Character count per line of digital text found to affect reading speed

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A trio of researchers at the University of Minnesota has found that the character count per line of digital text on small display devices can have a negative impact on reading speed. In their paper published in *Proceedings of the National Academy of Sciences*, Nilsu Atilgan, Ying-Zi Xiong, and Gordon Legge describe experiments they conducted with volunteers reading passages on different types of devices and what they

found.

As personal digital devices have become more popular, people have had to learn to adjust to reading text that is often smaller than that in books, magazines or typewritten papers. In this new effort, the researchers explored the impact that might have on reading speed. They carried out an experiment in which 30 volunteers read passages from well known fairy tales on one of three types of devices: laptops, tablet computers and smartphones. Of the volunteers, 30 had normal vision and 10 had low vision. Text size was varied and each reading session was timed.

The researchers found that as fewer words were displayed per line, the volunteers began to read more slowly. More specifically, they found that to read at 80% of their normal reading speed, the volunteers needed at least 13 characters per line—and those with poor vision needed at least eight characters per line.

The researchers suggest that the number of characters displayed per line (driven by screen and character size) plays a major role in determining how well people can read text displayed on a video screen. They also note that as smartphone screen sizes have grown, the issues of smaller text or fewer characters displayed per line has diminished greatly. Unfortunately, the same cannot be said for smart watches, which are much smaller. They suggest that makers of such devices take note of reading difficulties and give smartwatch users and others who still use very small screens (such as those using older phones) the option of increasing the number of characters per line, even if it makes them smaller.

More information: Nilsu Atilgan et al. Reconciling print-size and display-size constraints on reading, *Proceedings of the National Academy of Sciences* (2020). DOI: 10.1073/pnas.2007514117