Immersed in violence: How 3-D gaming affects video game players

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Brad Bushman

Playing violent video games in 3-D makes everything seem more real – and that may have troubling consequences for players, a new study reveals.

Researchers found that people who played violent video games in 3-D showed more evidence of anger afterward than did people who played using traditional 2-D systems—even those with large screens.

The higher anger in 3-D players was connected to the fact that, compared to 2-D players, they were more likely to feel they were "immersed in the game," said Brad Bushman, co-author of the study and professor of communication and psychology at The Ohio State University.

"3-D gaming increases anger because the players felt more immersed in the violence when they played violent games," said Bushman. "As the technology in video games improves, it has the ability to have stronger effects on players."

Bushman conducted the study with lead author Robert Lull, a graduate student in communication at Ohio State. They announced their findings on Sunday (10/19) during the New Horizons in Science briefings at ScienceWriters2014, an annual conference hosted this year by Ohio State.

Bushman discussed these new results as part of his presentation "Guns, gender, race and violent video games: Searching for the roots of modern aggression."

The study has been accepted for publication in the journal *Psychology of Popular Media Culture*.

Participants were 194 college students, about two-thirds of whom were women. All of the students played the video game Grand Theft Auto IV for 15 minutes. Half were instructed to play violently (kill as many people as possible in the game) and half played nonviolently (they went bowling).

They played on a 17-inch 2-D screen, a 96-inch 2-D screen or on a 96-inch 3-D screen while wearing appropriate 3-D glasses.

Later, all participants reported their mood on a variety of dimensions, including anger. For example, they were asked to rate how angry, annoyed and furious (among other adjectives) they felt on a scale of 1 to 5.

Results showed that for those who played nonviolently, it didn't matter if they played in 2-D or 3-D – their levels of anger were relatively low and unchanged.

Those who played violently showed higher levels of anger than nonviolent players no matter how they played, 2-D or 3-D. But those who played violently on 3-D were significantly angrier than those who played violently on the 2-D systems.

Why did those who play violently in 3-D show more anger? Another result from the study gives the answer.

After playing the games, participants were asked several questions measuring how immersed they were in the game. For example, they were asked to rate on a scale of 1 to 7 how much they felt they "were really 'there' in the game environment" and how much they felt like other characters in the game were real.

Results showed that people who played in 3-D felt more immersed in the game than did those who played in 2-D, and that immersion was related to the increased anger felt by those who played violently.

"The combination of violent content and immersive technology like 3-D can be troublesome," Bushman said.

"This is something that needs to be considered by everyone involved – electronics manufacturers, video game developers, consumers, parents and content ratings agencies."

Provided by The Ohio State University

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