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## **PLAYING VIDEO GAMES OFFERS LEARNING ACROSS LIFE SPAN, SAY STUDIES**

### **Skills Transfer to Classroom, Surgical Procedures, Scientific Thinking**

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BOSTON—Certain types of video games can have beneficial effects, improving gamers' dexterity as well as their ability to problem-solve ♦ attributes that have proven useful not only to students but to surgeons, according to research discussed Sunday at the Annual Convention of the American Psychological Association.

In one paper, Fordham University psychologist Fran C. Blumberg, PhD, and Sabrina S. Ismailer, MSED, examined 122 fifth-, sixth- and seventh-graders' problem-solving behavior while playing a video game that they had never seen before to show that playing video games can improve cognitive and perceptual skills.

As the children played the game, they were asked to think aloud for 20 minutes. Researchers assessed their problem-solving ability by examining the types of cognitive, goal-oriented, game-oriented, emotional and contextual statements they made.

"Younger children seem more interested in setting short-term goals for their learning in the game compared to older children who are more interested in simply playing and the actions of playing," said Blumberg. "Thus, younger children may show a greater need for focusing on small aspects of a given problem than older children, even in a leisure-based situation such as playing video games."

In a second paper, Iowa State University psychologist Douglas Gentile, PhD, and William Stone, BS, described several studies involving high school and college students and laparoscopic surgeons that looked at their video game usage and its effects.

Findings from the student studies confirmed previous research on effects of playing violent games: Those playing violent games were more hostile, less forgiving and believed violence to be normal compared to those who played nonviolent games. Players of "prosocial" games

got into fewer fights in school and were more helpful to other students.

Other studies involving students showed that those who played more entertainment games did poorer in school and were at greater risk for obesity.

A study of 33 laparoscopic surgeons found that those who played video games were 27 percent faster at advanced surgical procedures and made 37 percent fewer errors compared to those who did not play video games, said Gentile.

Advanced video game skill and experience are significant predictors of suturing capabilities, the researchers found, even after controlling for sex, years of medical training and number of laparoscopic surgeries performed.

A second study of 303 laparoscopic surgeons (82 percent men; 18 percent women) also showed that surgeons who played video games requiring spatial skills and hand dexterity and then performed a drill testing these skills were significantly faster at their first attempt and across all 10 trials than the surgeons who did not play video games first.

"The big picture is that there are several dimensions on which games have effects, including the amount they are played, the content of each game, what you have to pay attention to on the screen, and how you control the motions," said Gentile. "This means that games are not 'good' or 'bad,' but are powerful educational tools and have many effects we might not have expected they could."

In another paper, researchers Constance Steinkuehler, PhD, and Sean Duncan, MA, of the University of Wisconsin at Madison looked at how game-based learning can supplement textbooks and science labs in fostering scientific thinking. They analyzed a random sample of nearly 2,000 discussion posts in November 2006 where participants talked about various game-related topics.

Using codes based on national benchmarks for scientific literacy, discussions of the multiplayer online game World of Warcraft were examined to see what types of conversations took place, such as social bantering versus problem-solving, that classified as scientific reasoning. The game set in a fantasy world had players of various classes hunt, gather, battle and craft in order to strengthen or move their character up in "levels." Characters move faster when they work together.

The codes addressed a different aspect of scientific thinking, including reasoning using systems and models, understanding feedback, predicting and testing and using math to investigate a problem.

Scientific thinking can be learned in virtual worlds, said Duncan. The majority of participants (86 percent) shared their knowledge to solve problems and more than half the participants (58 percent) used systematic and evaluative processes indicative of scientific reasoning.

"These forums illustrate how sophisticated intellectual practices to improve game play mimic actual scientific reasoning," said Duncan. "Gamers are openly discussing their strategies and thinking, creating an environment in which informal scientific reasoning practices are being learned by playing these online video games."

**Presentations:** "Four dimensions of Video Game Effects," William Stone, BS, and Douglas A. Gentile, PhD, Iowa State University; "Games, Stealth Assessment and Learning," Valerie

Shute, PhD, Florida State University; "Informal Scientific Reasoning in Online Game Forums," Constance Steinkuehler, PhD, and Sean C. Duncan, MA, University of Wisconsin at Madison; "Children's Problem Solving During Video Game Play," Fran C. Blumberg, PhD and Sabrina S. Ismail, BA, Fordham University, **Session: 4076**, 9:00 ♦ 10:50 AM, Sunday, Aug. 17, Boston Convention and Exhibition Center, Meeting Level 2, Meeting Room 207

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*The American Psychological Association (APA), in Washington, DC, is the largest scientific and professional organization representing psychology in the United States and is the world's largest association of psychologists. APA's membership includes more than 148,000 researchers, educators, clinicians, consultants and students. Through its divisions in 54 subfields of psychology and affiliations with 60 state, territorial and Canadian provincial associations, APA works to advance psychology as a science, as a profession and as a means of promoting health, education and human welfare.*

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