latimes.com/health/boostershots/la-heb-video-games-brain-addiction-20111115,0,7840130.story

latimes.com

BOOSTER SHOTS: Oddities, musings and news from the health world

Frequent gamers have brain differences, study finds

By Eryn Brown, Los Angeles Times / for the Booster Shots blog

8:10 AM PST, November 15, 2011

Fourteen-year-olds who were frequent video gamers had more gray matter in the rewards center of the brain than peers who didn't play video games as much -- suggesting that gaming may be correlated to changes in the brain much as addictions are.

European scientists reported the discovery Tuesday in the journal Translational Psychiatry. Psychologist Simone Kuhn of Ghent University in Belgium and colleagues recruited 154 healthy 14-year-olds in Berlin and divided them into two groups. Twenty-four girls and 52 boys were frequent gamers who played at least nine hours of video games each week. Fifty-eight girls and 20 boys were infrequent gamers, who played less than nine hours a week.

Structural magnetic resonance imaging (MRI) showed differences in the test subjects' brains. Frequent gamers had more gray matter in a portion of the brain known as the left ventral striatum, which affects the interplay of emotions and behavior. Previous research identified striatal function as a "core candidate promoting addictive behavior," the authors wrote.

Using functional magnetic resonance imaging (fMRI), the team also observed changes in the kids' brains as they participated in a task that simulated anticipating and receiving a reward. They found that frequent gamers had greater brain activity when they were given feedback that they were losing. This is similar to a response seen in addicted gamblers, the authors noted, who have increased levels of the the brain chemical dopamine in the ventral striatum when they are losing money.

The authors wrote that their study is the first to correlate changes in brain structures with video gaming. They couldn't determine if the frequent gamers' brains grew larger as a result of playing video games or if those kids were attracted to gaming because that part of their brain was enlarged in the first place; scientists will need to measure the effects of video gaming on structures in the brain over time to figure that out.

But either way, discovering the link between brain structure and video games could help researchers

understand the role of the brain in addictive behaviors, they wrote.

"If the striatal differences observed in the current study are indeed an effect of gaming, video gaming might post an interesting option to explore structural changes in addiction in future studies in the absence of any neurotoxic substances," they noted.

The study is available at the Translational Psychiatry website.

Return to the Booster Shots blog.