Fonts for Interlude Reading: Improving Readability in the Digital Age
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Abstract
In our age of ubiquitous digital displays, adults often read in short, opportunistic interludes. We consider, for the first time, whether reading outcomes in this unique Interlude Reading can be improved by tailoring typeface to the individual. Hundreds of participants provide a foundation for understanding which fonts people prefer and which make them more effective readers. Results reveal that while 77% believed their preferred font would be fastest to read in; this was only valid for 20%. Differences between best and worst font average 75 words per minute (WPM), with no significant changes in comprehension. High WPM variability for every font suggests that one font does not fit all. We here provide recommendations for favorable fonts related to higher reading speed without sacrificing comprehension and suggest that our methodological approach can be used to model for individuation, allowing digital devices to match their users’ needs in-the-moment.

Study description
- **386 participants** from Amazon’s Mechanical Turk (ages: 18-71, 46% female) out of 500 participants initially recruited.
- **Study design:** 34 minutes, including (1) pre-survey, (2) preference test, (3) effectiveness test, (4) post-survey.
- **Preference test:** toggle interface to compare pairs of fonts in a double-elimination tournament until a single font emerges as a winner.
- **Effectiveness tests:** read 10 short passages (69-93 words each) in 5 different fonts, while WPM (reading speed) was tracked along with a comprehension test (2 multiple choice questions) after each passage.

Results
- **Variables accounted for...**
  - Reading speed: outliers removed; all measurements are within 100-650 WPM range
  - Comprehension: outliers removed; all comprehension scores in the 71-100% range
  - None/minor effects of content (familiarity, interestingness, fiction/non-fiction) on reading speed and comprehension
  - Take-away: Font familiarity does not affect font preference or effectiveness.

<table>
<thead>
<tr>
<th>Font</th>
<th>Most Preferred</th>
<th>Win Rate</th>
<th>Avg Elo Rating</th>
<th>Disagreement</th>
<th>Font Familiarity</th>
<th>WPM</th>
<th>Speed Rank</th>
<th>SD WPM</th>
<th>Comprehension</th>
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</thead>
<tbody>
<tr>
<td>Noto Sans</td>
<td>56</td>
<td>62%</td>
<td>1639</td>
<td>90</td>
<td>1.89</td>
<td>272</td>
<td>48%</td>
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<td>91%</td>
</tr>
<tr>
<td>Times</td>
<td>56</td>
<td>58%</td>
<td>1596</td>
<td>115</td>
<td>2.50</td>
<td>277</td>
<td>50%</td>
<td>108</td>
<td>91%</td>
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<tr>
<td>Avenir Next</td>
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<td>54%</td>
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<td>2.34</td>
<td>276</td>
<td>56%</td>
<td>102</td>
<td>92%</td>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>261</td>
<td>29%</td>
<td>90</td>
<td>94%</td>
</tr>
<tr>
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<td>1.70</td>
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<td>56%</td>
<td>107</td>
<td>89%</td>
</tr>
</tbody>
</table>

A single size does not fit all fonts
- The preliminary study showed font size drove font preference.
- Ran a perception study to choose a normalization method per font.
- We adjusted all fonts to match Times at 16 px, using x-height, height, and width measurements independently (as 3 separate normalization methods).
- Take-away: Effective font sizes vary significantly across fonts. The method to normalize a font’s size is font-specific.

Preference is personal
- Noto Sans and Times were the most preferred across all participants.
- Noto Sans also had the highest win rate and the highest average Elo Rating.
- Each of the 16 fonts was chosen as a favorite font by at least 4 participants.
- High amounts of disagreement across participants in the toggle tests when picking a favorite out of two fonts.
- Participants described their preferred font as being bold and modern, with natural character spacing. Qualitative preferences were not consistent across participants.

The right font can speed up reading
- Participants read 32% faster in their fastest font compared to their slowest font.
- Participants read 14% faster in their fastest font compared to their most preferred font.
- The fastest font is different across individuals.

Average Increase in Words-per-Minute Across Participants

Font Preference ≠ Effectiveness
Different fonts are effective for different people, leading us to believe that custom reading experiences can help people read more effectively.