

Videogames for Seniors Boost Brainpower

With NeuroRacer, attentional capacities rise



ENLARGE

Neuroscientists have found that playing a challenging videogame upgrades our ability to pay attention. Photo: Blend Images/Corbis

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7 COMMENTS

Distracted teenagers, their minds wandering from homework as they long for the

excitement and stimulation of their immersive videogames, have become poster children for critics who say that technology is damaging our attention spans.

But consider another group of videogame players, steering a virtual car over hills and past curves, spotting signs that offer them rewards on their journey. These players have white hair, and their attention spans are *improving*.

Attention is a limited resource. Essentially, we can focus on only one thing at a time. When we multitask while driving—scolding the children, or suddenly recalling that we have a doctor’s appointment in 20 minutes, or turning to see the angry driver who just honked at us—our attention shifts away from the basic activity of directing the car.

Fortunately, for important tasks, our brains can learn to become increasingly efficient in limiting interference. Thus an eye surgeon learns to ignore her itchy nose until she is finished with a procedure. Exactly how the brain allocates attention, draws on memory when it should and orchestrates quick, minute shifts in focus is not yet well understood.

What we do know is that, after we reach our 20s, our efficiency at shifting attention while multitasking steadily declines. We become slower and less accurate performing two tasks than a single task. Annoying as this decline is, recent research suggests that it can be turned around.

Neuroscientist Adam Gazzaley and his colleagues at the University of California in San Francisco have found that playing a challenging videogame upgrades our ability to pay attention.

As reported in the journal *Nature* in 2013, the Gazzaley lab trained 60- to 85-year-old subjects on a game called NeuroRacer^[1]. The multitask version involves simulated driving along a winding road while quickly pressing keys or a game controller to respond to a green sign when it appears on the roadside. As a control, some subjects played a single-task version of the game that omits the winding road and involves only noticing and responding to the green sign. To ensure that subjects were genuinely challenged but not discouraged, the level of game difficulty was individualized.

After 12 hours of training spread evenly over a month, multitasking subjects were about twice as efficient at shifting attention as when they started, a huge improvement by any standard. Remarkably, their new scores were comparable to those of 20-year-olds not trained on NeuroRacer. The subjects still tested positive six months later.

The multitaskers also got an unexpected brain bonus. Their sustained concentration and working memory (briefly holding information such as a phone number) improved as well. The training had targeted neither of these functions, but the general benefits emerged nonetheless. In contrast, those who played a single-task version of the game did better in performing in their see-the-sign task but did not show any transfer of benefits to working memory and sustained concentration.

Would other videogames such as War Thunder (you fly a World War II fighter plane in combat) work as well as NeuroRacer? Possibly, since the games certainly challenge the capacity to shift attention quickly and effectively, and they do provide the necessary feedback. Being shot down concentrates the mind, I find.

Accustomed as we are to getting uniformly bleak news about aging, the discovery that a guilty pleasure may actually enhance our brain's operations feels almost as good as the news a few year back that chocolate seems to boost memory function.

1. http://gazzaleylab.ucsf.edu/wp-content/uploads/2014/09/Anguera_Nature_2013-Video-game-training-enhances-cognitive-control-in-older-adults.pdf