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Andrea Estrada

UCSB Communication Professor Discusses Brain's Response to Virtual Violence

Video game violence affects the human brain, and cognitive neuroscientist Rene Weber has the pictures to prove it.

Weber, an assistant professor of communication at UC Santa Barbara, and his colleagues have developed a method for scanning the brains of video game players as they blast their way through Tactical Operations, a classical first-person shooter game. He will discuss his brain imaging technique and research in a talk on Wednesday, April 21, titled "This Is Your Brain. This Is Your Brain on Video Games."

The lecture begins at 7 p.m. in the multipurpose room of the Student Resource Center. It is free and the public is invited to attend.

"We can now study the brain in real time while subjects are exposed to a complex dynamic stimulus," Weber said of the new imaging method. "We were able to identify mechanisms by which exposure to virtual violence translates to a systemic brain pattern. While a person is exposed to this virtual environment, the brain processes the experience in a very specific and consistent way across distributed neural networks. We can show that certain brain areas are systematically connected and simultaneously activated."

One mechanism in the brain appears to involve regulation of cognitive and empathic processing of the stimulus. Thirteen experienced video game players, a common sample size in brain imaging studies, participated in Weber's study, and all produced the same results. Images of their brains showed first an increased activity in cognitive areas followed by an active suppression of their empathic or emotional responses to the violence they perceived. "We found that, among other interesting mechanisms, to be the case with all of our participants –– no exceptions," he said.

Weber is quick to point out that his findings, while an important component of research on the general effects of video game violence, do not prove anything about the behavior of players away from the game.

"Do video games encourage violence or are already aggressive personalities more attracted to violent video games? Should we limit access? Should we let our children play them? These are all interesting and important questions, and I can't answer a single one based on this research," Weber said.

"With the scans, we can see how specific empathic responses work in our brains when they are exposed to violence in a virtual reality. And some of those responses seem to be kind of bypassed or suppressed when we are exposed to virtual violence." Whether this response would be present in real-world situations is impossible to know without a larger study of people repeatedly exposed to virtual and actual violence, he said.

Weber's research could, however, lend credence to a host of behavioral studies that have examined how people respond to violent media. "It would be puzzling if I couldn't see anything on a neurophysiological level that supports the findings of those studies," he said. "So it's justified to say my study provides a piece of evidence that there is something on a neurological level that may be consistent with other findings."

Weber, who also has a medical degree, is currently leading other studies that use the imaging method to examine how the brain reacts on a neurophysical level to persuasive messages such as anti-drug public service announcements; to moral violations in dramatic narratives (e.g. in soap operas); and to humor in television comedies. Ultimately, Weber in interested in studying brain processes and brain connectivity pattern as a response to mediated experiences, which he also calls semi-natural experiences.

"With this research we might be able in the future to study the persuasiveness of public service announcements or what makes TV programs appealing to viewers on a neurophysiological level," he said.

At the same time, his research contributes to the better understanding of how the brain works in a natural environment as opposed to the artificial experimental conditions of traditional brain imaging studies –– and this is especially interesting for the neuroscience community.

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