

Understanding and Helping Your Dyslexic Child: A Pragmatic Parent Guide from a Fellow Parent's Perspective

Background and Purpose

Dyslexia is a reading disorder which is estimated to affect as many as one in five children. Very often dyslexia occurs together with one or more other learning or developmental issues – including mathematical disorder (called the difficult-to-pronounce “dyscalculia”), attention-deficit-hyperactivity disorder (ADHD), motor coordination issues, sensory processing issues, and anxiety. Parents of children with dyslexia can be easily overwhelmed trying to understand and most effectively help their child, particularly when it occurs with multiple other developmental issues. I know, because I am the parent of a child with each and every one of these issues! In my quest to help my own child, I reviewed many of the great resources available to parents; however, I found that these resources tend to have the following limitations:

- 1) Too scientific and abstract – and therefore lacking the ability to help parents find practical solutions for their child. These resources may also not be written in ways that can be readily understood outside of the scientific community.
- 2) Too anecdotal – a life story from a single perspective, which lacks scientific underpinnings and therefore difficult to generalize to a broader set of children.
- 3) Too narrowly focused on just dyslexia or just another issues – these resources look at children from a single dimension and, while useful for parents of children who have a single issue (e.g., dyslexia alone), they are less useful for those of us with more complex children with multiple needs.
- 4) Focused on advocacy – these resources primarily focus on how to navigate the public school system to become advocates for your child and obtain needed services. While this is a critically important area, it is specific to an individual school district and is not the focus of this parent guide.

Because of my own frustrations with the limitations described above, together with a burning desire to develop a deeper understanding of the brain of my own child, I have begun delving further into the scientific literature as part of earning a graduate degree in Neuroscience. I hope to help other parents better understand and help their complicated children thrive in the

face of dyslexia and other developmental issues. My intent with this parent guide is to translate research findings into easy-to-understand language, and to make the implications of this research clearer and more actionable. I'll use personal anecdotes for illustration, but recognize that your child and mine will likely be very different. I also hope to help parents navigate the complex and often intense feelings they face as they go through this journey with their child. It is not an easy road, and it's important to find and learn from others who are travelling alongside you.

Ultimately, my hope with this document is to help create:

- 1) More informed parents who better understand their complicated dyslexic child; are better prepared for discussions with their children's schools; provide better at-home support for dyslexia; and feel less stress and anxiety about their dyslexic child.
- 2) Dyslexic children who feel better understood, are receiving appropriate remediation and accommodations for their dyslexia, and are ultimately better positioned to maximize their potential.

What is Dyslexia?

A good place to begin is building a shared understanding about dyslexia. Dyslexia is a reading disorder – meaning that dyslexic children struggle to learn to read, and this deficit persists throughout their lifetimes (Shaywitz et al 2018). The underlying issue with dyslexia seems to be in how the brain processes the sounds of language and the relationships between symbols (i.e. letters) and sounds, which is often called “phonological awareness.”

The “symptoms” of dyslexia vary with the age of the child (Siegel 2006). In the youngest children, it can manifest as language or motor issues or delays. These children may struggle with picking up rhyming patterns and have a difficult time learning nursery rhymes that other children seem to pick up effortlessly. They have a very difficult time breaking down the sounds in a word – for example, understanding that the word cat is made up to three sounds – /c/, /a/, and /t/. As they grow into preschoolers, they can have significant trouble learning their letters – both the names of the letters and the sounds they make. They may also struggle to learn their numbers and with early math. As the child enters kindergarten and first grade, it becomes more apparent that they have difficulty recognizing written words and sounding out or “decoding” words. Once these skills are more developed (often with a lot of time and effort by the child, parent, and teacher), older children struggle more with the speed or fluency of their

reading and with understanding what they read. Additionally, they can continue to struggle with writing and spelling for a long after the time they become proficient, if not fluent, readers.

In my experience, the above are fairly well communicated to parents of children with dyslexia. However, dyslexia-related challenges in oral language aren't as broadly understood/discussed. In addition to their reading difficulties, children with dyslexia can also struggle to quickly retrieve words that they know in situations unrelated to reading of text (Hanley & Vandenberg 2010). When shown a picture of a familiar object, they take longer and make more mistakes than other children in naming the object. Interestingly, they do worse when the name of the object is longer and sometimes will substitute a "sound-alike" name – for example tornado instead of volcano. I saw this in my adolescent child recently when she inexplicably couldn't conjure up the name of someone she has known and been close to for many years. The dyslexic brain works just fine in completing the first cognitive step - processing the object (or person) and understanding what (or who) it is, but then stalls at the second step where it has to put together the sounds that make up the word to name the object/person. In effect, the word is more likely to get stuck on the "tip of the tongue." It's important to note that this phenomenon isn't necessarily related to a deficit in vocabulary – as research suggests that dyslexic children don't differ from their peers in their understanding of words ("receptive vocabulary"). Because of this challenge in finding the words they seek, dyslexic children are more prone to substitute non-specific words like "thing" or "stuff" for a more precise word in their oral communications.

One common misconception about dyslexia is that it is *primarily* a problem in how children see letters – for example, reversing their b's and d's or mixing up the sequence of letters in a word – such as reading the word saw as was. This is typified in a T-shirt that I recently saw emblazoned with "Dyslexics Untie!" Contemporary research has generally replaced this vision-focused hypothesis with the understanding described above that dyslexia is primarily based on deficits in how the brain processes sounds. That said, there is some recent evidence that while letter reversals are common in both dyslexic and non-dyslexic children and thus non-diagnostic, the presence of these in adults seems to indicate a severe subtype of dyslexia (Peter et al, 2021). On average, children with dyslexia don't have deficits in their visual system (for example visual processing or visual discrimination) compared with good readers (Heravian et al 2015). However, it is also true that some children (mine, for example) DO have both dyslexia

and visual issues that negatively reinforce each other, and thus successful treatment needs to address both of these needs. This can be difficult, since it can seem that you are challenging the orthodoxy of dyslexia providers today that the condition isn't visual. However, if your child does have visual issues co-occurring with their dyslexia, you need to advocate what is best for your child and get the vision support – a.k.a. vision therapy – they need to complement their dyslexia treatment.

Who Does Dyslexia Affect?

Dyslexia is actually fairly common, with one US-based study suggesting it may affect up to 20% of children (Shaywitz et al 2020), for a total prevalence of 10 million US children. Most sources, however, will quote prevalence on the order of 5% of children – still a very sizeable number that suggests there will be at least one dyslexic child in a typical kindergarten or first grade class. The presence of dyslexia is unrelated to race, ethnicity, or socioeconomic status. It is important to note that recent research suggests that while boys and girls are roughly equally likely to have dyslexia, boys are much more frequently identified by schools and thus diagnosed (Shaywitz 1990). This implies that parents need to be particularly sensitive to signs of dyslexia (as well as other issues such as ADHD) in girls since they are less likely to be picked up in the school environment. Secondly, you may need to work harder to advocate for a daughter with dyslexia than you would for a son to access appropriate testing, diagnosis, and treatment.

How Did This Happen to My Child?

When parents first recognize that their child may have a learning issue, or when they first receive a diagnosis, they often experience some combination of shock, grief, and guilt. They wonder if they did something wrong – did they not read enough to their child? Did they not play enough rhyming or alphabet games? The short answer to these questions is “No” – you didn't make your child dyslexic. There are underlying differences in the brain of dyslexics that are unrelated to anything a parent did or didn't do. To further understand this, let's explore the latest research about the genetic basis for dyslexia, as well as what we are learning from imaging studies of the dyslexic brain.

First, there is strong evidence that there is some genetic basis for dyslexia (Shaywitz et al 2008). In other words, if you have a family member with dyslexia, it raises the odds that your

child will be dyslexic. However, the relationship here is quite subtle – many dyslexics don't have a relative with dyslexia and dyslexic parents usually don't have dyslexic children. Moreover, there are many different genes that each play some small role in the likelihood of getting dyslexia. The practical implications of this are twofold: First, if a family member – particularly a parent or sibling - has dyslexia, you should learn about and look for the subtle clues suggesting dyslexia in young children so that you can identify and address it as early as possible. This is important even if your child seems particularly bright, as heritability of dyslexia seems to be higher in children with high IQs. Secondly, there isn't today – nor is there likely to ever be – a genetic-based test for dyslexia. Relatedly, there isn't likely to be some sort of gene therapy on the horizon that will magically “cure” dyslexia.

In recent years, there has been a lot of research done on how the brains of dyslexics work during reading, using imaging techniques like functional MRIs (Shaywitz et al 2008). These techniques provide a fascinating view into which structures of the brain are being activated under different conditions. For fluent readers, the brain uses multiple areas for reading. These include an area toward the back of the brain – the intersection between the visual system and the language processing system known as the “occipito-temporal” area to quickly and seamlessly recognize known words on sight. In dyslexics, this area is typically disrupted, meaning that the dyslexic can't access this “short-cut” system and thus needs to work harder and take more time to read even familiar words. In addition to this challenge, dyslexic brains typically have difficulties accessing a pathway in the brain called the “left posterior reading circuit.” This pathway is a series of connections associated with word analysis. Thus, dyslexic children have been dealt a doubly bad hand in the basic circuitry for learning to read – no wonder they struggle so!

The good news is that the brain is remarkably adaptive, and dyslexic children can and do build and rely upon different pathways in order to read. Over time, as dyslexic children learn to read they build stronger connections in a front part of the brain known as the “Broca's area” that is typically used for the production of speech. They also compensate for issues in the left side (or “hemisphere”) of their brain – which typical readers use almost exclusively – by using both the right and left hemispheres. Taken together, this research indicates that there is indeed a neurobiological explanation for dyslexia – wherein the brains of dyslexic children truly differ from typical readers – and that over time they find ways to get past whatever blockages are there

by creating new neural pathways for reading. The main “so what” from these imaging studies is an understanding that dyslexia is a condition with a true biological basis – it’s not a reflection of the child’s work effort or intelligence. Knowing this can help parents and their children better understand and accept dyslexia as a part of who they are and how they think.

Knowing that these brain pathways are disrupted in dyslexia, a logical question is “how did that happen?” As described above, heredity may play a role for some children. Another potential contributing factor for some children may be prematurity or low birth weight, as preterm birth may disrupt neuronal organizational processes that occur during the last weeks of gestation. However, the evidence for the impact of prematurity and low birth weight on dyslexia is mixed. For example, in one study of eight-year-old Italian children (Guarini et al 2010), researchers found deficits specific to literacy skills (reading and writing), in the absence of more general cognitive issues, among those born preterm. However, when researchers looked at a sample of Dutch dyslexic and non-dyslexic children, they did not find evidence of higher levels of preterm births or low birth weight (Bos & Tijms, 2012). The authors believe this discrepancy may relate to the populations studied – who may represent a more “purely dyslexic” group rather than a group with a more complex set of issues. They suggest that the latter group of more complex children would likely to have higher incidences of prematurity or low birth weight.

How Does Dyslexia Relate to Intelligence?

With dyslexic children, there is typically a disconnect between their level of intelligence and their reading level, such that their challenges in reading are “unexpected” given their overall cognitive abilities. In fact, there is a sizeable population of dyslexic children who are “twice exceptional” or “2e” – in other words, have dyslexia and also an IQ in the gifted range (International Dyslexia Association 2020). This population has unique needs with regard to diagnosis and educational support, and I would encourage the reader who believes their child may fit the “2e” definition to review the referenced Fact Sheet from the IDA, and its further references.

However, most dyslexic children, like mine, don’t fall under this 2e category and will face times when they or others will question their intelligence in light of their reading and other academic difficulties. The reasons for this is fairly straightforward – for neurotypical children who don’t have the brain development pattern associated with dyslexia, there is a strong

correlation over time between reading level and IQ. For dyslexic children this relationship is decoupled, and thus poor reading ability may lead to misperceptions or miscalculations of intelligence (Ferrer et al 2010). Additionally, many of the instruments used to assess IQ as children age may incorporate aspects of reading capabilities or experience gained through regular reading— and thus, with dyslexic children there is a pattern of measured IQ declining over time in concert with reading difficulties (Siegel & Himel 1998). This suggests that IQ scores may in fact be a poor way to assess intelligence of a dyslexic child or adolescent. Furthermore, the same phonological processing deficits have been seen via functional MRI studies in poor readers across a broad range of IQs – suggesting that even if your child’s IQ is measured as below the average range, they will still benefit from the same types of dyslexia programs as children with higher IQs (Tanaka et al, 2011). This research is important because some providers and schools rely on IQ as a key criterion for determining eligibility to dyslexia services. Thus, this may be an area where parents need to develop expertise and actively advocate for their child, if services are being refused due to results of an IQ test. This is especially the case for older children or children of low socioeconomic status, both of which seem to depress calculation of IQs in children with reading disabilities.

How Is Dyslexia Diagnosed?

There are several approaches to screening for and diagnosing dyslexia. One approach would be for a school to do a broad screening of their students to identify and help any students at risk for dyslexia, and then move toward detailed diagnostic testing and, if appropriate, focused interventions. One tool geared toward this is the Shaywitz DyslexiaScreen™ developed at the Yale Center for Dyslexia and Creativity and marketed/sold by Pearson. This is a validated screening tool that is used for those in Kindergarten through third grade. The teacher answers a series of questions about each student, and the instrument returns a binary (Yes/No) answer to their risk level for dyslexia (<http://dyslexia.yale.edu/resources/educators/instruction/shaywitz-dyslexiascreen/>). Despite the potential for broad-based screening, this isn’t typically the route by which at-risk students are identified. More typically, a teacher, parent, or physician may recognize the symptoms of dyslexia in the early school years or when the child’s reading lags far behind their peers, and request (or if the parent, demand!) a dyslexia evaluation.

Under a 2004 federal law called the Individuals with Disabilities Education Act, known more commonly as IDEA, parents can request from their school district at any time an initial evaluation to determine if their child has a learning disability, including dyslexia, and may require special education services. This evaluation is available to all students in the district – including those who attend private schools – at no cost to the family. The IDEA law specifies the timing and process for these evaluations. In addition to IDEA, there is another federal law known as “Section 504” that specifies the process and timeline for evaluation of children who may have a disability that may require accommodations, but not special education services. A school may undertake a formal dyslexia evaluation under either of these routes. One important difference between these two routes is that the parent is a required participant in the IDEA process and not in the 504 process.

Alternatively, a family may choose for various reasons to have a private evaluation conducted either by an educational testing office (these are often associated with schools that serve students with learning differences) or an independent practitioner licensed to perform this type of “neuropsychological” testing. Where I live, in North Texas, the Luke Waites Center for Dyslexia and Learning Disorders at the Scottish Rite Hospital for Children is considered to be one of the best private diagnostic centers, although the wait time to be evaluated can be quite lengthy.

Testing typically includes family interviews that will ask a number of in-depth questions about family history, pregnancy and birth issues, any health issues, and developmental and educational milestones. The family will be asked about activities the family and child participate in, and what they enjoy. They will be asked about their concerns about the child’s development and academic performance. The purpose of these questions is to help guide the assessments to be performed, and to gauge whether the child’s social environment may play a role in their academic issues. Depending on the child’s age and the provider, the teacher may also be asked to answer some questions about the child and perhaps complete some test instruments. Observation of the child in the school environment as well as review of work samples may also be included in the assessment.

In addition to these, the child will undergo a variety of standardized instruments. These will typically include some type of IQ test, such as the Weschler Intelligence Scale for Children or the Woodcock Johnson Tests of Cognitive Abilities. They will also administer tests of

educational achievement, such as the Kaufman Educational Achievement Test or Woodcock-Johnson Tests of Achievement, and the Gray Oral Reading Tests. To specifically test for the underlying deficits of dyslexia, they will also test for phonological processing and rapid automatic naming (which measures the speed of word retrieval) with an instrument such as the Comprehensive Test of Phonological Processing. An important part of the testing is the reading of “pseudowords” – which tests the child’s ability to truly decode words in a way that eliminates the effects of prior exposure and word memorization. If the parent or teacher reports other concerns, the evaluator will likely include other relevant tests – for example, those focusing on attention, behavior issues, or executive function.

The results of these assessments are typically brought together in a written report, which is shared with the family and further explained during a meeting with the evaluator and, if done by the public school, a broader educational team. In the case that dyslexia is diagnosed, the report will typically make note of the student’s reading level compared with age-matched peers, describe any underlying deficits in phonological processing and/or rapid automatic naming, and indicate whether or not other factors such as a low IQ, lack of proper reading instruction, social or behavioral issues, or vision or hearing problems, rather than dyslexia, could be primary contributors to the observed reading issues.

A key learning from my own experience in the diagnostic process is to ensure you really understand the specifics of how the diagnostic process is going to be carried out, and to do a “gut check” on the results compared with your own much more detailed knowledge of your child. I will offer an explanatory anecdote here to elaborate. We first had my daughter, a kindergartener at the time, tested privately by a center considered one of the premiere ones in the country, and we there was a many-month wait before we could be seen. However, on the day our slot came up, our daughter had been up all night with a cold and asthma attack so she was a pitiful mess during the testing. The center, rather than recognize that it would probably be best to reschedule given the circumstance, instead put her through eight hours of detailed cognitive testing to arrive at the conclusion that she was “just low IQ.” (Spoiler Alert: She’s Not.) In retrospect, I have learned that at her age testing should only have performed two hours at a time, and they probably should have written off the bad day entirely. Not surprisingly, the results of this testing didn’t match our own instincts about our child, ignored the clear areas of strength she possessed (including gifted level oral comprehension), and were inconsistent with testing in subsequent

years. In contrast, some free testing by the school district a few years later much better reflected her true profile of strengths and weaknesses. Thus, this was an example that the old adage of “you get what you pay for” was simply untrue.

Although above I noted that there are some interesting data on how imaging of the brain has helped to build our understanding of how dyslexia actually affects processing, MRIs or other imaging aren’t part of the diagnostic process today. The reason for this is that while there are general patterns that can be seen between large numbers of dyslexic and non-dyslexic children, we aren’t yet able to translate this to the individual level. Perhaps sometime in the future we’ll be able to do a scan of our child’s brain and know exactly what’s going on and what we can do about it, but that’s just not where the technology is today.

Can I Just Wait for It to Get Better?

As described above, dyslexia is, to some extent, genetic and is associated with some differences in how the brain is structured and how it processes information. This means that it isn’t just a temporary state, and that someone with dyslexia will “outgrow” it. In fact, research strongly suggests that children with dyslexia typically continue to have reading difficulties throughout their lives (Siegel 2006). Since the “outgrow” approach is destined to fail, this suggests the need to move toward an effective treatment approach as early as possible. Furthermore, there is strong evidence to suggest that targeted intervention approaches are more impactful when children are exposed to them earlier. In other words, your child is more likely to close the reading gap with non-dyslexic children if they start on a dyslexia program early – ideally in the first few years of elementary school (Shaywitz et al 2008).

What Will Help My Dyslexic Child in School?

It’s incredibly important to state here that there ARE effective strategies to help dyslexic children learn. These are typically broken down into remediation – or directly addressing the deficits and trying to close the gaps – and accommodations – finding workarounds to the deficits that prevent the dyslexia from affecting other areas of the child’s learning.

Remediation: If the most significant issue underlying dyslexia is a problem with phonological processing, then it would stand to reason that the most critical aspect in teaching a dyslexic child to read is a strong basis in phonics that allows them to decode new words and

develop spelling skills. Secondly, it is important to make word retrieval faster so that fewer words need to be sounded out and children can move toward fluency. In addition, children need instruction to build reading comprehension skills and their broader set of language skills.

According to the Texas Dyslexia Handbook (2018), an evidence-based dyslexia program should include all of the following eight components: phonological awareness; sound-symbol association; syllabication; orthography (aka written spelling patterns); morphology (understanding of the smallest unit of meaning – a prefix for example); syntax; reading comprehension; and reading fluency. The style of teaching this content also matters. As summarized in the Texas Dyslexia Handbook, research suggests that successful instruction methods are teacher-directed, intensive/repetitive, explicit, systematic, multi-sensory, and that they must be delivered by a highly qualified teacher. The emphasis is on teaching to mastery in an intensive way, rather than merely following a lesson timetable. This means that the duration of treatment may vary across children, and for some it may be of extended duration.

For school-age children, there are several curricula that are based on a solid research foundation and have been proven to affect dyslexia outcomes. One example of these is the “Take Flight” program developed by Scottish Rite and published in 2006 (Scottish Rite Hospital 2019). The full Take Flight curriculum is divided into seven books to be taught sequentially. Each book includes a number of daily lessons, and each lesson incorporates some aspects of phonics, fluency, and comprehension. Tests of accuracy of the program indicated significant gains in phonological awareness as well as all reading skills. In fact, the average performance of children at the end of the program was at or near the average range. Furthermore, these improvements were durable, persisting for at least four years after the program ended. It’s important to note that these excellent results were the result of the following conditions: children participated in the program four days a week for two academic years, with 90 minutes per session administered in a small group setting, with instruction provided by a trained and licensed Academic Language Therapist.

A challenge I have heard anecdotally is that while Take Flight and other scientifically validated programs have been proven effective in remediation of dyslexia, they are often not implemented in the intended way at many schools. The school/district may have their own program that is developed from scratch or “adapted from” or “based on” a validated program; however, the effect of those adaptations is not studied/known and may dilute the overall

effectiveness. Additionally, schools may not employ trained Academic Language Therapists to administer the program they have selected. Again, the impact of this change is unstudied but unlikely to be positive. Thus, it is in parents' best interest to ask questions about the program used by their school, what the evidence is for the validation program, and how and by whom the program is administered. Our children deserve to be taught by "best practice" approaches with proven evidence behind them, and deviations from this shouldn't be tolerated.

Accommodations: Proper accommodations can be very meaningful for a dyslexic student's overall learning and academic performance. One of the most impactful accommodations is having the option to listen or read along with audio versions of their textbooks. Learning Ally is a fantastic resource that makes nearly all textbooks accessible to the dyslexic student (and is available free of charge to all Texas students with dyslexia). The use of technology to support reading and spelling can also be transformative. Use of speech to type programs can unleash a child's ability for written expression by eliminating the roadblock of encoding sounds and spelling. Children can receive support in note-taking, or receive notes directly from the teacher. Giving dyslexic students extra time to complete activities that require substantial reading is important to put them on the same footing as non-dyslexic students who are likely able to read much more quickly and fluently. It may also be helpful for dyslexic children to have their work broken into smaller pieces, so that they don't get overwhelmed by seeing too many words on the page. Students with dyslexia have a very difficult time learning foreign languages, and should receive a waiver for any foreign language requirements a school may have. Further accommodations for attentional issues – such as sitting at the front of the class near the teacher – may also be warranted for the large percentage of dyslexic children who also struggle with attention.

Accessing Remediation and Accommodations in Public Schools: The federal IDEA and Section 504 laws provides guidelines about how states are to provide services to students meeting the definition of a specific learning disability, which explicitly includes dyslexia. Nonetheless, how this is operationalized can vary at the state and school district level. Furthermore, it's not a given that your state will comply with the federal law – for example, the state of Texas has twice been found to be out of compliance with IDEA in its provision of dyslexia services. As stated in the introduction, navigating you own local process (including understanding the options of a "504" vs. an "IDEA/IEP" approach) is out-of-scope for this paper.

I recommend that you review the information available from your own school district’s website, including how they handle the “Child Find” requirements of the IDEA law, and then talk to your school principal. You should also familiarize yourself with the two different approaches to accessing services. This site (<https://www.understood.org/en/school-learning/special-services/504-plan/the-difference-between-ieps-and-504-plans>) provides one of the more complete comparison charts I have seen.

What Is the Best School Environment for my Child?

For this section, I rely heavily on the recently updated Overcoming Dyslexia: Second Edition by Dr. Sally Shaywitz from the Yale Center for Dyslexia and Creativity (Shaywitz 2020). In Chapter 23 of her book, Dr. Shaywitz focuses on this specific question and provides her perspective from having treated many dyslexic children over 30+ years and visiting with many schools educating dyslexic children. Throughout this chapter, she emphasizes aspects of how well the dyslexic student receives appropriate instruction, but more importantly what she calls the climate of the school – the subtle ways that teachers, administrators and students behave toward the dyslexic student that ultimately affect how that student feels about themselves and their abilities. She gives numerous examples of schools that appear to be paying lip service to being welcoming and inclusive to dyslexic students while ultimately failing to support them properly – for example, requiring that a student request extra time for every single test even though the school acknowledges that the extra time is needed; or how the teacher handles the situation when a dyslexic student accidentally says a sound-alike word rather than the one they intended.

Dr. Shaywitz lists the following warning signs under which she suggests parents strongly consider moving schools (copied verbatim here):

- 1) The school has provided a special reading program and your child is still lagging behind;
- 2) The school cannot organize an effective program and your child is falling behind;
- 3) The constant battle to have the school provide promised services is adversely affecting your family;
- 4) The continual lack of understanding is taking a toll on your child, in terms of his or her self-concept and desire to learn and go to school;

5) Your child is demonstrating the onset of negative behaviors.

Dr. Shaywitz has become a strong advocate for enrolling dyslexic students, at least for a several-year period, in a specialized school where all students require some sort of reading support. Typically these are private schools, although the Louisiana Key Academy is an example of a well-regarded public charter school focused on dyslexic children. Her rationale for this recommendation is several-fold, and can largely be gleaned by reviewing the questions above. In such an environment, the child is likely to have ready access to the type of reading instruction they need, without the family needing to “go to battle” constantly with the school. Additionally, she strongly emphasizes the positive impact on the student’s self-esteem because their strengths are actively developed and celebrated instead of a continuous focus on their reading-related weaknesses. You may be in the lucky situation that your local public school readily provides the right culture and educational support to enable your dyslexic child to thrive. If you aren’t, then options in dyslexia-focused charter schools or private schools should be considered. Many of the latter have scholarship options available for families who may need financial support to access their services.

What Will Help My Dyslexic Child Outside of School?

While the school environment should handle the formal aspects of dyslexia remediation, there are things that can be done in the home environment to complement a formal curriculum. Since dyslexia is a language-based disorder, looking for any opportunities to stimulate your child’s language learning may be helpful. Taking every opportunity to engage your child and family in meaningful conversations using a rich vocabulary can help. Listening to audiobooks at their grade level, and likely above their reading level, can help with vocabulary acquisition and other language skills. We use audio books extensively in our family, primarily downloaded on an iPhone app from our local library. Providing reading material that your child enjoys and modeling an enjoyment of reading within the family can also help. For many dyslexic children, access to graphic novels is beneficial. The ability to follow the story with the pictures and not facing an intimidating pageful of small type inspires my child to read, whereas typical books are faced with dread and fear.

In addition to the above aspects, which focus on family interactions, one can supplement the school's efforts with outside tutoring. This is an approach that I used with my child – employing a Certified Academic Language Therapist to come to my child's (private) school four days a week and implement a validated program. This can be useful during the school year or over the summer to prevent the summer slide that is even more pronounced in children with learning issues. There are other resources – including even dyslexia-focused summer camps – that parents can seek out to help their child continue to make progress on their reading journey; however, the expense of these options makes them out of reach for most families.

What if My Kid Struggles with Reading AND Math?

A large proportion of kids with dyslexia (estimated up to 40%!) are also diagnosed with a math disorder known as dyscalculia (Wilson et al 2015). Despite this very high frequency of co-occurrence, I have found that both in the literature and in practice they are addressed as truly separate rather than related entities, perhaps because there is a much greater body of research studying dyslexia compared with dyscalculia. Kids with dyscalculia struggle to learn early math concepts like addition and have great difficulty learning their math facts. They have trouble with important basic mathematical concepts like the number line and place value and require significant mental energy to perform calculations. In later grades, they struggle with fractions, algebra, and other more advanced math concepts. In summary, they have poor “number sense.”

One potential reason for this high degree of overlap is that some kids with dyslexia struggle with the language or vocabulary aspects of math. The challenges dyslexic children have in retrieving the word they want may also be involved in retrieval of math facts. Alternatively, both problems could also be related to a problem with working memory or attention. In fact, a study in adults (Wilson et al 2015) showed that adults with both reading and math disorders had a much more limited short-term verbal memory than those with either math or reading disorder alone.

How Does Memory Relate to Dyslexia?

On average, children with dyslexia and average intelligence also have less developed working memories than a matched peer group of typical readers (Swanson et al 2009). Working memory is an important concept in psychology research, and is generally equivalent to one's

mental scratchpad. It involves the limited amount of information that a person can hold in their mind and actively use to complete some mental task. The particular deficit in dyslexic children seems related to problems in accessing verbal information and monitoring attention for verbal material – in other words, the aspects of the working memory that relate to rehearsing or processing the sounds of speech. In children that also have a math disorder (dyscalculia), the visual-spatial aspect of working memory may also be affected. Unfortunately, these deficits in working memory do not go away over time as the child gets older and becomes a more skilled reader.

Poor working memory is highly related to reading problems in general, and reading comprehension in particular. Imagine being a dyslexic child with a poor working memory struggling to read and understand a paragraph of text. First, you have to devote greater-than-average mental processing just to decode the words on the page. This alone likely consumes much of your available working memory space. Then, you need to keep a series of words together in your working memory in order to make sense of a sentence. Lastly, you need to keep the ideas of the sentence in mind to understand the paragraph as a whole. Thus, it's easy to see how even after a dyslexic child masters letter-sound associations and develops reasonable decoding skills, they still have a high mountain to climb in order to be a successful reader.

From a personal standpoint, understanding the deficits in working memory and how they affect reading has helped me to better understand the challenges my child struggles with reading comprehension, and helped me to be more patient in addressing the comprehension challenges she faces. Intuitively, this seems like an area where we should be able to intervene – i.e., improve working memory – and have a resultant improvement in reading and other academic areas. However, results of various approaches are mixed and require further study and optimization for a dyslexic population (Au et al 2016).

How Does Dyslexia Relate to Attention?

ADHD is a neurobiological disorder that typically manifests in children as some combination of impulsivity, inattention, and deficits in their ability to plan, organize, and follow through on tasks (collectively known as executive function) (Gray & Climie 2016). ADHD by itself can make it more difficult to read since attention may not be sufficient to carry out the work of decoding or to persevere through a long passage to comprehension. Furthermore,

impulsivity may cause them to skip words, sentences or paragraphs, and they may lack planning skills for successful word attack and paragraph comprehension. Studies suggest it is rather common for children to have both dyslexia and ADHD (up to 45% of such children), which further compounds their reading challenges. For a dyslexic child, their differently-structured brain makes them work much harder in order to carry out basic decoding and word recognition tasks. Imagine doing this when you simply can't sustain the attention needed to carry out this hard work. This is supported by research that shows that the impact of a validated reading intervention programs is lower in children who have unaddressed attention issues (Rabiner et al 2004).

Thus, it appears that to really address reading performance in a child with both dyslexia and ADHD, both of these conditions need to be addressed. Indeed, a review of scientific studies conducted in this dually affected population concluded that treatment of ADHD with medications (stimulant and non-stimulant) had a positive impact on the child's reading ability, likely by improving executive function rather than through an impact on phonetic processing (Gray & Climie 2016). Unfortunately, at this time there are no non-medication approaches to treating ADHD with strong scientific data behind them. Of course, the decision as to whether to medicate your child is multi-faceted, however, it is encouraging to know that medication has been shown to be helpful in making reading gains in these kids. Personally, I know that without medication for her ADHD my daughter would not be in a position to make the gains in readings that she has.

How Does Dyslexia Relate to Mental Health?

An unfortunate secondary consequence of dyslexia is that it increases a child's risk of anxiety and depression both during adolescence and to a lesser extent in childhood and through adulthood. A review article (Burden 2008) dives deeper into this issue and provides some insights into how to prevent these potential consequences. Research indicates that those with the greatest problems with self-esteem and negative internalizing behaviors (such as anxiety and depression) are those who were undiagnosed at the time of middle school and therefore did not understand the reason for their difficulties. Thus, developing an understanding and ownership of their dyslexia would likely help children, particularly adolescents, develop positive coping strategies. Other research (Giovagnoli et al 2020) indicated that these problems in adolescents

were associated with hypervigilance, (defined as an excessive sense of alertness toward school situations perceived as problematic), absence of positive peer relationships, low self-efficacy, and low self-esteem. The authors suggests that these negative symptoms can be prevented through remediation programs that include elements of motivation, self-esteem building, and peer network development.

The other theme in this research involves children's perceptions of a negative external reaction to academic failure, in part driven by perceived disappointment of their parents. This reflects the difficulty of setting appropriate expectations for your dyslexic child's academic progress. I know this is an area I personally have struggled with – wanting to help my child set her own expectations high in order to trigger internal motivation to work hard and persevere through challenges. There are times I know I have overdone it and triggered undue anxiety in my child where the expectations fell beyond her current capabilities. For parents this is a huge struggle, and it's important to continuously monitor one's own expectations and behaviors as well as the child's mental health status. The good news here is that children with dyslexia can avoid falling into the traps of negative internalizing behaviors with appropriate support.

How Will Dyslexia Affect My Child's Future?

Ultimately, this is a parent's biggest question. What will my child's future look like? Will they go to college? Will they earn a living and be a productive member of society? How will dyslexia and other learning issues affect their ability to do this?

To begin, it is important to note that there are numerous examples of highly successful people in many different fields who have dyslexia as well as other learning disorders (does the name Albert Einstein ring a bell?). Thus, a diagnosis of dyslexia does not define a child's destiny. That said, it would be disingenuous not to relate some of the data that have looked at long-term outcomes and risk factors for those with dyslexia (Snowling & Hulme 2020). Studies suggest that adults with a history of dyslexia are less likely to attend university. Additionally, they are at increased risk of unemployment, non-violent criminal behavior, and psychiatric disorders such as anxiety and depression. It is critically important to think of these outcomes as marginal increases in potential risk and not as an inevitable outcome for any particular child. Importantly, these studies did not look at the impact of effective dyslexia programs and deep parental sensitivity on long-term outcomes. From my perspective, I view these as motivators to

get my child the best treatment I can, to provide the emotional support she needs to develop self-esteem and self-advocacy, and also as potential risks to watch out for and mitigate.

Final Thoughts

Today, so much is known and understood about dyslexia and how best to help dyslexic children thrive. However, there is still so much more to learn – particularly for parents of children whose dyslexia is concurrent with other learning or developmental issues. We now understand that dyslexia is actually fairly common, and that it reflects an underlying difference in how your child’s brain processes sound information. We know that dyslexic children can be quite bright, which can make their reading challenges even more frustrating for both you and them. We know that dyslexia is not something that goes away, but that it can be addressed through high-quality remediation and appropriate accommodations, and that a key aspect of parenting dyslexic children is ensuring your child gets access to the best proven treatment programs. We know that it’s important to find a school environment that is truly supportive of your child’s learning style, both educationally and emotionally. We know that many children with dyslexia also face other challenges – such as math difficulties, attention problems, or memory issues – and that these can exacerbate your child’s struggles with reading. Thus, it’s important to address each issue in order to maximize your child’s reading. We know that emotional issues such as anxiety and depression are a risk for our children, but also that we can help support them through these challenges. Ultimately, the most important thing that we know is that with the proper support our children will be okay. Some will make enough progress to go on to college and to professions that require a substantial amount of reading. Some won’t, but will be able to use the determination and perseverance skills they develop through addressing their challenges to reach success in less academic areas.

To close, I’ll reiterate that parenting a child with dyslexia can indeed be difficult; however, I have found for me that it has helped me grow by fostering a deeper understanding of my child’s broader capability set beyond the typical academic skills. This experience has taught me compassion and patience, which have typically not been my strong suits. I hope that you similarly find a bright side in this experience, built upon a deeper understanding of your dyslexic child.

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