

Video games boost visual attention but reduce impulse control

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A person playing a first-person shooter video game like Halo or Unreal Tournament must make decisions quickly. That fast-paced decision-making, it turns out, boosts the player's visual skills but comes at a cost, according to new research: reducing the person's ability to inhibit impulsive behavior. This reduction in what is called "proactive executive control" appears to be yet another way that violent video games can increase aggressive behavior.

"We believe that any game that requires the same type of rapid responding as in most first-person shooters may produce similar effects on proactive executive control, regardless of [violent content](#)," says Craig Anderson, Director of the Center for the Study of Violence at Iowa State University. "However, this is quite speculative," he warns. But what is not so speculative is the growing body of research that links [violent video games](#)—and to a certain extent, total screen time—to attention-related problems and, ultimately, to aggression.

People's ability to override [aggressive impulses](#) is dependent in large part on good executive control capacity, as will be presented at a symposium at the American Psychological Association (APA) annual meeting in Honolulu. And [social psychologists](#) are looking how a variety of factors – including [media exposure](#), anger, and alcohol—affect that capability. Two types of [cognitive control](#) processes play a large role: proactive and reactive. "Proactive cognitive control involves keeping information active in short-term memory for use in later judgments, a kind of task preparation," Anderson explains. "Reactive control is more of a just-in-

time type of decision resolution."

In three new, unpublished studies, Anderson and colleagues found that playing action [video](#) games is associated with better visuospatial attention skills, but also with reduced proactive cognitive control. "These studies are the first to link violent video game play with both beneficial and harmful effects within the same study," Anderson says.

In one of the studies, Anderson's team had participants—none of whom were frequent gamers—either play the fast-paced and violent video game Unreal Tournament (2004), the slow-paced game Sims 2, or nothing for 10 sessions, each 50 minutes long over the course of 11 weeks. His team tested the participants' proactive cognitive control and visual attention before and after the video game playing. They found marked decreases in proactive cognitive control among the action game players versus the Sims players or non-game players. At the same time, there were marked increases in the visual attention skills of action gamers.

In another study, Anderson and Edward Swing, also of Iowa State University, assessed the TV and [video game](#) habits of 422 people to further examine the links between [screen time](#) and attention-related problems and aggression. In keeping with past research in this area, they found that total media exposure and violent media exposure both contributed directly to attention problems. Violent media exposure had a direct association with greater aggression and anger/hostility, while total media exposure was not significantly related to aggression or anger/hostility.

The analyses looked at both premeditated and impulsive aggression. "Impulsive aggression, by definition, is aggressive behavior that occurs automatically, or almost automatically, without evidence of any inhibition or thought about whether it should be carried out," Anderson

says. They found significant links between both types of aggression and attention problems, although the link between attention and premeditated aggression was weaker than the link between attention and impulsive aggression. "This is theoretically consistent with the idea that attention problems interfere with people's ability to inhibit inappropriate [impulsive behavior](#)," Anderson says.

Most screen media – TV, movies, video games – are fast paced and essentially train the brain to respond quickly to rapid changes in images and sounds, Anderson says. Violent video games, in particular, are designed to require quick response to changes on the screen. "What such fast-paced media fail to train is inhibiting the almost automatic first response," he says. "This is the essence of ADD, ADHD, and measures of impulsivity," and he says, "that's why attention problems are more strongly related to impulsive aggression than to premeditated aggression."

More information: Anderson is chairing the symposium "[Attentional and Cognitive Advances in Understanding Anger and Anger Regulation](#)," which is part of the programming of the Society for Personality and Social Psychology (SPSP) at the APA meeting.

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