

Practice makes perfect - Gamers are made, not born

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Video games, which reveal disconnects between a set of young television addicts and their elders, could bridge a generation gap. While Mortal Combat, Grand Theft Auto, or Halo may be foreign to aging generations, a new study out of Washington University in St. Louis and the University of Toronto suggests that video games like these promote a kind of mental "expertise" that could prove to be useful in the non-virtual world - potentially in rehabilitation and for the elderly.

Image: Who's wasting time? I'm building my domain expertise.

Alan Castel, Ph.D., Washington University post doctorate fellow in psychology in Arts & Sciences, conducted a study to examine how video games can lead to a degree of expertise in certain domains, and how that might influence video game players' visual search patterns.

Castel's research compares twenty college-aged, expert video game players, those who log more than ten — and upwards of 20 — hours of game time per week, to non-players, to determine how video game specialization influences human visual attention capacity and our environmental stimuli search patterns.

Castel found, in short, that gamers showed a 20% reduction in response times as opposed to non-gamers, averaging reactions 100 milliseconds speedier than non-players'.

Normal visual search habits reflect our impatience — rather than wait, we anticipate. If we have recently attended to a location, after a delay we are sometimes slower to revisit this location. Castel relates the slower reaction times after long delays between cues to a common kitchen conundrum: "If you're searching the kitchen for a knife that you misplaced, you might look in one location," he explained. "If it's not there, you'll close the drawer, and look in other locations before you actually search that drawer again."

His data did not support his suspicions that expert video game players, who move their attention very quickly across a visually dynamic setting and keep track of many items on a screen, show differences from standard knife-in-the-drawer search patterns. In other words, gamers are made, not born — their brains are not necessarily "wired" differently than those of non-gamers'.

Practice, in the long run, makes perfect.

"Typically when people get better at something, they get faster," Castel noted. "Any time you can get speed without the expense of accuracy, that's telling you something about how the brain and its related physiology changes."

While video games may keep kids from enjoying the summer weather, Castel's findings have important implications for their useful application. They might prove to be practical down the road in real-world contexts requiring quick mental processing and rapid eye movements, including eyewitness identification expertise in law enforcement, rehabilitation for stroke patients with motor disorders, memory in old age, and monitoring child development.

Castel and co-authors Jay Pratt and Emily Drummond from the University of Toronto, published their findings in the June, 2005 issue of *Acta Psychologica*. The study was supported by grants from the Natural Sciences and Engineering Research Council of Canada, and was conducted in part while Castel was at the University of Toronto.

Castel tested subjects on a computer with a screen divided into several locations. He conducted a 30-minute "inhibition of return paradigm" and visual search test. One location "cues," illuminating briefly, and then a target appears shortly afterwards (either in the cued location, or in a different location). Subjects responded by hitting a key on the keyboard when they detected the target. Future research might extend this to environments that are richer and more similar to video game situations.

Specialization is omnipresent: Ours is a world of chess Grand Masters, wine aficionados, and indeed, video game experts. But a chess expert who shows an exceptional memory for the positions of chess pieces on a chess board becomes flummoxed when pieces are given random

assignments.

"What's interesting is that expertise is very domain-specific," Castel said. "You might be very good at remembering baseball statistics if you're really into baseball, but as soon as other types of numbers appear, like those on your tax return, these numbers don't make sense. So even if it's the same type of knowledge, it's not in the domain that you have expertise."

According to Castel, there has been some previous research on video game players that suggests that gamers have more attentional resources at hand because they're so used to playing these very interactive, complex video games, and this finding provided the motivation for the current work.

"We were interested in the kind of strategies or search habits video game players use, and whether they're the same kind of search habits that you and I — non-gamers — might possess or whether they differ because they have a lot of experience playing video games," he said. "We conclude that relative to non-video game players, video game players rely on similar types of visual processing strategies but possess faster stimulus-response mappings in visual attention tasks."

Source: Washington University in St. Louis

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