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

THE READABILITY CONSORTIUM
https://thereadabilityconsortium.org/

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Introduction

- **Readability:** The ease with which readers decipher, process, and understand text, influenced by typographic elements.
- **Variable font:** An OpenType font file that contains a range of customizable styles, allowing users to adjust different font axes.
- **Font-Weight:** Adjustment of a font style to make it lighter or bolder by varying stroke weights, spacing, kerning, and other aspects.
- **Font-Grade**: The degree of boldness or lightness in a font style, without altering the overall width, line breaks, or page layout.
- **Objective:** To understand how the comparative boldness of parametric variable font technology impacts readability across different age groups.
- **Research Question:** What is the relative readability of text across the axes of font grade and font weight, which are commonly used by designers seeking to fit text into small design spaces and displays?

Experimental Design

- **IV:** Within –
  Font Grade & Weight (3 levels each);
  Between – Serif: Roboto Serif (Open-source);
  Sans Serif: Roboto Flex (Open-source);
  Google Sans Flex (Proprietary)
- **DV:** Reading speed, Comprehension
- One passage per experiment condition followed by 2 comprehension questions.
- 12th grade level passage reading test.
- 141 native English-speaking participants.
- Normal Or Corrected-to-normal vision.
- Age: 19-75 (Mean: 45.7).
- Split at median age (43): “Older”, “Younger”

Methodology

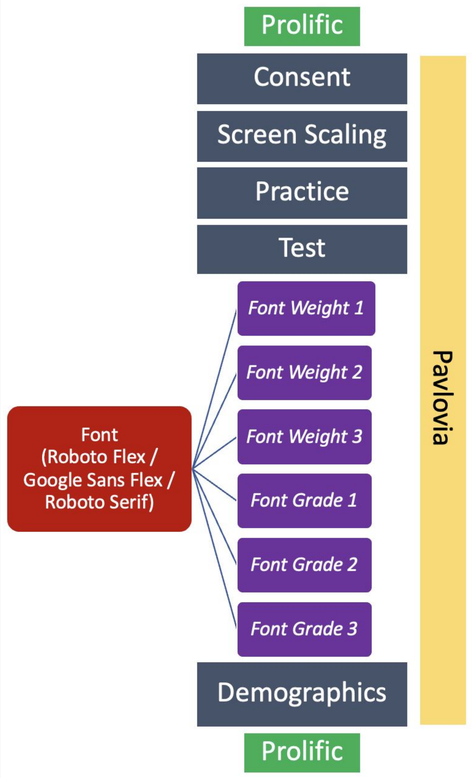

Figure 2: Sequence of experimental flow

		Value	Google Sans Flex	Value	Roboto Flex	Value	Roboto Serif
Font Weight	Light	275	Maryland	250	Maryland	340	Maryland
	Medium	400	Maryland	400	Maryland	400	Maryland
	Heavy	550	**Maryland**	600	**Maryland**	490	**Maryland**
Font Grade	Light	-50	Maryland	-100	Maryland	-50	Maryland
	Medium	0	Maryland	0	Maryland	0	Maryland
	Heavy	50	**Maryland**	150	**Maryland**	100	**Maryland**

Figure 1: Format difference of experiment conditions

Typeface	n	Age [min - max (mean)]	Male	Vision Corrected
Google Sans Flex	43	21 - 75 (47.7)	46.5%	60.5%
Roboto Flex	46	19 - 75 (45.3)	54.3%	67.4%
Roboto Serif	52	19 - 72 (44.2)	48.1%	67.3%

Table 1: Participants’ demographics

Result

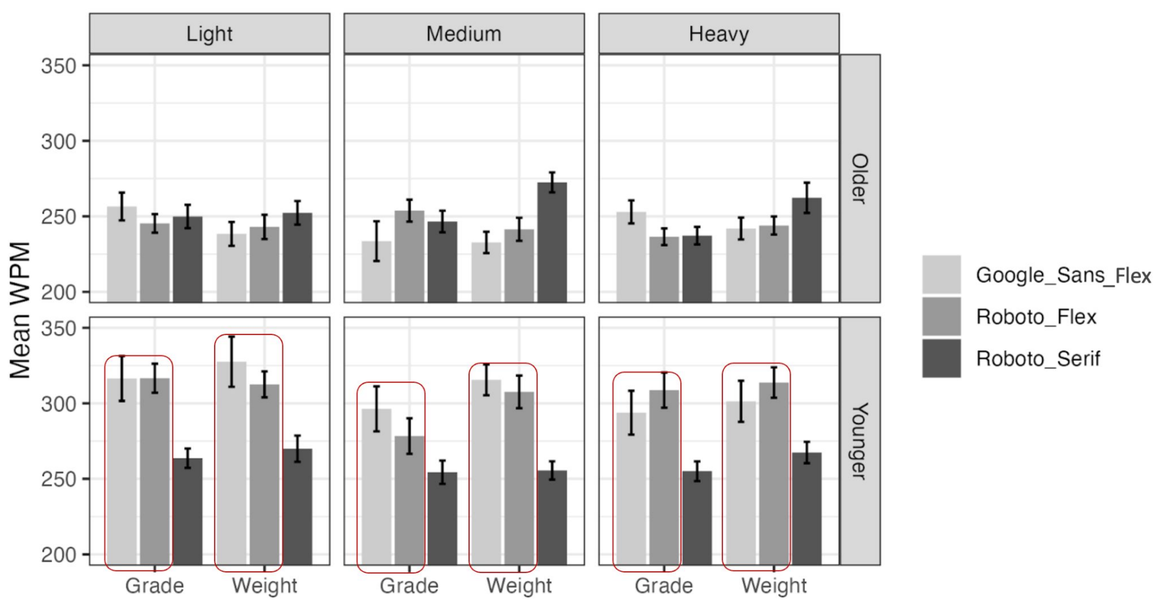

Figure 3: Mean reading speed by 3 levels (light, medium, heavy) of font weight and font grade of Google Sans Flex, Roboto Flex, and Roboto Serif

- Age had a significantly impact on readability performance (X^2 (1, N = 141) = 12.9, p < .001).
- The weight/grade levels have a greater influence on readability in younger participants (X^2 (2, N = 141) = 6.52, p = 0.04).
- Younger participants read sans serif (308 and 305 wpm) typefaces faster compared to the serif typeface (260 wpm) (X^2 (2, N = 66) = 9.1, p = 0.01).
- Older participants read faster at bold weights of serif font (X^2 (2, N = 75) = 9.3, p = 0.01).

Discussion

- **Age effect** supports the importance of individualization of font and font axis.
- **Serif typefaces were read more slowly by younger readers**, adding to the literature showing the impact of serif/sans serif typefaces varies based on context and audience.
- **Presence of serif and bold weight** yielded **faster reading speed in older readers**, possibly through helping better discrimination of the letters.

Conclusion

- The study Provides valuable insights into the readability of text across different parametric font variables and demographic groups.
- Designers and educators can create more effective and inclusive reading materials.

Future Directions:

- Exploring the impact of other variables: letter and line spacing.
- Incorporating metrics: reader enjoyment, immersion, and fatigue.
- Expanding the participant pool: children, non-native speakers, and individuals with visual impairments.

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