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2014

## Video Games

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### Recommended Citation

Durr, Tony, "Video Games" (2014). *Teaching, Learning and Leadership Faculty Publications*. 4.  
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Running Head: VIDEO GAMES

Video Games

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Video games have drastically increased in popularity in the past two decades and show no signs of decreasing anytime soon. From 2004 to 2009 the average 8- to 18-year-olds increased the amount of time spent playing video games by 24 minutes to 1 hour and 13 minutes a day (Rideout, Foehr, & Roberts, 2010).

Research on video games and their impact is a relatively new field, even though video games have been widely accepted in our culture since 1972, when Atari sold over 19,000 *Pong* machines. Findings of video game research have been a bit of a mixed bag. Studies strongly support that video games can have a positive impact on several cognitive functions, but video games also have a dark side in their public perception.

### **Cognitive Influences**

There are many cognitive benefits identified in the literature on video games. Playing video games can help improve some cognitive functions like visual sensitivity, task switching, and spatial cognition, even attention can be improved (Bavelier, 2012).

In the case of visual sensitivity, individuals who play video games (specifically action games) have improved sensitivity to minute details. They also have a greater sensitivity to contrast. A common example of contrast sensitivity is driving in fog, a video game player would be better able to differentiate various shades of grey and more easily identify other cars.

Task switching is a cognitive skill that is often misinterpreted as multitasking. For most tasks, the brain is not able to do two demanding things at once. For example, if as you are reading this sentence, you ask a question to

someone else that may be in the room, you will probably notice you can't do both at once. You have to stop reading while you are speaking your question. Even though you don't need to use your voice when you are reading you still need many of the same mental resources. You can probably hold a conversation while walking, because walking is a relatively automatic process, but trying to do so while running would not be as easy. While the brain is not good at doing two things at once, it is pretty good at task switching. In the case of checking a text message while involved in a conversation, one might feel like they are multitasking. One might even be able to do both effectively, but the brain is really switching between reading the text and listening to the conversation. This task switching sometimes happens so quickly it seems like you are doing two things at once. To return to video game players, they demonstrate an increased ability to effectively and quickly task switch. So, an avid video game player may be more effective at having a conversation while texting because of the increased efficiency in switching cognitive tasks.

Another cognitive benefit is spatial cognition. Players of action video games are better able to identify shapes in three-dimensional space. For example, if shown a three-dimensional figure, a video game player would be more adept at identifying what that figure would look like if it were rotated.

The parietal lobe, frontal lobe, and anterior cingulate are all sections of the brain that control various aspects of attention, all three of which are more efficient in people that play action video games according to brain imaging scans. Many erroneously, associate video games with reduced attention spans. However, studies have consistently demonstrated that players of action heavy games demonstrate

several improved attention skills (Castel, Pratt, & Drummond, 2005; Dye, Green, & Bavelier, 2009).

Much of the previously mentioned research was conducted on action video games (commonly referred to as first person shooters). While the intensive, immersive environment of these shooter games may have cognitive benefits they also have dark side and can be quite controversial.

### **Violence**

Do video games cause violence? This is a question that has been asked often in the past decade and it gains particular attention in the wake of tragic mass shootings, such as Newton, CT, where the attacker is associated with avid playing of violent video games. Did video games cause such behaviors? Human behavior is complex and horrific actions such as a school shooting cannot be explained by a single variable, it is a tragic combination of many factors, but violent video games may be one of those many factors.

Studies that incorporate brain scans from fMRI machines indicate that “. . . virtual violence in video game playing results in those neural patterns that are considered characteristic for aggressive cognition and behavior” (Weber, Ritterfeld, & Mathiak, 2006, p. 51). To put that another way, playing violent video games produces aggressive impulses in the player’s brain. It is not clear if those impulses translate into aggressive behaviors, but another recent study sheds more light on that very issue.

In perhaps the most significant piece of literature on video game violence, researches compiled the results of 130 different studies from many different countries. After reviewing data on over 130,000 individuals the authors concluded that exposure to violent video games does cause an increase in aggressive behavior, aggressive thoughts, and aggressive feelings, as well as a decrease in feelings of empathy and prosocial behavior. It is important to emphasize that this study identified video games as a *causal factor*; meaning violence was caused by exposure to video games, not simply associated with it (Anderson et al., 2010).

The findings of these studies make it pretty clear that there is a link between video game violence and aggressive thoughts and even behaviors. With that said, some question the *strength* of that relationship. Some researchers argue that relative impacts of those effects are small compared to other variables known to cause violence (Ferguson, 2010). To put that a different way, violent video games can make people more aggressive, but something like being a victim of violence or poor family bonding have a much, much stronger impact.

Some research contends that the adverse effects of video games will only impact certain individuals. Some, if not many, players of violent video games will not display uncharacteristic aggressive behaviors. "Instead, it appears that it is crucial to consider various personality traits of the person playing the violent video game when predicting whether or not the violent video game will have adverse effects" (Markey & Markey, 2010, p. 89). Video games players with a specific personality combination of high neuroticism (e.g. easily upset), lack of

conscientiousness (e.g. act without thinking), and low agreeableness (e.g. indifferent to others feelings) were particularly susceptible (Markey & Markey, 2010).

### **Conclusion**

While it appears there are some cognitive benefits and exciting new ways to think about how video games can improve mental skill, it remains a slippery slope. Players of action video games may have improved visual sensitivity, task switching, spatial cognition, and attention. However, there is still a concerning element to immersing ones consciousness (especially an adolescent's) into any environment where one "virtually" kills thousands of people. Even proponents of the benefits of video games would agree that game playing should not involve playing binges that last several hours. In the case of children and adolescents, parents, should be particularly mindful of their video game activity.

### **Further Reading**

Anderson, Craig A. (2003). Violent Video Games: Myths, Facts, and Unanswered Questions. 2013, from

<http://www.apa.org/science/about/psa/2003/10/anderson.aspx>

Anderson, Craig A., Shibuya, Akiko, Ihori, Nobuko, Swing, Edward L., Bushman, Brad J., Sakamoto, Akira, . . . Saleem, Muniba. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin*, 136(2), 151-173. doi: 10.1037/a0018251

Bavelier, Daphne. (2012). Your brain on video games. from

[http://www.ted.com/talks/daphne\\_bavelier\\_your\\_brain\\_on\\_video\\_games.html](http://www.ted.com/talks/daphne_bavelier_your_brain_on_video_games.html)

Trudeau, M. (2010). Video Games Boost Brain Power, Multitasking Skills. 2013

from <http://www.npr.org/2010/12/20/132077565/video-games-boost-brain-power-multitasking-skills>

### References

- Anderson, Craig A., Shibuya, Akiko, Ihori, Nobuko, Swing, Edward L., Bushman, Brad J., Sakamoto, Akira, . . . Saleem, Muniba. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin*, *136*(2), 151-173. doi: 10.1037/a0018251
- Bavelier, Daphne. (2012). Your brain on video games. from [http://www.ted.com/talks/daphne\\_bavelier\\_your\\_brain\\_on\\_video\\_games.html](http://www.ted.com/talks/daphne_bavelier_your_brain_on_video_games.html)
- Castel, Alan D., Pratt, Jay, & Drummond, Emily. (2005). The effects of action video game experience on the time course of inhibition of return and the efficiency of visual search. *Acta Psychologica*, *119*(2), 217-230. doi: <http://dx.doi.org/10.1016/j.actpsy.2005.02.004>
- Dye, M. W. G., Green, C. S., & Bavelier, D. (2009). The Development of Attention Skills in Action Video Game Players. *Neuropsychologia*, *47*(8-9), 1780-1789.
- Ferguson, Christopher J. (2010). Blazing angels or resident evil? Can violent video games be a force for good? *Review of General Psychology*, *14*(2), 68-81. doi: 10.1037/a0018941
- Markey, Patrick M., & Markey, Charlotte N. (2010). Vulnerability to violent video games: A review and integration of personality research. *Review of General Psychology*, *14*(2), 82-91. doi: 10.1037/a0019000
- Rideout, V., Foehr, U., & Roberts, D. (2010). Generation M2: Media in the Lives of 8- to 18-Year-Olds: Kaiser Family Foundation.

Weber, René, Ritterfeld, Ute, & Mathiak, Klaus. (2006). Does Playing Violent Video Games Induce Aggression? Empirical Evidence of a Functional Magnetic Resonance Imaging Study. *Media Psychology*, 8(1), 39-60. doi: 10.1207/S1532785XMEP0801\_4