosis, here is what research tells us:

- We need to look for patterns in the intake interview and assessments that point to:
 - **Family history** of reading disorder/problems with spelling, English or foreign language learning
 - **Oral Language:** Possible speech delays and articulation problems
 - Reports that individual doesn't like reading or struggles with timed reading tests
 - Somatic or behavior complaints
 - Difficulty reading **single words**, including pseudo-words
 - The ability to read nonsense words is the best measure of decoding skill in children (Shaywitz, 2005)
 - **Reading comprehension** scores that are often **superior** to scores on oral reading tests of words/passages
 - Dyslexics will typically do better on tests of reading comprehension, which are usually silent, than on the list of isolated words or oral reading fluency tests. The ability to rely on context and use rereading helps the student to infer meaning.
 - **Oral reading** that is labored, dysfluent and slow, or accurate but slow; that omits function words consistently
 - An individual who reads accurately but not fluently is dyslexic (Shaywitz, 2005). We need to look at prosody and rate, as well as accuracy, as a student may be able to decode the words, but he or she may be working much harder to process the letters and sounds, so his or her rate and expression will be affected.
 - If a diagnostician or teacher rules out reading disorder because of high comprehension, despite the student meeting other criteria, get a second opinion or challenge the professional. Ability to comprehend material has been shown through research not to be as significant a factor in dyslexia/reading disorder!
 - **Reversals** of b/d in reading or writing; p/b and p/q can also be noted
 - **Spelling** that is below average for age/IQ; assess spelling errors in organic writing samples as well as performance on spelling tests; watch for vowel confusions
 - **Writing** that lacks conventions of standard written English typical for individual's age/grade level including errors in punctuation, sentence fluency, appropriate syntax, word choice and overall coherence/organization
 - A **decreased processing speed** relative to other Index scores (WMI, VCI, PRI) since processing speed is a cognitive risk factor for dyslexia (Pennington, 2008)
 - A **decreased working memory** score may be indicative of dyslexia given other findings; however, it may be average while verbal memory is low.

- **Handwriting** that is labored; strokes are too heavy or light; words float above or below line; spacing is too close or far apart between letters or words (*indicative of dysgraphia which can accompany dyslexia*)
 - Grip that is unconventional (*indicative of dysgraphia which can accompany dyslexia*)
- Researchers and clinicians have indicated that the dependence on the severe discrepancy model between IQ and reading achievement is not a useful tool in diagnosis; this is due in part to research that has identified **the central role of phonologic deficit in dyslexia** (Shaywitz, 2005; Berninger, 2009; Pennington, 2008)
 - It should be noted that most public schools rely on the severe discrepancy model/criterion discrepancy score for eligibility for special education services. Shaywitz (2005), Berninger (2009), and Pennington (2008) argue that this should no longer be a requirement for diagnosis and services.
 - ***Students with dyslexia often do not meet the severe discrepancy cut-off despite having significant reading challenges that impact them daily and across domains***

References:

- Berninger, V. W., & Wolf, B. J. (2009). *Teaching students with dyslexia and dysgraphia: Lessons from teaching and science*. Baltimore: Paul H. Brookes Pub. Co.
- Pennington, B. F. (2008). *Diagnosing learning disorders: A neuropsychological framework*. New York: Guilford Press
- Shaywitz, S. E. (2005). *Overcoming dyslexia: A new and complete science-based program for reading problems at any level*. New York: A.A. Knopf

Providers in Seattle Area:

It is always important to interview a psychologist to make sure he/she will be a good fit and has the experience working with and evaluating children and adolescents with reading and writing disorders and language impairment. The following are psychologists with whom I have worked, or have been recommended to me, or identified as qualified by the International Dyslexia Association.

Arboretum Psychological Services

206-729-2829

400 E. Pine St. Suite 220 <http://www.arboretumpsy.com/psychologists.aspx>

- **Dr. Yumi Hiraga**
- **Dr. Angela Hungelmann**

Dr. Fred Provenzano

5506 33rd Ave NE Unit D
(between 55th St & 57th St)
Seattle, WA 98105 (206) 361-2343

Dr. Elizabeth MacKenzie

4204 SW Oregon St.
Seattle, WA 98116 206-932-2590

Dr. Kathie Ekemo

<http://www.northup-group.com/clinicians.html>
2200 112th Ave NE Suite 140, Bellevue, WA 98004
425-502-9414

Dr. Belle Chenault (IDA Recommended)

<http://www.bellechenault.com/>

Further Reading/Research:

See Roots to Learning's website www.roots2learning.com and Twitter feed for latest resources & research on dyslexia and dysgraphia.

- A must have for teachers and parents: *The Dyslexia Checklist: A Practical Reference for Parents and Teachers*, Sandra Rief & Judith Stern
- www.LDOnline.org (excellent site for articles on multiple issues related to learning disorders and ADHD)
- National Center for Learning Disabilities: <http://www.nclld.org/types-learning-disabilities/dysgraphia/what-is-dysgraphia>
- Bright Solutions for Dyslexia: <http://www.dys-add.com/>

- ***Overcoming Dyslexia***, Sally Shaywitz