

### 10.1. A BRAIN DISORDER?

The International Dyslexia Association defines dyslexia as the following (IDA, 2018):

*“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.”*

<https://dyslexiaida.org/definition-of-dyslexia/>

#### **Neurobiological Origin?**

To help us understand what “dyslexia” is or might be, an analogy is used here based on an article by Protopapas and Parrila (2018): Little Janey is in 4<sup>th</sup> grade. She struggles to play the piano. After taking piano lessons for three years she can still barely play the piano. Her playing is laboriously slow and uneven with no sense of rhythm or musicality.

Would you consider Janey disabled? Would you say she had a piano playing disability? Would Janey’s brain be thought to be abnormal, dysfunctional, or atypical? Would you think there to be something wrong with the normal development of her brain? Would Janey be thought to have a learning disability that was neurobiological in origin? Would there be a label or category applied to Janey? Would you look for brain imaging research comparing the brains of “normal” piano players to non-piano players to try to understand what was “wrong” with Janey? Would you send Janey to a “special” piano playing classroom to do endless drills involving low-level piano playing skill in hopes that she would catch up to her piano-playing peers? Hopefully not. Hopefully, you would realize that some people’s brains are wired in ways that make piano playing more difficult to learn than others.

So it is with reading.

From an evolutionary standpoint, reading is not something human brains are naturally hard-wired to do (Turner, 2012). In fact, reading “disabilities” is a social and cultural construct that is of rather recent origin. There was no such thing as a reading “disability” 200 years ago. There may have been hunting disabilities, or farming disabilities, or even riding-a-horse disabilities, but there was no such thing as a reading “disability”. Even 100 years ago, when human society did not rely on literacy to the degree that it does today, someone who could not read was not thought to be disabled or to have an abnormal brain. Today, if a person struggles with reading, that is not evidence that there is something wrong with his or her brain (Gabriel, 2018; Protopapa & Parrila, 2010; Ramus, Altarelli, Jednorog, Zhao, & di Covella, 2018; Vandermosten, Hoeft, & Norton, 2016; Velluntia, Fletcher, Snowling, & Scanlon, 2004).

#### **What Dyslexia Is**

So what exactly is ‘dyslexia’? Protopapa and Parrila (2018) write that “dyslexia” is simply another name for poor reading. The International Literacy Association says, “... *there is no empirical basis for the use of the term dyslexic to distinguish a group of children who are different from others experiencing difficulty in acquiring literacy*” (2016, page 8). Thus, dyslexia can be defined as a condition whereby one has extreme problems using the skills or coordinating the strategies necessary to create meaning with print. Dyslexia is another name for severe reading difficulties (SRD) or a reading disability. The term is merely a designation for

those on the lower end of the reading continuum (Ellio & Grigorenka, 2014; Stanovich, 1994). These are students who usually score two or more standard deviations below the mean on standardized reading achievement tests.

While brain imaging research is of some interest here, it does little to move the field forward in terms of helping students with SRD (Elliott & Grigorenka, 2014; Frey & Fischer, 2010; ILA, 2016b; Turner, 2012). Knowing that certain areas of the brain may or may not light up during word reading tells us nothing about the type of instruction or interventions that are effective in helping struggling readers create meaning with print (Velluntio, Fletcher, Snowling, & Scanlon, 2004). As well, if you were to compare brain images of struggling piano players, chess players, or even pickle-ball players to those of experts, you would most likely find similar “defects” and “abnormalities”. Again, dyslexia is simply a term for those with extreme or severe reading difficulties.

### ***Things we Know About Dyslexia***

For this article, the terms, severe reading difficulties (SRD) and dyslexia will be used interchangeably. However, the preferred term is SRD. This is what we know about dyslexia:

**1. Dyslexia is not related to visual problems** (ILA, 2016a; Strauss, 2011; Weaver, 1994). Students with SRD do not perceive letters backwards or jumble up words to any greater degree than beginning readers or readers of similar ability.

**2. Dyslexia is not a brain disorder** (Coles, 2004; Straus, Goodman, & Paulson, 2009). There is no reliable evidence to show that the brains of students with SRD are qualitatively different from the brains of other students (Coles, 2004; Moreau, Stonyer, McKay & Walkie, 2018; Protopapa & Parrila, 2010; Ramus, Altarelli, Jednorog, Zhao, & di Covella, 2018; Vandermosten, Hoeft, & Norton, 2016; Velluntio, Fletcher, Snowling, & Scanlon, 2004). The brain imaging research that purports to demonstrate “dysfunction” or “abnormalities” is fraught with methodological concerns (Bishop, 2013; Coles, 2004; Hruby, 2011; Ramus, Altarelli, Jednorog, Zhao, & di Covella, 2018; Velluntio, Fletcher, Snowling & Scanlon, 2004; Strauss, Goodman, & Paulson, 2009). These concerns are usually related to small sample size, the type of subjects used in studies, using single-word reading tasks, the use of the phonological model to define and understand reading, the types of data collected, the over-interpretation of the data, and the kinds of generalizations made based on the data.

This is not to say that there are not differences when comparing the brain images of students with SRD to students without SRD. However, what is usually not included in the brain imaging studies is that many of the differences can be explained by differences in instruction and experience (Vandermosten, Hoeft, & Northon, 2016). Also, these differences largely disappear with the right kinds of instruction and experience (Coles, 2004).

**3. Students with dyslexia often have difficulties in analyzing and manipulating sounds in words** (ILA, 2016a; Strauss, 2011; Ziegler & Goswami, 2005). They often struggle processing phonological data; but this is not always the case (Elliott & Grigorenko, 2014; Hadzibeganovic, et al., 2010; Snowling, 2008). As well, the types of word reading errors made by readers identified with dyslexia are not remarkably different from those made by other struggling readers or from beginning readers at the same level (Elliott & Grigorenko, 2014; ILA, 2016b; Weaver, 1994).

**4. Students with SRD often have difficulties with spelling** (Moreau, Stonyer, McKay, & Waldie, 2018; Snowling, 2008). Spelling proficiency is related to visual memory capacity (Gentry & Gilbert, 2006; Johnson, 2008). Good spellers are better able to store and retrieve letter patterns from their long-term memory than are less able spellers. Since students with SRD

often have trouble processing phonological data, it follows that this would result in spelling difficulties. Thus said, spelling has little to do with one's ability to create meaning with print. And, drill and practice on weekly spelling lists does little or nothing to help students become better spellers or to enhance their ability to create meaning with print.

**5. More phonics is not the answer.** What severely struggling readers often receive in intervention programs is a steady diet of phonics and low-level reading skills (Allington, 2012; Weaver, 1994). While research has shown that phonics-based instruction can lead to increased scores on phonics-based measures (Allor, Mathes, Roberts, Cheatham, & Al Otaiba, 2014; Browder, Ahlgrim-Dezell, Flowers, & Baker, 2012; Fautsch-Patridge, McMaster, & Hupp, 2011; Fredrick, Davis, Albert, & Waugh, 2013, Hill, 2016); there is little transfer of these skills to authentic reading conditions (Pearson & Heibert, 2013). As well, there is little evidence to demonstrate that this kind of instruction has any have long term effect on students' ability to create meaning with print (Allington, 2012; Johannessen & McCann, 2009; McCormick, 2007; Strauss, 2011).

This is not to say that phonics instruction is not necessary. Phonics instruction in some form is an important part of an intervention given to most students with SRD; however, it should occur within a meaningful context to the greatest extent possible (Fawcett & Nicolson, 2007; Johnson, 2016). And, it should be part of a balanced literacy program that includes practice reading real books, a focus on higher order reading skills, and word work that develops all three cueing systems (phonological, semantic, and syntactic).

**6. There are no standardized pre-packaged programs that are effective in helping students with dyslexia create meaning with print** (Allington, 2012; Coles, 2004; Gabriel, 2018; ILA, 2016a; Phillips, Hayward, & Norris, 2011; Pitt & Sonia, 2018). Despite the "research-based" claims made by commercial programs such as Orton-Gillingham, Lindamood-Bell LIPs, Simultaneously Multisensory Teaching, Phonics First, Open Court, Fast Forward, or Barton, there are no one-size-fits-all programs that will "cure" dyslexia. The "research" conducted and the research-based claims made here are dubious at best, usually made by those with a financial interest in the outcome. You will find few, if any, of these claims supported by peer-reviewed research. As well, there is no valid research to support the superiority of these skill-based programs in helping struggling readers create meaning with print when compared to a balanced approach to literacy instruction or meaning-based interventions.

**7. Struggling readers do not need dramatically different kinds of instruction** (Allington, 2012; Wharton-McDonald, 2011). Students with SRD need interventions that provide more intense versions of the kinds of research-based instruction they are currently receiving in a general education setting (see below). When an intervention is substantially different from classroom instruction, it creates a splintered curriculum. Here struggling readers are presented with different types of instruction and learn different sorts of skills in different places throughout the day. This makes it harder to develop their reading skills; not easier. Struggling readers need consistency in order to reinforce developing skills. This is not to say that there are not differences in instruction between students with and without SRD, but the differences are in emphasis and intensity, not in kind (see below).

**8. Students with SRD need more intense instruction.** Intensity here refers to (a) more time, (b) more time-on-task, (c) more time engaged in authentic literacy activities [reading and writing], and (d) smaller instructional groups (3 to 7 students) (Allington, 2012; Wharton-McDonald, 2011). Intense, supplemental instruction (or an intervention) can occur within or

outside of a general education classroom setting. The big question when students leave the general education classroom is, what will you have them miss?