Typeface Matters: Psychophysical Insights into Readability Across Different Reading Tasks

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https://thereadabilityconsortium.org/

BACKGROUND

- Reading research is vast, encompassing diverse perspectives, from single letter recognition in the periphery to evaluating comprehension and fatigue in reading longer texts
- While our visual system operates similarly in various reading tasks, the specific underlying visual mechanisms for each task may differ.
- To gain a complete understanding of the factors affecting reading, it is crucial to assess and compare their impact across different tasks.

Aim:

- Investigating the impact of typefaces in relation to different modes of reading

Questions:

- Do different fonts behave similarly across different reading tasks?
- Are the best/worst performing fonts consistent across different reading tasks?

METHODS

Participants

- 50 native English-speaking participants
- Age range: 35-73 (Mean: 54.7)
- Normal or corrected-to-normal vision

General Design

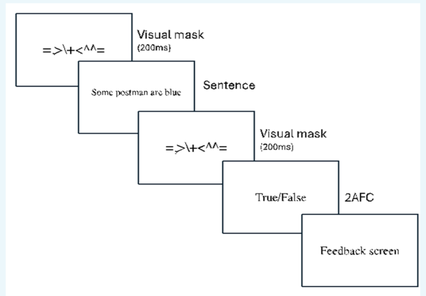
- Each participant performed three different reading tasks
- Each task was completed at two time points
- Each task was presented in 8 different fonts (Open Sans, Georgia, Arial, Times, Roboto, Merriweather, Poppins, Source Serif Pro)
- For sentence and glance reading, adaptive staircase method was used

Passage reading:

- 12th grade level passage reading test
- Two comprehension questions

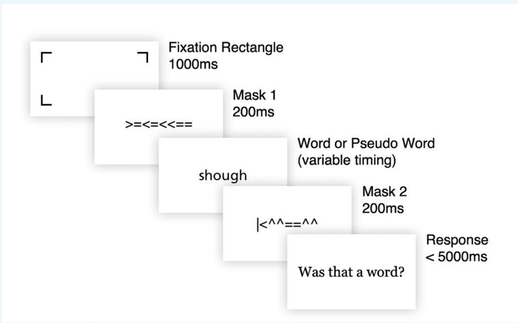
Sentence reading:

- True/False judgement task
- 4-word sentences, followed by a mask
  - Sentences created based on Crossland et al., 2008, *Behavioral and Brain Functions*



Glance reading:

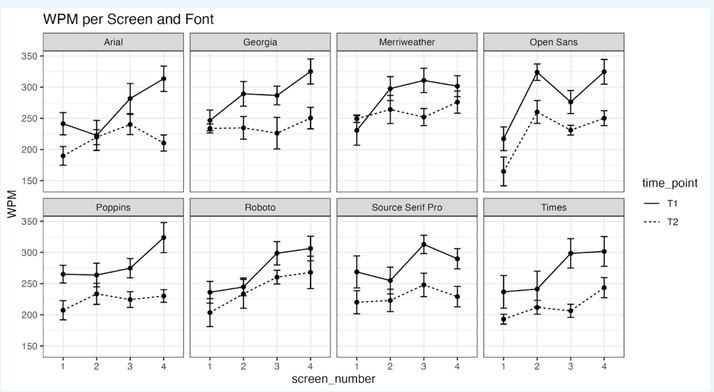
- Words or pseudowords are presented, followed by a mask
- Participants were asked to do a lexical decision task



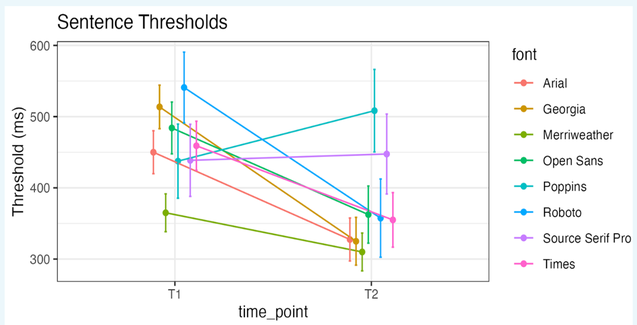
Modelled after Dobres et al., 2016, Ergonomics.

RESULTS

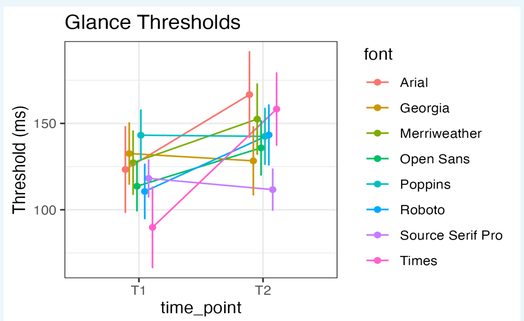
PASSAGE READING



SENTENCE READING



GLANCE READING



- The best performing typeface showed correlations across reading tasks:
  - High correlation between glance and sentence reading (r = .52, p < .001),
  - Moderate correlations between glance and interlude tasks (r = .44, p < .001), as well as sentence and interlude tasks (r = .36, p < .001)
- Differences were also observed
  - Merriweather is the optimal font for interlude and sentence reading,
  - Source Serif Pro shows the best performance in glance reading

CONCLUSIONS

- The optimum typeface, associated with the best performance, showed correlations across reading modes, **suggesting shared underlying mechanisms**
- Observed differences in the optimum typeface across different tasks, possibly indicating **adaptive strategies in the visual system based on the task at hand**