

Dyslexia

Definitions, Key Concepts, Academic Implications, & Legislation

What is dyslexia?

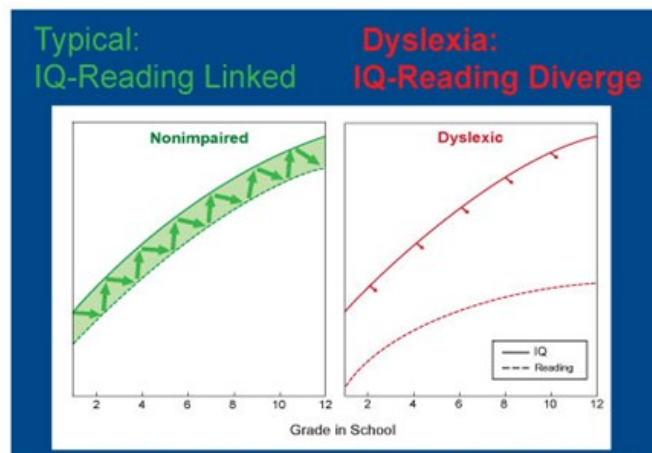
Dyslexia is a neurological or brain-based learning disorder that impairs a person's ability to read and to make connections between spoken language and written letters and words. Dyslexia is an unexpected difficulty learning to read (meaning, it is not caused by sensory impairments, lack of proper reading instruction, intelligence, or poverty). It negatively impacts a student's skill in reading fluency, decoding, comprehension, writing, spelling, and/or speech. Dyslexia has no relationship to student intelligence.^{4,5,7,8,9,13}

What causes dyslexia?

Dyslexia runs in families and scientists have hypothesized the gene that may carry the disorder. In fact, the brain of a student who has a dyslexia (also referred to as a reading disability) looks physically different than a typical reader when examined using fMRI scans.^{2,3,7,9,10,11} There is no cure and people do not "outgrow" the disorder, but it can be treated using evidence-based instructional practices.^{1,9,15}

What are common characteristics of dyslexia?

Figure 1 .
Relationship of IQ to reading skill development



Source. Ferrer, E., Shaywitz, B.A., Holahan, J.M., Marchione, K., and Shaywitz S.E. (2010).

The manifestations of dyslexia may look very different from one student to another. However, the unexpectedness of the difficulty in learning to read sets dyslexic students apart from other struggling readers. In the figure to the left², the data indicate that in typical readers intelligence and reading track together, they are dynamically linked; "In contrast, in dyslexia read-

ing and intelligence are not linked so that a child (or an adult) can have a very high level of intelligence and unexpectedly read at a much lower level, providing incontrovertible evidence that a person can be extremely bright and yet struggle to read."

- Mispronunciation of long, unfamiliar, or complicated words
- Trouble remembering dates, names, telephone numbers, random lists
- Trouble finishing tests on time
- Believes that he or she is dumb and believes peers would agree

Strengths at School Age and Beyond:

- Excellent thinking skills: conceptualization, reasoning, imagination
- Learning is best accomplished through meaning rather than memorization
- High level of understanding what is read to him/her
- Ability to read and understand at a high level highly practiced words in a special area of interest (i.e. biology books if the person is interested in medicine)
- A surprisingly sophisticated listening vocabulary
- Noticeable excellence when focused on a highly specialized area such as medicine, law, public policy, architecture
- Articulate in expression of ideas and feelings; Exceptional empathy and warmth
- Reliance and ability to adapt

What are the common myths about dyslexia?

There are many misconceptions about dyslexia among educators and common members of society alike. Here are the most common myths (that need to be dispelled, even among teachers and parents):

Myth: “Dyslexia” means the reader sees or writes letters backwards or that letters seem to jump around the page. If a child does not confuse or reverse b’s, d’s, p’s, or q’s he or she cannot be dyslexic.

Fact: Many early readers write letters backward, regardless of whether they have dyslexia or not. Reversing letters may or may not be part of a child’s dyslexia characteristics.^{8,9,7,11, 13} Dr. Frank Vellutino disproved this common misconception by asking dyslexic and non-dyslexic students to reproduce a series of Hebrew letters that none of them had ever seen before. Both were able to reproduce the letters with similar accuracy.¹³ Dyslexic children often have difficulty remembering and quickly accessing the letter names, but not necessarily in copying them. Children who do not make letter reversal errors but who have dyslexia are often undiagnosed due to this misperception by adults.¹³

Myth: Smart people or people who perform well in school cannot be dyslexic.

Fact: People who have dyslexia have all levels of intelligence. Many gifted people at their top of their fields are dyslexic. Some dyslexics perform well in school and many have completed rigorous programs at highly selective colleges and graduate schools.^{2,3,4,5,7,9,10,11,13,14}

Myth: Dyslexia does not exist; “dyslexic” students are no different than other struggling readers.

Fact: There has been more than 30 years of documented, international, scientific evidence from medical schools, such as Yale, Harvard and others that prove the existence of dyslexia.^{1,2,6,13} It is one of the most common learning disabilities to affect children (between 10-20% of students have the disability).^{1,2,3,4,5,6,7,8,9,10,11,12,13,14} The myth that dyslexia does not exist is comparable in scope to the myth that vaccinations can cause autism: although it has been scientifically proven

to be incorrect, the incorrect information persists among some people due to inaccurate and misleading information available on the internet. Likewise, the myth that students with dyslexia are similar to “all struggling readers” shows a lack of awareness about dyslexia. Dyslexia causes problems in more than reading. It may include problems with spelling, spoken language, writing and memorization.¹³ If a child is dyslexic, she will likely show other signs besides difficulty with reading.^{5,13}

Myth: Dyslexia cannot be diagnosed until grade 3.

Fact: Professionals with extensive training in diagnosis can accurately identify precursors to dyslexia as early as age 5.^{9,13} Dyslexia is not a medical program and is not diagnosed by doctors, contrary to popular belief. It can be identified by an educational psychologist, licensed school psychologist or diagnostician.^{1,4,5,9}

Myth: Children with dyslexia are lazy.

Fact: This is the most damaging misconception about dyslexia even by parents and teachers.¹ What frequently happens is that these children learn that they are going to fail at tasks of reading, spelling, and writing; it becomes an attempt at self-preservation (i.e., rather than try and fail, it is safer to just not try or work laboriously to no avail). Research has shown, with the technology of functional magnetic resonance imaging (fMRI), that those with dyslexia use a different part of their brain when reading and working with language.^{2,3,9} Dyslexic people show an abnormal pattern of brain function when reading: underactivity in some regions, over-activity in another which, according to research, accounts for the difficulty they have in extracting meaning from the printed word.^{2,3,9,11} The findings provide evidence that people with dyslexia are not poorly taught, lazy, or stupid, but have an inborn brain difference that has nothing to do with intelligence. If students with dyslexia do not receive the right type of intervention and/or classroom accommodations, they often struggle in school -- despite being bright, motivated, and spending hours on homework assignments.

Myth: Accommodations are a crutch, and the student for whom they are made will become lazy.

Fact: Accommodations are not an advantage; they are an attempt to level the playing field.¹³ To paraphrase [Richard Lavoie](#), fair doesn't mean everyone gets the same thing; fair means everyone gets what he or she needs to be successful. Even with certain accommodations, such as extra time on a test, a slow reader will still feel the same time constraints compared to the ordinary reader.¹³ Examples of accommodations for dyslexia include assistive technologies such as speech to text and text to speech, extra-time on tests in school and on high-stakes standardized tests, and partial waivers of foreign language requirements in high school and college.¹

Myth: Most teachers know the warning signs of dyslexia, so they can alert a parent if their child is showing symptoms.

Fact: An individual with dyslexia often is confronted with challenges when attending school. Most classroom teachers have not had formal training in dyslexia. Since there are so many different types and severities of a learning disability that could potentially be in a classroom at a given time, it is difficult for one teacher to be an expert and identify all of the needs of the students. Therefore, if your child is struggling and not achieving, it behooves you to talk with your child's teachers and building principal to begin the steps toward requesting additional help, and, if necessary, a special education referral for a suspected learning disability (LD).¹³

Myth: If a teacher doesn't count off for spelling for a dyslexic child, then that child will never learn how to spell.

Fact: By virtue of a diagnosis of dyslexia, a dyslexic child has great difficulty learning to spell in the traditional way, so marking off for spelling will not teach him how to spell.¹³ They need to be taught spelling using alternative methods, such as the Orton-Gillingham approach⁹. Unless it is specifically a spelling test (and then reduce the number of words that a dyslexic child would have to spell to demonstrate that he has learned a particular spelling pattern), a dyslexic student's papers should be graded for content only, and not spelling.¹³

Myth: Most reading and resource teachers are highly trained in dyslexia and its remediation methods.

Fact: Unfortunately, this is not true. Recent graduate students with a Master's degree in reading have not had any courses on dyslexia. Additionally, few literacy coaches and resource specialists have had training in dyslexia either.¹⁴

Myth: Dyslexia can be cured or helped by special balancing exercises, fish-oils, glasses with tinted lenses, vision exercises, NLP magical spelling, modeling clay letters, inner-ear-improving medications, training primitive reflexes, eye occlusion (patching), etc.

Fact: None of these remedies have been found to be effective based on scientific evidence.¹³ Dyslexics require explicit and systematic instruction in phonological awareness, phonics, and spelling patterns and rules.^{13,14} Additionally, they may need strategies for vocabulary, reading comprehension and writing, as well as verbal expression and word retrieval.^{5,6,9,10,11,12,13,14}

What are evidence-based instructional strategies or curriculum to teach dyslexic students to read?

Texas' dyslexia laws state that LEAs must provide a reading instruction program that provides the following (19 TAC §74.28(c)): (1) phonological awareness, (2) sound-symbol association, (3) syllabication, (4) orthography, (5) morphology, (6) syntax, (7) reading comprehension, (8) reading fluency. Additionally, the law indicates how instruction should be delivered. Instruction must contain each of the following dynamics: (1) simultaneous multisensory stimulation, (2) systematic and cumulative, (3) explicit instruction, diagnostic teaching to automaticity (strong fluency), (4) synthetic instruction (teaching parts of words to whole words), and (5) analytic instruction (teaching whole words to word parts).^{9,10,11,12} Finally, bilingual and English language learners with dyslexia should be provided with additional explicit instruction in the similarities and differences between the first and second languages. Instruction should include vocabulary development in English as well as cognate that are shared between the first and second languages, incorporate ESL strategies, and incorporate English Language Proficiency Standards (ELPs).^{6,12}

How are dyslexic students in Texas public schools identified and provided supports and services needed to learn to read and write well?

In Texas (and in 21 other states) there are specific laws regarding the education of students who have dyslexia. [Texas Education Agency \(TEA\)](#) publishes *The Dyslexia Handbook* (revised 2014) that details state and federal laws, eligibility, definitions, appropriate interventions, teacher preparation requirements, and more. [Region 10](#) Education Service Center provides state coordination for dyslexia information, legislation and services.

There are multiple pathways that student reading problems may be identified as dyslexia in Texas. Identification and

services may be in connection with: the Student Success Initiative –TEC 39.023(a); Section 504 (29 U.S.C. § 701); or, the Individuals with Disabilities Act (IDEA 2004, PL 108-446, 34 CFR 300, 301).

Through the [Student Success Initiative](#), TEC 39.023(a), all k-2 students must be administered early reading assessments. Students in or above grade 7 who do not pass the STAAR reading must also be assessed. Based on assessment outcomes, if students are determined to be at risk for dyslexia, the parents must be notified. TEC §28.006(g) requires an intensive reading program to appropriately address the students' reading difficulties or dyslexia.

[Section 504](#) of the Rehabilitation Act of 1973 (Section 504, 2008) is a federal law that was enacted initially support adults with disabilities but also applies to public schools and institutions of higher education. The criteria used to qualify for services is broader than the criteria that is used by the special education law, IDEA, but narrower than ADA. Section 504 requires that school districts provide a free and appropriate public education (FAPE) to students who qualify. An appropriate education for a student with a disability under the Section 504 regulations could consist of education in regular classrooms, education in regular classes with supplementary services, and/or special education and related services. It intends to provide an education equivalent to that provided to students who do not have a disability. In **Texas, most students with dyslexia are served under Section 504.** Dyslexia services are considered to be part of general education. When a student's needs cannot be adequately addressed through a general education dyslexia program, he or she is referred for evaluation to determine whether they qualify as having a disability under IDEA, the special education law. Section 504 is a non-funded mandate.

[Individuals with Disabilities Education Act \(IDEA 2004\)](#) requires that students who struggle with reading should be provided with scientific, **research-based intervention that may be in a multi-tiered model of instruction** (i.e. a response to intervention [RTI] model). The resulting data from the intervention process can be used to determine whether a student has dyslexia after ruling out that the reading difficulty does not stem from poverty, a lack of research-based reading instruction, a sensory impairment of vision or hearing, English language proficiency, or any other qualifying disability, such as an intellectual disability. IDEA is a federally funded mandate, although it has not ever been fully funded at higher than 12% of the full cost of the IDEA special education program.

To be eligible for educational services and supports **under IDEA, a student who has dyslexia must be eligible as a student with a "specific learning disability."** The definition of a student with a learning disability under IDEA Part 300A.300.8(c)(10) is: "a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

Where can I get additional information about dyslexia?

There are many excellent resources for further information about dyslexia.

1. Watch the HBO documentaries titled, "[The Big Picture: Rethinking Dyslexia](http://www.hbo.com/documentaries/the-big-picture-rethinking-dyslexia)" <http://www.hbo.com/documentaries/the-big-picture-rethinking-dyslexia> and "[Journey into Dyslexia](http://www.hbo.com/documentaries/journey-into-dyslexia)" <http://www.hbo.com/documentaries/journey-into-dyslexia> and the PBS documentary "[Misunderstood Minds](http://www.pbs.org/wgbh/misunderstoodminds/intro.html)" <http://www.pbs.org/wgbh/misunderstoodminds/intro.html>
2. Visit the [Yale Center for Dyslexia and Creativity website](http://dyslexia.yale.edu/teachers.html) <http://dyslexia.yale.edu/teachers.html>

Key points of interest: which tech devices (i.e. [tablets](#), [speech-to-text](#), [Livescribe SmartPens](#), etc) work best for students with dyslexia; [Project-based learning](#); [SAT test and dyslexics](#); [video clips of testimonies to Congress](#) on the current needs of students with dyslexia).

3. Read [Overcoming Dyslexia](#) [ISBN 0-679-78159-5] by prominent dyslexia researcher, Sally Shaywitz from the Yale Center for Dyslexia and Creativity and [What is Dyslexia? A book explaining dyslexia for kids and adults to use together](#). [ISBN-13: 978-1843108825] by Alan Hultquist
4. Read brief bios for successful adult dyslexics, organized by career path (i.e., scientists, teachers, entrepreneurs & executives, etc.) <http://dyslexia.yale.edu/successfuldyslexics.html>
5. Visit the [International Dyslexia Association website](#) <http://eida.org/>

Key points of interest: Fact sheets for [Adolescents and Adults with Dyslexia](#), [At Risk English Language Learners](#), [Dyslexia and the Brain](#), [Effective Reading Instruction for Students with Dyslexia](#), [Transitioning from High School to College](#), [Testing and Evaluation](#)

References

- ¹Center for Dyslexia & Creativity. *Assessing Strengths*. Retrieved September 21, 2015 from <http://dyslexia.yale.edu/Strengths.html> and *Myths and Truths about Dyslexia*. Retrieved September 21, 2015 from <http://dyslexia.yale.edu/Myths.html> *Clues-Signs of Dyslexia*. Retrieved September 21, 2015 from <http://dyslexia.yale.edu/clues1.html>
- ²Ferrer, E., Shaywitz, B.A., Holahan, J.M., Marchione, K., and Shaywitz S.E. (2010). Uncoupling of reading and IQ over time. Empirical evidence for a definition of dyslexia. *Psychological Science*, 21(1), 93-101. doi: 10.1177/0956797609354084.
- ³International Dyslexia Association (2015). *Dyslexia and the Brain Just the Facts Fact Sheet*. Author.
- ⁴International Dyslexia Association Board of Directors. (2002). *Definition of Dyslexia*. Retrieved September 21, 2015 from <http://eida.org/definition-of-dyslexia/> and *Effective Reading Instruction*. [for Students with Dyslexia] Retrieved September 21, 2015 from <http://eida.org/effective-reading-instruction/>
- ⁵Learning Disabilities Association of America. *Dyslexia*. Retrieved September 21, 2015 from <http://ldaamerica.org/types-of-learning-disabilities/dyslexia/>.
- ⁶Linan-Thompson, S. (2010). Response to instruction, English language learners and disproportionate representation: The role of assessment. *Psicothema*, 22(4), 970-974.
- ⁷Mayo Clinic Staff. *Diseases and Conditions Dyslexia Definition*. Retrieved September 21, 2015 from <http://www.mayoclinic.org/diseases-conditions/dyslexia/basics/definition/con-20021904>.
- ⁸National Institute of Neurological Disorders and Stroke. (NINDS). *NINDS Dyslexia Information Page*. Retrieved September 21, 2015 from <http://www.ninds.nih.gov/disorders/dyslexia/dyslexia.htm>
- ⁹PBS. *A Primer on Dyslexia*. Retrieved September 21, 2015 from <http://www.pbs.org/parents/readinglanguage/articles/dyslexia/main.html>
- ¹⁰Shaywitz, S. (November, 1996). *Dyslexia*. *Scientific American*. 275(5), 98-104.
- ¹¹Shaywitz, S. (2003). *Overcoming Dyslexia*. New York: Penguin Random House. ISBN: 0-679-78159-5.
- ¹²Texas Education Agency (2014). *The Dyslexia Handbook*. Austin, TX: Author.
- ¹³University of Michigan. *Debunking the Myths of Dyslexia*. Retrieved on September 21, 2015 from <http://dyslexiahelp.umich.edu/>
- ¹⁴Youman, M., & Mather, N. (2012). Dyslexia laws in the USA. *Annals of Dyslexia*, doi: 10.1007/s11881-012-0076-2.

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September, 2015

Publication 15.10