Speed-Reading Apps May Impair Reading Comprehension by Limiting Ability to Backtrack

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To address the fact that many of us are on the go and pressed for time, app developers have devised speed-reading software that eliminates the time we supposedly waste by moving our eyes as we read. But don't throw away your books, papers, and e-readers just yet — research suggests that the eye movements we make during reading actually play a critical role in our ability to understand what we've just read.

The research is published in *Psychological Science*, a journal of the Association for Psychological Science.

"Our findings show that eye movements are a crucial part of the reading process," says psychological scientist Elizabeth Schotter of the University of California, San Diego, lead author of the new study. "Our ability to control the timing and sequence of how we intake information about the text is important for comprehension. Our brains control how our eyes move through the text — ensuring that we get the right information at the right time."

Schotter and UC San Diego colleagues Keith Rayner and Randy Tran conducted a study examining the role that eye movements play in the reading process, which is rendered impossible by rapid serial visual presentation (RSVP), the method used to display text in speed-reading apps like Spritz.

Studies have shown that readers make regressions, moving their eyes back to re-read bits of text, about 10 to 15% of the time; Schotter and colleagues tested the hypothesis that these regressions could be a fundamental component of reading comprehension.

The researchers recruited 40 college students to participate in the study. The students were instructed to

read sentences (displayed on a computer screen) for comprehension. Sometimes the sentences were presented normally; other times, the sentences were presented such that a word was masked with *X*s as soon as the participants moved their eyes away from it, making it impossible for them to get more information from the word were they to return to it.

The results showed that, during normal reading, comprehension levels were about the same whether the students did or did not make a regression. These results suggest that we only make regressions when we fail to understand something, and we can fill in the gap by going back to look again.

But, when the researchers compared data from the normal sentences and the masked sentences, they found that the students showed impaired comprehension for the masked sentences, presumably because they weren't able to re-read when it would have been helpful.

"When readers cannot backtrack and get more information from words and phrases, their comprehension of the text is impaired," explains Schotter.

Importantly, the students showed similar impairments in comprehension for masked sentences that were straightforward and also for more difficult, ambiguous sentences, suggesting that regressions are critical for reading comprehension across the board.

The study has clear relevance to new apps, like Spritz, that minimize eye movements and limit the amount of control readers have over the sequence of reading. But, given how integral reading is to our everyday lives, the findings also have broad relevance to our understanding of how we read any piece of text.

Schotter and colleagues are currently planning follow-up experiments that apply a similar visual manipulation to different types of sentences, in order to further investigate the reading process.

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