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Dyslexia Fonts: What Postsecondary Instructors Need to Know

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ABSTRACT

Touted as a solution, dyslexia fonts have been growing in popularity during this era of increased political and state-wide attention to the reading and learning needs of students with dyslexia. This paper reviews the research literature on effectiveness of dyslexia fonts and offers evidence-based instructional recommendations for students with dyslexia.

KEYWORDS

Dyslexia; dyslexia fonts; letter/word reversals; phonological processing proficiency

On a recent webinar on racial bias in education by faculty committed to increased access and equity, the presenter shared her PowerPoint slides printed with the OpenDyslexic font, explaining that her reason for choosing this particular font was to increase accessibility. A Texas high school librarian is excited about what Sora, a reading app marketed to public schools, has to offer through its easy-to-use interface that now includes “a dyslexic font which allows students to read more easily” (Trammell, 2020, para. 4).

During this era of Covid-19 pandemic-induced online teaching and learning along with increased political and state-wide attention to the reading and learning needs of students with dyslexia, well-meaning post-secondary instructors and those supporting college-age students with specific learning needs may be tempted to recommend or incorporate dyslexia fonts into their teaching. This implementation of specialized fonts is an attempt to respond to the needs of all learners, some of whom may experience print processing challenges due to a learning disability such as dyslexia. However, there is a lack of research evidence that dyslexia fonts work, which in fact has prompted Brightspace, one of the leading learning management systems software for online teaching and learning, to recently drop OpenDyslexic from their system (Earl, 2019). The purpose of this paper is to inform postsecondary instructors about dyslexia and why dyslexia fonts, despite their allure, may not offer meaningful supports to the students they are intended to support: students experiencing challenges with print.

Dyslexia Fonts

OpenDyslexic, shown in [Figure 1](#), is one of the most popular dyslexia fonts. It was designed by Abelardo Gonzalez, a mobile app designer, who, it is claimed (Yirka, 2012), developed it in collaboration with educators working with students with dyslexia. On the opendyslexic.org website, one can obtain this font for use in word processors, eBooks, Instapaper, mobile app platforms (e.g., iPhone/iPad), Apple's Safari browser, and Android devices. The font has reportedly attracted interest from tech giants like Sony, Amazon, and Google (Yirka, 2012). Currently, the font is available for download based on a donation.

As evidenced in [Figure 1](#), this font modifies perceptual properties of the text including letter shapes and size. Additionally, this font utilizes increased letter spacing within and between words. The font's heavy-bottom design is intended to help the reader "quickly figure out which part of the letter is down which aids in recognizing the correct letter" (Gonzalez, 2015, para. 1). This, according to the website, "helps to keep your brain from rotating [letters] around" and can "also help reinforce the line of text." OpenDyslexic is not the only font touted as a solution for students with dyslexia. The Dyslexie font (Boer, 2015) shares similar features; designers claim that its heavy-bottom design prevents letters from "being turned upside down" thanks to a "visual

The quick brown fox jumps over the lazy dog.
THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG.
1 2 3 4 5 6 7 8 9 10 ! ? #

Figure 1. *OpenDyslexic Font Example Applications.*

center of gravity" in each letter's baseline (para. 3). With their adjusted shapes and longer sticks in those letters with sticks, letters are assumed to be less prone to being turned, mirrored and swapped in the visual perception of the reader with dyslexia.

Dyslexia Fonts and Misconceptions about Dyslexia

Heavy-bottom fonts touted to prevent reversals and correctly orient the letters are based on a faulty assumption that readers with dyslexia see letters and words backward (Greene, 2015; Marion, n.d.). As research has shown, even educators, including special education teachers, may be influenced by this misconception (Thorwarth, 2014). Participants in Thorwarth's study of public

school teachers' perceptions of dyslexia were found to be unsure of dyslexia's origins when asked to rate their agreement with survey items positing dyslexia as a visual problem prone to letter/word reversals.

Reversals of letters and words (e.g., “b” for “d” or “was” for “saw”) are common errors of early readers and writers; they are developmentally appropriate, and, according to research literature, they do not appear to be related to perceptual problems (Catts et al., 2012). In one of the earliest studies of the perceptual disorder hypothesis (Vellutino et al., 1972), the performance of students with and without dyslexia was found to be comparable in reproducing briefly presented verbal and non-verbal stimuli of letters. In more recent studies, cognitive factors like working memory processes in children (Brooks et al., 2011) and sequential processing in adults (Peter et al., 2020) have been implicated in the reversal mistakes of individuals with dyslexia.

Thus, the common misapprehension that readers with dyslexia flip words and letters due to a visual-perceptual problem, which is the foundational argument underpinning dyslexia fonts, does not appear to be substantiated by research. Instead, a long line of scholarly consensus views dyslexia as a cognitive processing challenge originating in the phonological domain of language (Bradley & Bryant, 1983; Fletcher et al., 1994; Morris et al., 1998; Shaywitz & Shaywitz, 2020; Torgesen, 1996). According to Torgesen, “dyslexic children are consistently more impaired in phonological awareness than any other single ability” (p. 6 as cited in Catts et al., 2012, p. 94). Phonological awareness is a precursor to developing the ability to attend to individual sounds in words and match them to letters in the process of building consolidated orthographic representations in words that facilitate automatic recognition of these words.

Thus, dyslexia involves a phonological processing difficulty—rather than a visual processing problem—that, if not treated through early identification and prevention, delays the development of skills required for learning to read. Although readers with dyslexia can be taught to develop phonemic awareness and letter-sound matches (Ehri et al., 2001), because of neurobiological differences in the mapping of their reading circuitry, they often do not achieve rapid and fluent reading skills with the same rate and accuracy as successful readers outside of highly familiar topics and texts.

Despite these misconceptions of the causes of dyslexia, developers of dyslexia fonts claim these fonts offer benefits to individuals with dyslexia. For evidence on this point, we can review research findings on dyslexia fonts from controlled experimental studies.

Research Findings on Dyslexia Fonts

According to research on heavy-bottom fonts like OpenDyslexic and Dyslexie, the promise of dyslexia fonts appears to be a false one. Comparing OpenDyslexic to regular fonts like Verdana, Helvetica, Arial, or Times New

Roman, researchers have found no advantage for students with dyslexia in reading accuracy and speed across studies, some of which were conducted with young children (Rello & Baeza-Yates, 2013; Wery & Diliberto, 2017; Zikl et al., 2015 as cited in Kuster et al., 2018). In fact, OpenDyslexic was the study participants' least favorite font. The same pattern of results was obtained in a relatively recent study comparing the Dyslexie font with regular fonts (Kuster et al., 2018).

However, there is one feature of dyslexia fonts like OpenDyslexic that requires further exploration: letter spacing. In one notable study, slight increases of spacing between letters in words was found to differentially benefit children with dyslexia in the form of faster reading (about eight more words per minute) and greater comprehension of stories read (about 10% more comprehension questions answered) than a control group of readers without dyslexia whose gains were negligible between the slightly increased and default letter spacing conditions (Perea et al., 2012). In another study of letter spacing in a sample of Italian 12-year-olds, substantially shorter reading times of individual words (faster reading) were found for students with dyslexia when the spaces between letters in words were increased but no impact was found for those in the control group (Spinelli et al., 2002). Letter spacing was also found to increase the speed of reading for English-speaking "low-progress" children when the text was presented in the Dyslexie font compared to standard-spaced Arial font (Marinus et al., 2016). When the Arial font's letter spacing was matched to that of the Dyslexie font, reading speed increased in similar ways. This led the authors to link Dyslexie font's efficacy with these readers to the font's letter-spacing feature. Other research, in addition to replicating previous research findings on the Dyslexie font's effects with students with reading disabilities, revealed letter spacing can mitigate negative effects of "unfriendly" fonts like Times New Roman Italic and Curlz MT (Duranovic et al., 2018).

As this review shows, the letter spacing feature of dyslexia fonts may be their only feature that works with students with dyslexia. If the letter spacing technique were to be used, however, it should be applied to a regular font like Arial, Verdana, or Times New Roman as each of these fonts were unanimously favored by students with dyslexia over the dyslexia fonts. Further study would be important before any claims about the efficacy of these letter spacing adjustments could be substantiated as a supportive intervention for postsecondary readers with dyslexia. That is, until more research is conducted, it can be tentatively suggested based on these studies that the letter-spacing feature of dyslexia fonts may improve ease and speed of reading for students with dyslexia and facilitate greater exposure to print. Positive consequences are likely to accrue from greater engagement with print in reading fluency, vocabulary knowledge, and familiarity with the academic discourse of print language (Stanovich, 1986).

Evidence-Based Instruction for Students with Dyslexia

Given the prevailing scientific view of dyslexia as a cognitive processing challenge, instructional approaches should be prioritized in working with students with dyslexia making sure they develop phonemic decoding skills and use that knowledge to read unknown words through explicit, systematic, and scaffolded instruction (Al Otaiba et al., 2012). Doing so will redirect their attention from a general tendency to memorize whole words to analyzing and committing to memory letter-sound connections specific to individual words. This would allow for the creation of a repertoire of automatically recognized lexical representations that are built through stable three-way connections between each word's spelling, the sounds in its pronunciation, and its meaning (Ehri, 2014). Some of these vetted instructional approaches include repeated readings and other fluency-oriented instructional programs, preferably incorporating language-rich multisensory experiences. Repeated readings, for example, is an evidence-based strategy for reading fluency and comprehension training with sound research support. Through meta-analysis (Therrien, 2004), the repeated reading strategy has been found to yield medium to large effects in reading comprehension and fluency, respectively, of students with reading disabilities.

For faculty, instructors, and others who are committed to creating interventions and supports that meaningfully encourage the development of readers, a list of vetted and evidence-supported instructional strategies (e.g., phonological awareness training and repeated readings) can be located on The What Works Clearinghouse (WWC) website along with published reviews of studies employing rigorous Randomized Control Trial (RCT) designs: <https://ies.ed.gov/ncee/wwc/FWW>. Additional evidence-based insights and instructional recommendations and supports for readers with dyslexia can be found on the International Dyslexia Association's website (<https://dyslexiaida.org/>).

Conclusion

Without a clear understanding of dyslexia and reading disabilities and their causes and consequences for postsecondary readers, recommendations, fads, and fashions without research substantiation are likely to take root and gain popularity. Unfortunately, that means that families and educators who are striving to provide more equity and accommodations for postsecondary readers are likely to implement strategies that fall short of supporting learners who do need critical supports, particularly in a time of disrupted schooling and online instruction. Recommendations by individuals with limited knowledge of reading disabilities and challenges risk offering an unsubstantiated approach to treatment of a learning disability

that according to some estimates affects 15–20% of the population (International Dyslexia Association, n.d.; Shaywitz & Shaywitz, 2020). While efforts to support access and accessibility of all of our learners are critical and laudable, it is imperative that our initiatives be founded in what meaningfully does support, and is aligned with the needs, preferences, and prevailing understandings of learners and their learning needs.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

Notes on contributor

Omer Ari is a clinical assistant professor in the Department of Middle and Secondary Education at Georgia State University's College of Education and Human Development where he teaches in and coordinates the Bachelor of Interdisciplinary Studies Program. He has worked with struggling college readers and has taught teacher preparation courses on foundations of literacy development.

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