Dyslexia—Part 2 of 2: **Addressing Dyslexia**

This white paper and its companion piece, *Defining Dyslexia*, are based on the book *Conquering Dyslexia: A Guide to Early Detection and Intervention for Teachers and Parents* by Jan Hasbrouck, PhD. (Benchmark Education; PD Essentials).

In this piece, we will discuss:

- What dyslexia actually looks like.
- Other dyslexia-related skill deficits.
- Prevention and intervention for dyslexia.
- English learners and dyslexia.
- The emotional, behavioral, and social impacts of dyslexia.
- The dyslexia debate.

Introduction

In our previous white paper, *Defining Dyslexia*, we discussed how almost a century of research from a variety of scientific fields has disproven many myths about dyslexia that are unfortunately still prevalent in our culture. We now know that dyslexia is neurobiological in origin and typically results from a deficit in the phonological component of language. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. Like all learning disabilities, dyslexia is a spectrum disorder that varies in its level of impact and has no correlation with intelligence. This white paper will attempt to explain the prevalence of dyslexia, what signs parents and teachers should look for so we can detect dyslexia earlier—sometimes even before students learn to read—and how we can address it in the classroom, so we can turn struggling readers into confident ones.

What Does Dyslexia Actually Look Like?

In the companion white paper, *Defining Dyslexia*, we explored how many of the commonly held beliefs about dyslexia within our culture have been disproven. So, if all these old beliefs about dyslexia are untrue, how can we accurately know if someone may have dyslexia? What are the real signs and symptoms that parents and teachers should be looking for? To answer this question, we return to the IDA definition:

> "[Dyslexia] 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."

When we see a student with at least average cognitive abilities who has received appropriate literacy instruction yet continues to struggle with reading and spelling words—and when a student's accuracy and fluency in reading and writing are below the standard proficiency level for their age and grade—we can reasonably consider this to be a red flag for dyslexia. And perhaps surprisingly, we can sometimes see tell-tale signs of dyslexia well before a child even begins to learn to read! This is because we understand that dyslexia, at its core, is a language-based disorder that—if left untreated—can ultimately result in difficulties with reading, writing, and spelling.

We now have the ability to accurately identify and assess concerns with a child's language development well before we would be thinking about providing literacy instruction. This includes looking at children's development of phonological and phonemic awareness.

Phonological Awareness

Research has identified one particular area of concern, noted in the IDA definition, that the vast majority of students with dyslexia demonstrate "a deficit in the phonological component of language." Researchers and teachers often discuss the importance of helping to develop the foundational skill of "phonological awareness" in beginning readers. Let's look more closely at this essential component of skillful reading.

Phonological awareness is the ability of the brain to first simply notice, then identify, and ultimately manipulate the units of oral language, starting with whole words and word parts. In typically developing brains, phonological awareness begins to develop very early. There are stages to this development, beginning with a child's brain starting to notice the fact that in the seemingly unbroken streams of sounds in spoken language, there are separate and distinct words being uttered. When young children notice a word, they might repeat it or point to the object that word represents (such as "dog" or "ball"). The next stage of typical language development is the ability to identify specific words in speech and patterns within these words. At around two years old, most children show an understanding of syllabication and can clap or otherwise demonstrate they are aware of patterns in their names and other familiar or interesting words ("E-liz-a-beth," "mom-my," "hot-dog," "snow-ball," etc.). A more advanced skill is when children can manipulate words ("'Cowboy' without 'cow' is 'boy'"). This is when the brain is noticing patterns such as alliteration and rhyming in certain words or phrases.

This is the age where children take a great interest in nursery rhymes or books with lots of repetition of words or phrases such as the popular books by Dr. Seuss, Bill Martin Jr., and others. A child without the markers of dyslexia and a strong foundation of receptive language will be able to predict what the next word would likely be in a rhyming phrase ("Look, look, Daddy! Look up in the tree! Way up high I see a buzzing …"). A young child who shows little interest in rhymes or who cannot correctly predict a rhyming pattern or identify syllables may be showing early signs of dyslexia.

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Phonemic Awareness

The next level of phonological skill development is called “phonemic awareness,” which is a finer-grained skill subset of phonological awareness. Phonemic awareness is the ability to notice, identify, and manipulate individual sounds (phonemes) in spoken words. A phoneme is the smallest unit of sound comprising spoken language. In every spoken language, speech involves combining phonemes to form syllables and words. For example, in English the word “dog” has three phonemes: /d/ /o/ /g/. The word “flute” has four phonemes: /f/ /l/ /oo/ /t/ but is spelled using five letters. There are 44 phonemes in the English language, including sounds represented by letter combinations such as /sh/.

When children first begin to notice sounds, they might say things like “‘Mommy’ starts like ‘McDonald’s.’” When their brains start to identify sounds, children might say “‘Horse’ starts with the /h/ sound just like ‘house’ and ‘Hannah.’” Once children’s brains have developed to the point that they can manipulate the sounds in a word, we might hear them say, “‘Stop’ without the /s/ says ‘top!’”

The website Reading Rockets (www.readingrockets.org) provides examples that help us understand how it might feel to struggle with this foundational component of reading, from the perspective of a child who is struggling, as well as their parent and teacher (reprinted with permission):

CHILDREN’S Perspective—What they say:

Children will often express their frustration and difficulties with phonological/phonemic awareness in a general way, with statements like “I hate reading!” or “This is stupid!”. But if they could, this is how kids might more accurately and specifically describe how difficulties with phonological or phonemic awareness affect their reading:

- I don't know any words that rhyme with “cat.”
- What do you mean when you say, “What sounds are in the word ‘brush?’”
- I'm not sure how many syllables are in my name.
- I don't know what sounds are the same in “bit” and “hit.”

A PARENT’S perspective—What I see at home:

- She has difficulty thinking of rhyming words for a simple word like “cat” (such as “rat” or “bat”).
- He shows little interest in language play, word games, or rhyming.

A TEACHER’S perspective—What I see in the classroom:

- He doesn't correctly complete phoneme substitution activities, such as changing the sound of /m/ in “mate” to /cr/ to make a new word: “crate.” She doesn't correctly complete auditory blending activities. For example, putting together sounds /k/ /i/ /ck/ to make the word “kick.”
- She has a hard time identifying how many syllables there are in the word “paper” (2).
- He has difficulty with rhyming, syllabication, or spelling a new word by its sounds.

Other Dyslexia-Related Skill Deficits

The IDA definition of dyslexia identifies deficits in phonological awareness as the most common cause of dyslexia. Because of these difficulties with the phonological components of language, students with dyslexia typically have difficulties with accurate and/or fluent word recognition and often have poor spelling and decoding abilities. (Decoding is the ability to use the knowledge of letter-sound relationships, including letter patterns, also called "phonics," to correctly identify unfamiliar written words and then ultimately to efficiently recognize words by sight.) Additional, secondary consequences of dyslexia include problems with reading comprehension (text-level reading difficulties). Students with dyslexia read much less, which can result in impaired vocabulary and background knowledge, thus hindering their comprehension.

Research conducted since the IDA definition of dyslexia was developed expands our understanding of some of the underlying causes of dyslexia that go beyond deficits with phonological and phonemic awareness. Brady (2019) draws our attention to findings that show many students with dyslexia also have a separate language disorder known as developmental language disorder (DLD), an unexpected deficit in language abilities in spite of adequate environmental stimulation and cognitive abilities with no neurological impairment. DLD is characterized by significant delays in oral language development in vocabulary, grammatical, and pragmatic processes. Current evidence suggests that dyslexia and DLD are distinct disorders, which frequently co-occur with estimated ranges of 17–71 percent (Adlof & Hogan, 2018). However, while some students with DLD also have reading difficulties (dyslexia), others do not.

Prevention and Intervention for Dyslexia

Obviously, skill deficits that result from dyslexia are deeply concerning. They can be quite severe and often result in serious negative academic outcomes (as well as adverse emotional and behavioral outcomes; see "The Emotional, Behavioral, and Social Impacts of Dyslexia" section). However, there is good news, too! Because of the large numbers of scientific studies that have been conducted regarding dyslexia, we can address these concerns quite early. More importantly, we can intervene (the earlier, the better!) with powerful, and age-appropriate instruction to help students "overcome" (Shaywitz, 2003) or even "prevent" (Fletcher et al., 2019; Gaab, 2019) the struggles associated with dyslexia.

> "...the most effective instruction and intervention for reading should be systematically designed and delivered"

Decades of research have clearly shown that the most effective instruction and intervention for reading should be systematically designed and delivered. This instruction should also include high levels of student engagement and feedback. This instruction will look different across the grades.

Preschool

Focus on language development, both expressive (encourage students to use their expanding language to communicate in increasingly complex sentences) and receptive (read aloud to students from language-rich books, including nursery rhymes, and use academic vocabulary while interacting with the students).

Students at this level should start to learn print concepts:

- Follow words in texts from left to right, from top to bottom of the page, from page to page.
- Recognize that spoken words are represented in print by specific sequences of letters.
- Understand that words are separated by spaces in print.
- Begin to recognize and correctly identify upper- and lower-case letters of the alphabet, starting with the letters in each child's name.

Several times daily, have students play games and engage in activities that help them develop phonological awareness.

Kindergarten

Continue to expand and develop students' expressive and receptive language while increasingly incorporating new vocabulary and experiences with print. Students should also continue to frequently play games and engage in activities that help them develop their phonological and phonemic awareness. Teach that words have internal structures that relate to the sounds of speech. As students show interest and readiness, incorporate letters into auditory games as you teach them the sounds of letters they will encounter and use in their early reading and writing.

Grade 1

Continue to develop proficient phonological and phonemic awareness in all students using multimodality practices and activities that develop and expand students' language skills and vocabulary. Use an evidence-based, comprehensive core reading program that helps teachers provide high-quality instruction and supports students as they progress along the continuum from "learning to read" to "reading to learn." Provide instruction using explicit instructional strategies (i.e., demonstration, guided practice, collaborative practice, independent practice, etc.) with appropriate intensity and active student engagement using a lively pace. Incorporate spelling and writing words with decoding lessons.

Differentiate reading instruction to meet the needs of each student whether they are at Level 1 (still learning letter names and sounds), Level 2 (learning to decode words with blending and segmenting), or Level 3 (reading fluently and building a growing set of sight words). Provide opportunities for all students to practice their developing skills by reading and engaging with connected text. Students in Level 2 should do most of their reading practice in small group lessons or 1:1 tutoring, where errors can be corrected, and skillful reading is modeled and encouraged. Students reading at Level 3 can benefit from independent reading and related writing and reading increasingly complex text with appropriate scaffolding support from the teacher. Begin to incorporate instruction in morphology, learning about prefixes, suffixes, root words, and base words to expand their word reading skills and vocabulary.

Students still at Level 1 of reading development, including students with dyslexia, should receive additional, targeted intervention daily, based on the results from diagnostic data. Regularly collect and use that data—and observation results from progress monitoring—to adjust instruction and interventions as necessary.

Grade 2 and up

Continue developing and expanding students' language and vocabulary in speaking, reading, and writing. Continue to teach accurate decoding and spelling using a wide range of two-syllable and then multi-syllable (i.e., three syllables or more) words. Instruction in decoding these longer words should include attention to common syllable division patterns and syllabication rules. Continue using the core reading program and differentiate to provide appropriate Tier 2 and Tier 3 intervention. Some students will need daily supplemental support for many years.

English Learners and Dyslexia

Students in our classrooms who are learning to speak English may be at risk for dyslexia at the same levels as their English-speaking peers. The fact that some English learners (ELs) may have the underlying language disorder that can lead to dyslexia can often be overlooked because many teachers are understandably more focused on the challenges of helping students learn how to speak and understand English. On the other hand, it has been noted, that there may be an over identification of EL students with reading difficulties in some cases. This can be a result of using evaluation processes that are merely looking for "low-performing readers" and not taking into account that these EL students may currently be "low-performing" because their English language skills are still developing, rather than because of any underlying cognitive disorder.

Even though EL students represent one of the fastest growing populations in U.S. schools today, there is limited research on these students. The limited research available is often fragmented and inconsistent, leading to fragmented and inconsistent policies and practices (Lesaux, 2019). However, conclusions from this limited body of research do indicate, especially for the largest population of EL students in the U.S., native speakers of Spanish, that many of the same "red flags" or indicators of dyslexia can be as readily identified in these students as in the students who are native speakers of English (Lesaux & Siegel, 2003). This research also indicates that assessing and teaching EL students with dyslexia would follow a similar process as native English speakers while taking into account their unique needs due to their varying levels of language acquisition.

For example, Raynolds, López-Velásquez, & Olivo Valentín (2017) found that reading and language skills learned in a child's first language can be readily transferred to English, especially when there are commonalities between the two languages, such as with Spanish. For ELs with learning difficulties in kindergarten and first grade, there is a strong consensus across research studies that reading instruction that includes explicit, systematic instruction of phonological awareness and phonics is associated with improved word reading outcomes (Hall, Steinle, & Vaughn, 2019). This type of instruction is especially effective when provided using evidence-based strategies for teaching EL students (Mathes et al., 2007; Richards-Tutor, Aceves, & Reese, 2016).

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—(Hall, Steinle, & Vaughn, 2019).

The Emotional, Behavioral, and Social Impacts of Dyslexia

In addition to providing students with structured, explicit, and intensive interventions as early as possible, it is incredibly important to acknowledge the traumatic, profound, and far-reaching emotional, behavioral, and social impacts of having dyslexia on the individual, their families, and society at large.

These challenges can often arise early. Most preschoolers who will later show evidence of dyslexia typically enter their first academic experience with the same joy, excitement, and confidence as other young children. However, once formal academic instruction starts and they are having difficulty with the tasks that their peers seem to master with relative ease, they often begin to demonstrate anxiety, anger, shame, self-doubt, and low self-esteem (Ryan, 2004). Early learners, who lack an understanding of the situation, frequently struggle with their feelings of frustration and may start to believe that something is 'wrong' with them or that they are not 'smart.' While parents and teachers may believe that this once happy and confident child, who otherwise is capable and successful, is just not trying hard enough, or that the answer is to "just wait a while longer for reading to develop naturally." As we have already discussed, nothing could be further from the truth!

> "Individuals with dyslexia are at increased risk of negative outcomes in emotional, social, educational, and occupational domains."

Livingston, Seigel, and Ribary (2018) reviewed 97 articles from international research published in the years 1980 to 2018 that investigated the impact of dyslexia on emotional and social functioning. They concluded that individuals with dyslexia are at increased risk of negative outcomes in emotional, social, educational, and occupational domains. They also found that the behavioral and emotional profiles associated with dyslexia vary, in part because dyslexia is a spectrum disorder that varies in both the severity of impairment (from mild to severe) and the way in which individuals respond to their learning disability (Riddick, 2010).

Both externalizing (disruptive) behaviors and internalizing (depressive, withdrawn, and anxious) behaviors are associated with dyslexia. Individuals with dyslexia have reported anger, stress, embarrassment, shame, aggression, guilt, isolation, insecurity, anxiety, low motivation, low self-esteem, and related social problems. Adolescents with learning disabilities, including dyslexia, have also found to be at twice the risk of emotional distress, including risk for violence and suicide attempts (Svetaz, Ireland, & Blum, 2001). The memories of these experiences can have lasting damage into adulthood.

Dyslexia has an impact on the family as well. Dyslexia is associated with increased parental distress. Caregivers can play an important role in protecting their children from the misunderstandings and trauma associated with their dyslexia. However, the parents of children with dyslexia may be overwhelmed or so focused on the reading difficulties and academic challenges of their children that they sometimes miss the need for emotional support, or they are simply unable to provide it. Parents of children with dyslexia have also reported feeling guilty for their influence in genetically passing on their dyslexia or for having wrongly assumed their child was not trying hard enough. While we know that students with dyslexia and their parents experience a disproportionate amount of stress compared to their neurotypical peers, we also know that social-emotional support at home when combined with intensive, explicit interventions at school, can help mitigate or eliminate these issues.

Studies reviewed by Livingston, Seigel, and Ribary (2018) also documented the impact of dyslexia on the broader society. Students with learning disabilities, including dyslexia and especially those students of color, are far more likely to be labeled as "disruptive" and are approximately twice as likely to be suspended throughout each school level than without disabilities. Such excessive exclusionary discipline negatively impacts classroom engagement and results in missed class time. It also increases the likelihood that excluded students will be retained in grade, drop out of school, or be placed in the juvenile justice system (U.S. Commission on Civil Rights, 2019). Students with learning disabilities and those with other academic difficulties are over-represented in both the homeless and prison populations. This is especially true for students of color. A majority of adolescents who are homeless were found to have a reading disability that was not attributable to a history of substance abuse, maltreatment, or educational experiences.

To compensate on a psychological level and improve both academically and socially, a child with dyslexia will often require help to develop coping strategies that can reduce the impact of the stigma and personal reactions to difficulties with learning (Terras, Thompson, & Minnis, 2009). Livingston, Siegel, and Ribary (2018) identified three factors that can help a child with dyslexia develop useful strategies for coping with the related academic, social, and emotional consequences. Children with dyslexia benefit by receiving:

- A clear and understandable explanation of their diagnosis.
- On-going parental support.
- Appropriate intervention provided as early as possible.

The Dyslexia Debate

Although there has been a significant amount of research conducted on dyslexia, and it is accepted today as an official category of specific learning difficulty, a debate continues among some educators and cognitive researchers over whether any kind of label is necessary to describe this category of children with learning difficulties (Lawrence, 2009).

In "The Dyslexia Debate," Elliott and Grigorenko (2014) state: "...[T]he primary issue is not whether biologically based reading difficulties exist"—the answer is an unequivocal 'yes'—but rather "Is dyslexia a scientifically rigorous construct that has meaningful value for research and educational/clinical practice?"

This debate about using the term "dyslexia" to describe problems with accurately and fluently reading words and text continues in part because some students may have significant reading difficulties for reasons other than dyslexia. Poor quality, low-skilled reading can be caused by brain injuries, low levels of language proficiency or language disorders, a hearing or visual impairment (i.e., blindness or deafness), severe intellectual disability, or simply as the result of a lack of adequate or appropriate instruction.

There is another reason that some use to argue against using the term dyslexia. As we have reviewed, if well-designed and appropriately targeted intervention is skillfully provided to children, as young as four-to-six, who are born with the cognitive markers that indicate dyslexia, these children's reading skills and brain function appear the same as their neurotypical peers. Researchers do not make the claim that dyslexia can be "cured" but rather conclude that dyslexia can be "overcome" (Shaywitz, 2003) or "prevented" (Fletcher et al., 2019; Gaab, 2019).

Conclusion

Reading is the most fundamental of all academic skills and is essential to success both inside and outside the classroom. However, for a significant number of students, learning to read, write, and spell can be incredibly challenging, difficult, and frustrating. These students are usually just as eager to start school as their peers. However, they become deeply discouraged as they begin to struggle with reading, writing, and spelling while their classmates excel.

Oftentimes—but not always—dyslexia and other closely related and sometimes coexisting conditions like attention-deficit/hyperactivity disorder (ADHD), DLD, and dysgraphia can be a factor in why a student is struggling despite adequate effort and instruction. Unfortunately, prevalent and disproven myths about dyslexia can potentially prevent early detection, delay intervention, and encourage ineffective, sometimes even unscientific, instructional methods causing students to continue to struggle unnecessarily.

Luckily, in the past century, we have made great strides in understanding dyslexia, its causes, and how we can effectively address it with instruction and intervention. We now know that with scientifically proven instruction, intensive intervention, and adequate support, students can not only overcome dyslexia, but we can potentially prevent symptoms from ever manifesting. Best of all, these instructional methods can help ALL readers—not just those with dyslexia—excel. We also know that with the right interventions and supports, we can address the needs of all struggling readers, regardless of the cause.

Recommended Resources for Dyslexia

Children's Dyslexia Centers/Scottish Rite Freemasons—Over 40 Centers in 13 states help children with dyslexia learn to read and to reach their full potential. Services provided on a sliding scale.
https://www.dyslexia-reading-well.com/scottish-rite-dyslexia.html

Decoding Dyslexia and #saydyslexia—A network of parent-led grassroots movements across the United States aiming to raise dyslexia awareness, empower families to support their children and inform policy makers on best practices to identify, remediate, and support students with dyslexia.
http://www.decodingdyslexia.net/home.html
https://www.saydyslexia.org/

Dyslegia: A Legislative Information Site—This site reports and tracks pending legislation in the United States related to dyslexia and other reading disorders.
https://www.dyslegia.com

Five from Five—Five from Five is a project based in Australia that aims to improve literacy levels by ensuring all children receive effective, evidence-based reading instruction. Provides resources for teachers, parents, and administrators.
https://www.fivefromfive.org.au/

Florida Center for Reading Research (FCRR)—The FCRR is a multidisciplinary research center at Florida State University. FCRR has resources and references ("Library") with valuable resources for educators and parents.
https://fcrr.org/

The Gaab Lab—A multidisciplinary team of researchers at Boston Children's Hospital's Laboratories of Cognitive Neuroscience whose research focuses on typical and atypical reading development, including whether there are any neural pre-markers of developmental dyslexia in the pre-reading brain (infants and preschoolers).
https://www.gaablab.com/

Glean Education—Glean partners with schools and districts to compile knowledge about literacy best-practices, supporting dyslexia awareness, struggling learners, data-based decision making, and MTSS/RTI implementation.
https://www.gleaneducation.com/

The Institute for Educational Sciences (IES)—The mission of IES is to provide scientific evidence to ground education practice and policy and to share this information in formats that are useful and accessible to educators, parents, policymakers, researchers, and the public, including these three reports:

- *Foundational Skills to Support Reading for Understanding K-Gr. 3* [NCEE 2016-4008];
- *Assisting students struggling with reading: Response to Intervention and multi-tier intervention for reading in the primary grades* [NCEE 2009-4045];

  and
- *Improving Adolescent Literacy: Effective Classroom & Intervention Practice* [NCEE 2008-4027)

https://ies.ed.gov/

The International Foundation for Effective Reading Instruction (IFERI)—IFERI is a not-for-profit organization organized to contribute to raising standards of literacy in the English language based on robust research and high-quality instruction in the teaching of reading, spelling and writing.
https://iferi.org/

International Dyslexia Association (IDA)—A comprehensive resource and clearinghouse on dyslexia for students, parents, and professionals.
https://dyslexiaida.org/

Intervention Central—Free instructional and assessment resources to help struggling learners.
https://www.interventioncentral.org/home

Language and Reading Research Consortium (LARRC)—Researchers at the LARRC at The Ohio State University have developed an explicit and systematic language development curriculum for PreK–grade 3 called "Let's Know." It is available at no cost in English with an ELL supplement in Spanish.
https://larrc.ehe.osu.edu/curriculum/

National Center for Intensive Intervention (NCII)—NCII provides a series of reading lessons and other resources to support special education instructors, reading interventionists, and others working with students who struggle with reading. These lessons address key reading and prereading skills and incorporate research-based instructional principles that can help intensify and individualize reading instruction.
https://intensiveintervention.org/

National Center for Learning Disabilities (NCLD)—The mission of NCLD is to improve the lives of the one in five children and adults nationwide with learning and attention issues.
https://www.ncld.org/

The National Center on Improving Literacy (NCIL)—The mission of the NCIL is to increase access to, and the use of, evidence-based approaches to screen, identify, and teach students with literacy-related disabilities, including dyslexia.
https://improvingliteracy.org/

Neuhaus Education Center—A non-profit organization providing evidence-based training and support to educators, information, and resources to families.
https://www.neuhaus.org/

Reading Rockets—A source for numerous resources for parents and educators to help struggling readers build phonemic awareness, phonics, fluency, vocabulary, and comprehension skills.
https://www.readingrockets.org/

The Yale Center for Dyslexia and Creativity—The mission of the Yale Center is to increase awareness of dyslexia and its true nature, specifically to illuminate the creative and intellectual strengths of those with dyslexia, to disseminate the latest scientific research and practical resources, and to transform the treatment of all dyslexic children and adults.
https://dyslexia.yale.edu/