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NEWS

RSNA Press Release

Violent Video Games Alter Brain Function in Young Men

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At A Glance

- Using functional MRI, researchers have found that playing violent video games for one week causes changes in brain function.
- The brain regions affected by violent video game play are associated with cognitive function and emotional control.
- The change in brain function was reduced after game play was discontinued for a week.

CHICAGO—A functional magnetic resonance imaging (fMRI) analysis of long-term effects of violent video game play on the brain has found changes in brain regions associated with cognitive function and emotional control in young adult men after one week of game play. The results of the study were presented today at the annual meeting of the Radiological Society of North America (RSNA).

The controversy over whether or not violent video games are potentially harmful to users has raged for many years, making it as far as the Supreme Court in 2010. But there has been little scientific evidence demonstrating that the games have a prolonged negative neurological effect.

"For the first time, we have found that a sample of randomly assigned young adults showed less activation in certain frontal brain regions following a week of playing violent video games at home," said Yang Wang, M.D., assistant research professor in the Department of Radiology and Imaging Sciences at Indiana University School of Medicine in Indianapolis. "These brain regions are important for controlling emotion and aggressive behavior."

For the study, 22 healthy adult males, age 18 to 29, with low past exposure to violent video games were randomly assigned to two groups of 11. Members of the first group were instructed to play a shooting video game for 10 hours at home for one week and refrain from playing the following week. The second group did not play a violent video game at all during the two-week period.

Each of the 22 men underwent fMRI at the beginning of the study, with follow-up exams at one and two weeks. During fMRI, the participants completed an emotional interference task, pressing buttons according to the color of visually presented words. Words indicating violent actions were interspersed among nonviolent action words. In addition, the participants completed a cognitive inhibition counting task.

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The results showed that after one week of violent game play, the video game group members showed less activation in the left inferior frontal lobe during the emotional task and less activation in the anterior cingulate cortex during the counting task, compared to their baseline results and the results of the control group after one week. After the second week without game play, the changes to the executive regions of the brain were diminished.

"These findings indicate that violent video game play has a long-term effect on brain functioning," Dr. Wang said.

Coauthors are Tom Hummer, Ph.D., William Kronenberger, Ph.D., Kristine Mosier, D.M.D., Ph.D., and Vincent P. Mathews, M.D. This research is supported by the Center for Successful Parenting, Indiana.

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