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Letter to the editor

Comment on letter to the editor: is dyslexia caused by a visual deficit? (Skottun, B. C., 2001)

In his Letter to the Editor, Skottun (2001) re-plots data from O'Brien, Mansfield, and Legge (2000) to illustrate the claim that decreasing print size maximizes the difference in reading speed between individuals with dyslexia and controls. This is an intriguing and suggestive observation, but we believe a more definitive study is required to justify this claim.

The goal of our study was to investigate the effect of *contrast* on reading speed in groups of readers with and without dyslexia in order to test the hypothesis that reducing contrast aids dyslexic performance (e.g. Williams, May, Solomon, & Zhou, 1995). Our findings indicated that contrast affected dyslexic and non-dyslexic reading similarly, implying similar contrast coding in both groups. We observed this result across several variables, including age of the participants (children and adults), contextual constraint (sentences and random word strings), mode of performance (oral and silent reading), and print size (0.2, 0.8 and 2.0 degree characters). Our purpose for testing at different print sizes was to relate our results to previous findings of spatial-frequency-selective deficits in dyslexic contrast sensitivity.

While our data show a potential group by printsize effect, we are unwilling to draw a firm conclusion. Only a small number of subjects were tested across all print sizes (two dyslexic and two control). This was because we were primarily interested in dyslexic versus non-dyslexic effects of contrast at the three print sizes, and not the effect of printsize per se. We did not perform a statistical analysis of the apparent group by printsize effect, as suggested by one reviewer, because most subjects were tested at a single print size.

An investigation focusing on the effect of print size in dyslexia requires an adequate sample size tested across a range of print sizes in a repeated measures design. Such a study could yield detailed reading-speed-by-printsize curves (cf. Mansfield, Legge, & Bane, 1996). Typically, these curves are flat for a range of large print sizes, turn down at a 'critical print size' (i.e. the smallest print size yielding maximum reading speed), and drop off rapidly as the reading acuity limit is approached. We would expect maximum reading speed to be lower for individuals with dyslexia. But to further examine Skottun's claim, it would be informative to determine if dyslexic curves have the normal two-limbed shape, and whether their critical print sizes and reading acuities are within the normal range.

To our knowledge, the only other study that addresses character size effects in dyslexia is that of Cornelissen, Bradley, Fowler, and Stein (1991). They showed that reading errors decreased with large font size (24-point versus 9- and 12-point Helvetica) for reading disabled children who had poor binocular control. The authors concluded that straining the visual system caused reading errors in these children. Cornelissen et al.'s (1991) findings and Skottun's observations point to print size as a variable that might establish a causal link between vision and dyslexia. Since our study had insufficient repeated measures data, it cannot be taken as definitive support for this causal link. In our view, an appropriately designed study is desirable.

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