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Could action video games help people with dyslexia learn to read?

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In addition to their trouble with reading, people with dyslexia also have greater difficulty than typical readers do when it comes to managing competing sensory cues, according to a study reported February 13 in *Current Biology*. The findings suggest that action video games might improve literacy skills in those with dyslexia, which represent five to ten percent of the population.

"Imagine you are having a conversation with someone when suddenly you hear your name uttered behind you," says Vanessa Harrar of the University of Oxford. "Your attention shifts from the person you are talking to—the visual—to the sound behind you. This is an example of a cross-sensory shift of attention. We found that shifting attention from visual to auditory stimuli is particularly difficult for people who have dyslexia compared to good readers."

In fact, researchers already knew that people with dyslexia had some challenges with auditory processing in addition to their visual impairments. New evidence had also begun to link multisensory integration and dyslexia to the same parts of the brain. That evidence, together with Harrar's own personal challenges with reading and writing, prompted her and her colleagues to conduct one of the first investigations of how people with dyslexia process multisensory stimuli.

Participants in the study were asked to push a button as quickly as possible when they heard a sound, saw a dim flash, or experienced both together. The speed with which they pressed the buttons was recorded

and analyzed. While everyone was fastest when the same type of stimuli repeated itself, the data showed that people with dyslexia were particularly slow at pressing the button when a sound-only trial followed a visual-only trial. In other words, they showed "sluggish attention shifting," particularly when asked to shift their attention from a flash of light to a sound.

While the researchers say further study is needed, they suggest based on the findings that dyslexia training programs should take this asymmetry into account.

"We think that people with dyslexia might learn associations between letters and their sounds faster if they first hear the sound and then see the corresponding letter or word," Harrar says. Of course, traditional approaches to reading, in which letters are first seen and then heard, do just the opposite.

Harrar's team goes on to propose a unique, nonverbal approach to improve reading and writing with action video games. "We propose that training people with dyslexia to shift attention quickly from visual to auditory stimuli and back—such as with a video game, where attention is constantly shifting focus—might also improve literacy. Action video games have been shown to improve multitasking skills and might also be beneficial in improving the speed with which people with dyslexia shift attention from one task, or sense, to another."

More information: *Current Biology*, Harrar et al.: "Multisensory integration and attention in developmental dyslexia." dx.doi.org/10.1016/j.cub.2014.01.029

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