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Light or Bold? Navigating Font Weights and Grades for Enhanced Readability

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Abstract

Several visual factors impact an individual's reading performance, with fonts being recognized as one of the most pivotal elements. Before the advent of variable font technology, assessing subtle, systematic changes in font designs across continuously varying parameters was challenging. Variable fonts now allow precise adjustments to specific parametric axes, facilitating detailed examinations of their impact on readability. Here, we investigated two parameters: weight and grade, as they are widely used in digital environments. The weight of a font allows adjusting the style from lighter to bolder in typographic color, by varying stroke weights, spacing and kerning, and other aspects of the type. The grade of a font allows changing the style from lighter to bolder without any changes to the overall width, line breaks, or page layout. Separately examining these parameters helps make inferences about the underlying visual mechanisms. In this study, we examined three variable fonts (i.e., Google Sans, Roboto Flex, and Roboto Serif), each including three levels of weight and grade.179 participants (Mean age= 45.7) were recruited through an online platform and were asked to complete a paragraph reading test. Their reading speed and comprehension levels were measured. While there was little to no effect of typeface, different light/bold levels of grade and weight revealed an effect on reading speed. The results showed that lighter grades and weights were read slightly faster than the bolder ones (X2 (2, N = 141) = 5.4, p = .063). This finding is in line with the previous research, potentially suggesting the effect of reduced crowding. As expected, a strong impact of age was also observed on the degree to which these parameters

influencing readability, showing a greater impact on younger readers (X^2 (1, N = 141) = 12.9, $p < .001$), supporting the importance of individualization of font parameters for individuals.