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Gentile cites positive, negative effects of video games on the brain in Nature Reviews article

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(Medical Xpress) -- Douglas Gentile says his own research has found both positive and negative effects from playing video games. And the Iowa State University associate professor of psychology cites examples of both in a new article he coauthored in the December issue of *Nature Reviews/Neuroscience*.

In the "Brains on video games" article, six experts shed light on the current understanding of the positive and negative ways in which playing video games can affect cognition and behavior. It explains how that knowledge can be harnessed for educational and rehabilitative purposes.

For parents who just purchased new video games for their kids this holiday season, Gentile says the article shows that it's not simply a "black and white" issue when it comes to how video games affect the brain.

"Six researchers from four different research groups all wrote perspectives for this article -- all independent of each other, but focusing on a wide range of issues," said Gentile, who runs the Media Research Lab at Iowa State. "What is most valuable is that it cites research that video games can contribute to real problems, but also can have some real benefits."

Beneficial effects of video games

In the article, Gentile cites research demonstrating that video games can have beneficial effects. One study by University of Rochester (N.Y.) researchers Daphne Bavelier and C. Shawn Green on the first-person shooter game "Unreal Tournament" found that players improved perceptual and attention skills by playing that game.

Although fewer studies have examined the positive effects of video gaming on social behavior, experimental studies (on which Gentile collaborated) in the U.S., Japan and Singapore found that playing pro-social games led to more subsequent "helping" behavior in users. In one longitudinal study, the researchers found that children who played more pro-social games early in the school year demonstrated increased helpful behaviors later in the school year.

"If content is chosen wisely, video games can actually enhance some skills," Gentile said. "But overall, the research has demonstrated that they're far more powerful teaching tools than we imagined. But the power can be both good and bad."

Gentile documents negative effects too, "which makes sense when one considers that most of the effects reported are learning effects at the core," he wrote. He cited the most comprehensive meta-analysis conducted to date -- one led by his colleague and ISU Distinguished Professor of Psychology Craig Anderson -- which included 136 papers detailing 381 independent tests of association conducted on 130,296 research participants. It found that violent game play led to significant increases in desensitization, physiological arousal, aggressive cognition and aggressive behavior. It also decreased pro-social behavior.

"The evidence that playing video games induces criminal or serious physical violence is much weaker than the evidence that games increase the types of aggression that happen every day in school hallways," Gentile wrote. "As a developmental psychologist, I care deeply about the

everyday aggression (verbal, relational and physical), whereas critics of the research seem to be mostly interested in criminal violence."

He reports that there aren't many studies on how playing video games affects attention needed in the classroom. But those that exist -- including two conducted at Iowa State -- suggest that there is a relation between video gaming and attention problems in school.

Addressing addiction

Gentile also addresses video game addiction in the article. In addition to his two landmark studies on pathological game play, he wrote that there are now scores of studies showing that the pattern of problems pathological gamers face are very similar to the problems people with substance abuse or gambling addictions have.

He contends that games offer significant promise for education, particularly since they have been found to be such effective teaching tools. But while studies of educational software demonstrate that children do learn from playing educational games, Gentile says that the amount of money spent on educational games is a tiny fraction of the amount spent on a commercial entertainment game. "Therefore," he wrote, "most educational games aren't as interesting, fun or good as even a mediocre commercial game."

Given all the different effects of video games on the brain cited in the article, Gentile is hopeful it may reduce some dichotomous thinking in the field of video game research.

"Playing video games is neither good nor bad," he concluded. "Existing research shows that they are powerful teaching tools, and therefore we need to harness that potential, aiming to maximize the benefits while minimizing the potential harms."