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Considering the Speed and Comprehension Trade-Off in Reading Mediated by Typography

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Abstract

The quantity of information an individual absorbs each day is rapidly expanding. We consider how everyday people adapt to these demands, reading to maximize speed or comprehension, and the resultant speed – comprehension trade-offs. In a large-scale Interlude Reading experiment, 445 crowdworkers read 12 short passages set to a 12th-grade reading level. They read passages in Times and 5 other randomly selected fonts from a group of 26 total fonts. They read 2 passages per font and answered 3 comprehension questions after reading each passage. We divided each passage into 2 short screens to measure reading speed. We found a significant inverse correlation between reading speed and comprehension per-trial ($R = -0.27$, $p < 0.001$), consistent with a speed-accuracy trade-off. We found a similar correlation when aggregating per font, suggesting that font may mediate the effect ($R = -0.39$, $p <= 0.041$). Font also significantly affected reading speed ($p = 0.018$). Confirmatory analyses on each font's relative speed (ranked speeds per participant) demonstrated a strengthened relationship ($R = -0.48$, $p = 0.011$), suggesting the fonts' design characteristics mediated the trade-off within and between participants. Reading speed rises by 31 WPM over the session, and second screens are consistently read faster than first screens by 31 WPM (both $p < 0.001$). Conversely, passage order and the font did not significantly affect comprehension, nor did they indicate that additional practice could mediate the trade-off. Interestingly, practice effects appear insufficient to overcome an intrinsic speed – comprehension trade-off. Fonts demonstrated the same trade-off in an intra-participant analysis, our results suggest

that leveraging typeface design could minimize individuals' trade-offs. Indeed, finding the right font for the reader could improve individual performance in the context of their reading goal: comprehension or speed.