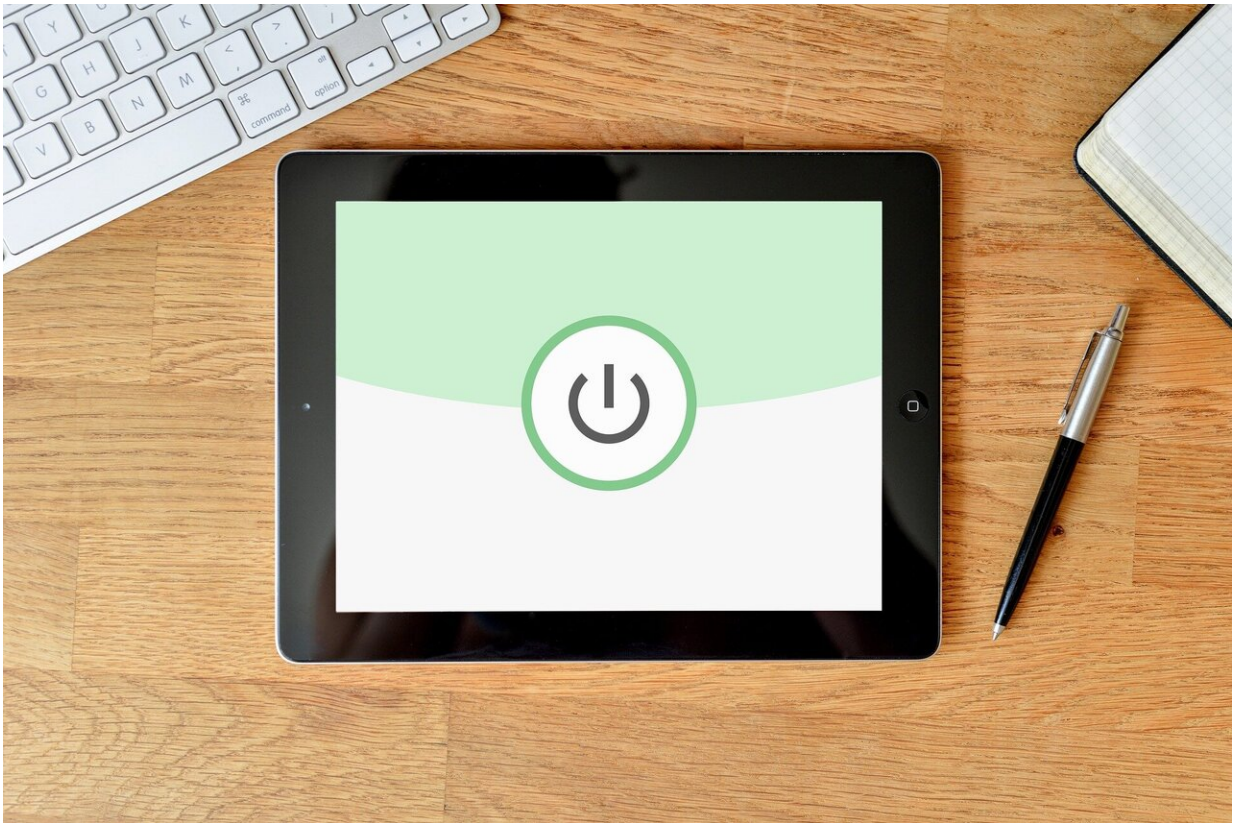


Loss of executive function with aging can make learning new skills hard

July 17 2023, by Laura Williamson



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Technology is designed to make life easier and more efficient. People can autopay their bills, order food and download movies right on their phones or tablets. They can even ask a virtual assistant to do it all for

them.

But performing these daily tasks requires continuous learning, as operating systems and apps are routinely updated and new ones created. This can be challenging—and stressful—for older adults, who struggle to keep up with the changes as they begin to lose the [cognitive skills](#) needed for new learning.

Broadly defined, [executive function](#) skills are those that allow people to learn, plan and manage everyday tasks. A key component of executive function is working memory—the ability to hold on to new information so the brain can work with it while performing or learning a task. Studies show working memory declines with age, though how much varies among individuals.

When working memory declines, "clearly it is more difficult to learn new things," said Dr. Vladimir Hachinski, a distinguished university professor in the department of clinical neurological sciences at the University of Western Ontario in Canada.

"Decision-making also is slowed," he said. "Reaction time decreases and people cannot think as well."

That may be due to the loss of "alerting," a cognitive function that prepares the brain to receive new information, said João Veríssimo, an assistant professor at the University of Lisbon in Portugal. Veríssimo was lead author on a [2021 study](#) published in the journal *Nature Human Behaviour* that found some types of cognitive function were more susceptible to age-related decline than others.

Alerting was most susceptible to decline, Veríssimo and his colleagues found. "Older adults take longer to respond to cues," he said.

With so much new information continuously coming at them, it also makes it more difficult for [older adults](#) to evaluate what's legitimate, Hachinski said. "It makes them more susceptible to scams."

Hachinski said one of the best things people can do to prevent the loss of executive function skills is to maintain good blood pressure control.

Hypertension, or high blood pressure, is a strong risk factor for dementia. Studies show it's even more strongly associated with the loss of executive function than memory. Black people, who experience more severe hypertension and at an earlier age than their white peers, are twice as likely as [white people](#) to experience [cognitive decline](#) as they age, research suggests.

Higher levels of education can also help to protect against cognitive decline, Veríssimo said. A [2018 study](#) he co-authored found men had steeper declines in working memory than women as they got older, and the more education the women had, the greater their working memory.

"If you already have more years of schooling, you will have less decline in working memory," he said.

Once lost, there's no evidence working [memory](#) can be regained, said Michael Ullman, a professor in the department of neuroscience at Georgetown University in Washington, D.C. But the 2021 study he co-authored with Veríssimo found other aspects of executive function that may help with learning may be improved, such as the ability to block out distractions, at least until a person reaches their 70s.

"The areas for which we found improvement are those susceptible to practice," Veríssimo said. "These are things that we get better at by doing them more often."

For example, he said, learning a foreign language and staying socially engaged have been shown to help preserve cognitive function.

"Since the evidence so far suggests that some aspects of executive function can improve through experience, and others can't, it makes sense to focus on those that can," Ullman said.

Provided by American Heart Association

Citation: Loss of executive function with aging can make learning new skills hard (2023, July 17) retrieved 12 May 2024 from <https://medicalxpress.com/news/2023-07-loss-function-aging-skills-hard.html>

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