

AB004. The dyslexia font OpenDyslexic facilitates visual processing of text and improves reading comprehension in adult dyslexia

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Background: Proficient literacy skills and reading comprehension are crucial skills for participation and success in everyday life. One group that regularly falls short in demonstrating good reading skills are people with dyslexia. This group suffers from a range of visual deficits including the pattern of ocular movements, and distorted, blurred and reversed (or mirrored) vision of letters during reading. However, only recently designers started to develop affordable and easily implementable remedies that are supposed to reduce the visual symptoms of dyslexia such as specific dyslexia fonts. These fonts incorporate properties aimed at improving the visual and behavioural reading performance of people with dyslexia by using larger intra- and inter-word whitespace, unique letter shapes and no serifs. To date, empirical evidence about the efficacy

of these fonts is contradictory, and their effects on adult dyslexics' eye movements and cognitive processing during longer reading tasks remains elusive.

Methods: To bridge this gap, we measured the eye movements of adults with and without dyslexia during the reading of a set of standardised texts from the international reading speed texts (IReST; Trauzettel-Klosinski & Dietz, 2012) reading battery coupled with validated comprehension questions. These texts and questions were presented either in the traditional font Times New Roman or the specific dyslexia font OpenDyslexic.

Results: Here, we found that OpenDyslexic led to improvements in reading comprehension in dyslexics and non-dyslexics. These improvements were larger for dyslexics. Contrarily, participants' reading speed was unaffected by OpenDyslexic. Our eye-tracking data showed that OpenDyslexic resulted in a higher number of eye movements, reduced visual search intensity, and longer median fixation duration across participants. Particularly, median fixation duration, as a measure of cognitive load, was predictive of reading comprehension across groups. Among dyslexics, OpenDyslexic yielded increases in visual search intensity and visual ease in the form of decreases in median fixation duration and fixation to saccade ratio as well as a smaller number of falsely programmed forward saccades.

Conclusions: Our findings illustrate that OpenDyslexic results in a different visual reading strategy. These findings provide empirical evidence for the efficacy of OpenDyslexic in longer standardised texts and suggest its use in everyday documents, education materials, and online sources.

Keywords: Dyslexia; font; eye-tracking; reading comprehension; visual remedy

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