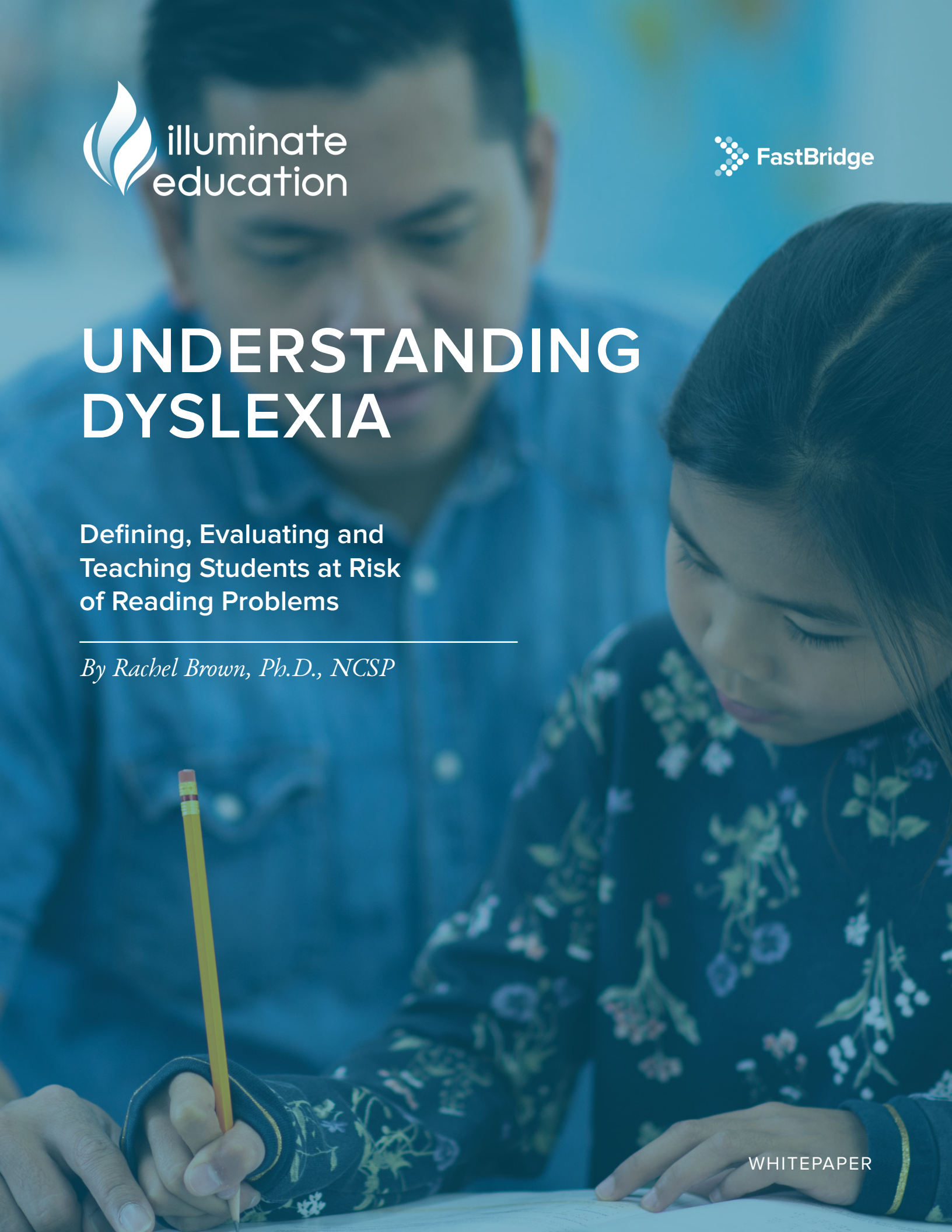

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UNDERSTANDING DYSLEXIA

Defining, Evaluating and Teaching Students at Risk of Reading Problems

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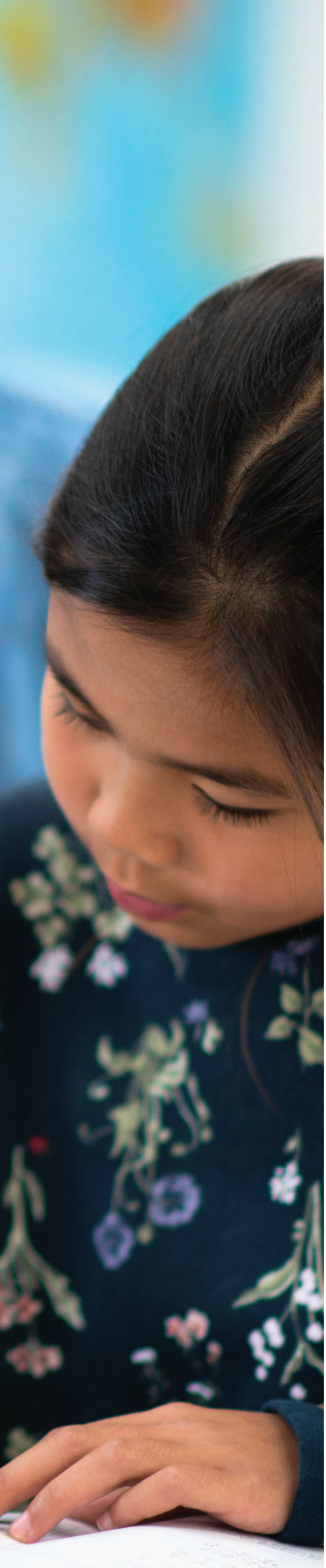
WHITEPAPER



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EXECUTIVE SUMMARY

- The primary reason for most reading difficulties is the lack of effective instruction (National Research Council, 1998).
- There are a range of reading problems that can affect students, including dyslexia.
- Dyslexia is a more significant form of reading disability and is characterized by persistent difficulty with learning and using core reading skills.
- Universal screening for reading problems is the best way to identify and address reading difficulties as early as possible.
- Most students with early reading problems who do not have dyslexia yet will benefit from direct and systematic instruction in the five core reading areas.
- Some students with dyslexia will require more intensive instruction and these students might be eligible for special education services.
- Additional information about dyslexia is available through university and government websites.

WHAT IS DYSLEXIA?

Dyslexia is one type of learning disability that affects a student's ability to learn how to read. The following is the definition adopted by the International Dyslexia Association (IDA; 2019):

> *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 of vocabulary and background knowledge.*

Although the term dyslexia has been used for many years, it is not the only reason that a student might struggle when learning to read. Indeed, research documents that most reading difficulties are due to poor instruction (National Research Council, 1998). Early research about dyslexia and its causes suggested that it was due to poor visual processing (Anderson & Meier-Hedde, 2001; Handler & Fierson, 2011; Kirby, 2018). Later research has confirmed that dyslexia involves difficulty reading due to poor phonological processing (Benton, 2002; Tunmer & Greaney, 2010; Shaywitz & Shaywitz, 2005).

DYSLEXIA AND OTHER READING PROBLEMS

Although reading problems have most likely been present since the origin of written words (van Gijn, 2015), they were not considered concerning until the nineteenth century and the Industrial Revolution when the ability to read became more important (Pickle, 1998). In the U.S., most states introduced compulsory school attendance laws in the late nineteenth and early twentieth centuries. When school attendance became mandatory, those students who might have stayed at home due to difficulty learning to read were now required to attend school (Chirkina & Grigorenko, 2014).

Dr. Samuel Orton was an Iowa pediatrician who investigated children's reading problems and brought the term dyslexia into popular use. His original research about dyslexia suggested that it was due to poor visual processing (Anderson & Meier-Hedde, 2001; Handler & Fierson, 2011; Kirby, 2018). Later research has confirmed that most reading problems, including dyslexia, involve poor phonological processing (Benton, 2002; Tunmer & Greaney, 2010; Shaywitz & Shaywitz, 2005).

As noted, factors related to how reading is taught are the primary cause of most reading problems (National Research Council, 1998). While a small number of students can learn to read regardless of the instructional methods, most benefit from specific instructional methods and some depend on such methods. Although dyslexia is a more pronounced and persistent type of reading difficulty, it exists on a continuum with other reading problems (Chyl et al., 2018). Some educators distinguish between dyslexia and other reading difficulties using the term "classic dyslexia" to describe the former. The features associated with classic dyslexia, as compared to other reading problems, include significantly slower acquisition of phonics skills and automaticity as well as persistent symptoms despite intensive intervention (Tunmer & Greaney, 2010).

Causes

In recent years, more details about the possible causes of reading problems have emerged thanks to modern technologies such as functional magnetic resonance imaging (fMRI). By recording brain activations of typical and delayed readers while they read, researchers have learned that those with reading problems have far fewer activations in the temporal and occipital brain regions and many more in the frontal region. The greater number of frontal lobe activations mean that the reader is struggling to recognize and understand the letters and sounds in words. By contrast, typically developing readers use connections in the temporal and occipital lobes to recognize words automatically, leaving the majority of reading effort for comprehension (Chyl et al., 2018; Norton, Beach, & Gabrieli, 2014–2015). As a result of less automatic letter and sound recognition, delayed readers often spend much longer decoding words, identifying their meanings and understanding connected text. When such delays persist despite intensive evidence-based instruction, true classic dyslexia is thought to exist.

Additional research has documented that there appears to be a familial pattern in some reading problems, including persistent dyslexia (Carroll, Mundy, & Cunningham, 2014; Giménez, Ortiz, López-Zamora, Sánchez, & Luque, 2017). Some of the research concerning familial patterns has focused on identifying children who could have a higher risk for reading problems and then providing them with specialized instruction to lower or eliminate the risk (Snowling, Muter, & Carroll, 2007). The good news is that young children at risk for reading difficulties who participate in highly structured direct reading instruction can learn to read well (Hulme, Nash, Gooch, Lervåg, & Snowling, 2015). The research documenting the benefits of early reading intervention for children at risk for reading problems contributed to the passage of laws requiring dyslexia screening in all elementary schools. As of March 2019, 43 U.S. states have dyslexia screening requirements (National Center on Improving Literacy).

Screening

Dyslexia screening laws require universal reading screening. This is an important distinction because dyslexia is not a stand-alone reading disability, but exists within the larger continuum of all reading problems. Although reading problems are most often identified once a student begins school and is expected to learn how to read, recent research suggests that it is possible to identify risk factors in the preschool years (Raschle, Chang, & Gaab, 2011). The benefit of screening all students for possible reading problems in the primary grades is that educators can learn which students will benefit from additional reading support, regardless of the reason for this need. For all students with early reading difficulties, early intervention with a specific type of instruction is the single best way to help them become readers.

Screening for reading problems is typically very brief (e.g., 4-5 minutes per student) and can be done by classroom teachers, literacy specialists, special educators, school psychologists, or others with the correct training. The specific tasks included in the screening can vary by grade level in relation to what students are expected to know. In grades K and 1, tasks include blending and segmenting oral words to measure phonemic awareness, reading pseudowords to measure phonics skills, and sometimes reading sentences or short stories. In grades 2 and higher, the task is for the student to read three short stories for 1 minute each while the teacher records any errors that the student makes.

It is the types of errors that the student makes that provide indicators of reading problems. If older students cannot read well enough to complete the oral reading stories, the K and grade 1 activities can be used to document what skills they have and what errors were made. If the screening score and error pattern indicate that the student might have reading problems, the next best step is to provide evidence-based reading intervention and to collect progress data.

Many students will make significant reading improvements with such intervention, regardless of the cause of the reading problems (Gerston, 2008).

If the accumulated results consistently show that the student has persistent reading problems despite intervention, the student can be referred for a comprehensive evaluation for special education services. The main difference between screening and the kind of evaluation required for special education services is that eligibility for special education requires a comprehensive evaluation by a multidisciplinary team that is far more in-depth than screening.

Diagnostic Evaluation

For those students whose screening and intervention data indicate persistent reading problems, a diagnostic evaluation can be helpful to confirm the data, rule out other possible reasons for reading problems, and recommend additional instructional strategies. The personnel with the training to conduct a diagnostic reading evaluation are psychologists. Such evaluations are available through psychologists in private practice; however, the cost for a private evaluation must be paid by the family.

School-age children with persistent reading problems are typically evaluated by a school-based team that considers whether the student is eligible for special education. Students with persistent reading problems such as dyslexia are not automatically eligible for special education. Instead, the team needs to consider how the symptoms affect school performance and whether specialized instruction is needed. Dyslexia is not a specific category of special education service; instead, dyslexia is recognized as a type of specific learning disability and that is the category for special education service. For more information about the procedures for evaluation and eligibility in your child's school, contact the district's special education director.

Treatments

As noted, the earlier that reading problems are identified, the more quickly effective intervention can be provided. The good news is that there is a strong body of evidence documenting the most effective reading instruction practices regardless of the cause of reading problems (Foorman & Torgeson, 2001; Gersten et al. 2008). Research examining effective reading instruction goes back more than 100 years (Rooney, 1995).

One of the lasting effects from Dr. Orton's work was the development of assessment and instruction methods for identifying and treating reading problems, including dyslexia. The defining features of effective reading instruction are that it includes direct and systematic lessons in all core areas of reading, including (a) phonemic awareness, (b) phonics, (c) fluency, (d) vocabulary, and (e) comprehension (National Reading Panel, 2000; Stockard, Wood, Coughlin, & Khoury, 2018). A specific type of reading instruction often associated with dyslexia treatment is called the Orton-Gillingham method. This method was developed by Dr. Samuel Orton and his associate Anna Gillingham in the 1950s when much less was known about the causes and treatments for dyslexia. The Orton-Gillingham method involves individualized instruction to learn the sounds (phonemes) for all letters, strategies for reading words that are phonetically irregular, and many, many repetitions to master these skills. There are a number of modern adaptations of the Orton-Gillingham method (e.g., Wilson Reading).

Another form of instruction that has been shown to be effective with students who have reading difficulties is direct instruction (Stockard et al., 2018). Importantly, direct instruction, Orton-Gillingham, and related methods have been shown to be effective for any and all students with reading problems. In addition, there are other methods that focus exclusively on single component skills; however these do not appear to work as well as comprehensive instruction (Alexander & Slinger-Constant, 2004; Brunsdon, Hannan, Coltheart, & Nickels, 2002).

One of the lingering challenges in supporting struggling readers is that the amount of specialized instruction that each student needs tends to vary. For example, one student might need 100 hours of specialized instruction while another student needs 1,000. It is clear that earlier treatment is best and that programming for older students tends to require more time and resources (O'Brien, Wolf, Miller, Lovett, & Morris, 2011). These findings support the use of school-based universal screening and treatment as a means to improve student outcomes. Earlier intervention also can reduce financial costs for schools and communities (Hakkaart-van Roijen, Goettsch, Ekkebus, Gerretsen, & Stolk, 2011).

MYTHS ABOUT READING DISABILITIES AND DYSLEXIA

Myth: *Reading disabilities like dyslexia don't affect children until elementary school when we're teaching them to read.*

Fact: One of the core components of all reading difficulties is understanding the sounds in words. Many students who later have reading problems began with delayed language skills. As such, signs of reading problems are often seen much earlier than Kindergarten (Raschle, Chang, & Gaab, 2011; Shaywitz, 2005). Studies have shown that learners with reading difficulties in elementary school had delayed speech and language skills as toddlers, and were slower to learn preliteracy skills, such as rhyming, as younger children (Lyytinen, Eklund, & Lyytinen, 2005). Early reading intervention can be extremely successful for learners who are developmentally delayed in early childhood, and we recommend providing it to all struggling learners. Early intervention is more effective than waiting until much larger learning gaps have formed. In schools, specific learning disabilities, including dyslexia, aren't diagnosed until elementary school but early reading intervention can be provided with or without a diagnosis.

Myth: *Most students with dyslexia can't learn to read.*

Fact: Students with dyslexia can learn to read with structured literacy instruction. This includes daily intensive instruction in the big ideas of reading, as well as language, provided in an explicit and systematic format (Kilpatrick, 2015).

Myth: *Dyslexia and other reading problems can be remediated through visual training methods.*

Fact: All learners with reading difficulties always benefit from intensive, systematic and explicit literacy instruction. There is a belief that visual training can be used to treat dyslexia. However, there is no evidence that dyslexia is a vision disorder and visual training has not been found to be an evidence-based intervention for reading difficulties. Additionally, the American Academy of Pediatrics does not support the use of visual training to treat dyslexia (Handler et al., 2011).

Myth: *Reading problems are caused by not reading enough to a child at home.*

Fact: Although exposure to books and reading to children enhances their reading skills, the absence of such activities does not cause reading problems. Many learners with reading problems, including dyslexia, have families that have surrounded them with literacy and language experiences from birth. In the case of true dyslexia, one of its core features is that it is persistent, regardless of the home environment provided to young children. As noted, there is a familial pattern to dyslexia that can affect multiple generations (Carroll et al, 2014). These students generally require more structured, intensive instruction to learn to read, regardless of their early home experiences.

Myth: *Most students with reading disabilities cannot attend college.*

Fact: Students with reading disabilities can attend college and be very successful. There are many well-known individuals with a range of reading disabilities, including dyslexia, who have careers in all professions. That said, it appears that classic dyslexia is a persistent condition and is likely to affect all learning experiences that involve reading (Poncelet et al., 2003). For this reason, many colleges now offer supports for students with reading disabilities and there are specialized colleges with preparation programs for students with severe dyslexia (e.g., Landmark College).

IN CONCLUSION

The primary reason for most reading difficulties is the lack of effective instruction (National Research Council, 1998). Nonetheless, there are a range of reading problems that can affect students, including dyslexia. Dyslexia is a more significant form of reading disability and is characterized by persistent difficulty with learning and using core reading skills. Universal screening for reading problems is the best way to identify and address reading difficulties as early as possible. Most students with early reading problems who do not have dyslexia yet will benefit from direct and systematic instruction in the five core reading areas. A small number will improve, but not fully overcome, reading difficulties despite effective instruction. These students manifest classic dyslexia and benefit from ongoing intensive intervention as well as additional supports to ensure access to education. With the correct treatment, most of these students will be able to participate with their peers in general education settings as well as graduate from high school and attend college. It is clear that early screening and intervention are two of the most effective steps to support children at risk for reading problems.

It is important for educators to have access to systems that support early screening and progress monitoring for all students, including those with dyslexia. The FastBridge assessment system is the only system to combine Computer-Adaptive Tests (CAT) and Curriculum-Based Measures (CBM) to support universal screening and progress monitoring across reading, math and behavior. Included in every FastBridge subscription is earlyReading. With earlyReading, you have the ability to screen for signs of dyslexia at the critical early grade levels, including as early as PreK; address student learning needs with targeted, data-driven interventions; and monitor each student's progress toward reading goals. To learn more about using FastBridge to improve instruction and learning for all students, including students with dyslexia, contact sales@fastbridge.com.

ADDITIONAL RESOURCES

The following websites provide additional information about the causes and treatments for dyslexia.

- International Dyslexia Association: https://dyslexiaida.org/
- IRIS Center: https://iris.peabody.vanderbilt.edu/
- The Meadows Center for Preventing Educational Risk: https://www.meadowscenter.org/
- National Center on Improving Literacy: https://improvingliteracy.org/
- Reading Rockets: http://www.readingrockets.org/

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