Allie Carlson

Mrs. Thomas

AP Literature, Period 5

Research Paper

May 28th, 2020

Why Brain Eating Zombies Might Actually HELP Your Brain

Everyone knows the original video games 'Pac-Man' and 'Space Invaders,'as they are classic arcade video games that have existed since the late 1970s. So what happens to society when loveable and innocent games such as these turn into violent games such as 'Mortal Kombat' with a gruesome "decapitation sequence" in 1992? Violence in 'Mortal Kombat' led to the U.S. Congress demanding the formation of a video game rating system and thus the Entertainment Software Rating Board (ESRB) was formed (Porter and Starcevic 422). With video game production on the rise throughout the 1980s, the world began to question their effects on society, especially their impact on children. So, researchers began to study the connection between video games and cognitive function in the mid-1980s (Dale et. al 2). In general, researchers in the late-1980s and 1990s stated that there is little evidence to support claims that violent video games were harmful (Markey and Ferguson 106). However, societal opinions regarding video games began to change after a new video game genre called 'first-person shooter' arose in the 1990s (Porter and Starcevic 422-423). Since the 90s, there has been a stigma surrounding video game usage, heavily revolving around supposed increased aggression and negative mental health impacts for those who play such games. However, this stigma has been thoroughly debunked by scientific researchers over the past 30 years. Now research

suggests that video games actually have a more positive impact not only on the video game player's mental health, but also on their cognitive functions.

The idea that video games and violence have a strong connection is one that has been around since video games began to rise to popularity. In 1983, a U.S. Surgeon General, C. Everett Koop, suggested that video games were "a leading cause of family violence," despite lacking strong evidence to back up his claims at the time (Markey and Ferguson 102). However, in 1999, he gained many supporters for his claims after two white teenage boys, Eric Harris and Dylan Klebold, "went on a shooting rampage at Columbine High School". They killed twelve students and one teacher before committing suicide. It was later revealed that the two boys had owned and played the 1993 'first-person shooter' game 'Doom' previously (Porter and Starcevic 423). In accordance with the times, society looked to an excuse as to why two nice, suburban, white teenage males would do something so violent. They looked for excuses because acts of violence like this by young adults were thought to be exclusive to minorities and urban populations. If an African American teenager from an urban neighborhood committed a similar act of violence, society blamed his race and upbringing. Since these boys had played 'Doom' previously, video games were blamed for corrupting and brainwashing them. This shows that the original stigma around video games arose from racism, classism, and scapegoatism. Video games were used as an excuse as to why two white teens committed such a massive school shooting. In reality, both boys "had a history of severe depression and issues with rage and anger," so while it cannot be proven that 'Doom' had no part in their choices, it cannot be used as the only reason either (Markey and Ferguson 103). The Columbine massacre took the pre-existing notion by anti video game activists that video games caused an increase in violence and cemented the link.

With society becoming increasingly concerned about video games and their negative impacts, U.S. Senator Hillary Clinton chose to hold a press conference discussing violent video games in 2005. At this conference, she brought national attention to the growing idea that video games were having negative effects on children. Clinton claimed, “violent video games increase aggressive behavior as much as lead exposure decreases children’s IQ scores,” only supported by evidence from researchers who have since been discredited. Clinton introduced a bill that would enforce stricter regulations of video games that have been rated ‘Mature’ by the ESRB. The bill, titled “Family Entertainment Protection Act,” would make it so that video game distributors would face consequences for selling violent games to children, a guideline that most distributors already followed but is otherwise voluntary. However, Clinton’s bill remained in committee, and was later declared unconstitutional, as it would be censorship. The United States Supreme Court “declared that video games are art and that, if they are sometimes violent, this is no different from literature, film, or even fairy tales,” thus making video games on the same level as other media (Markey and Ferguson 99-100). This bill was made based off of disproven research and societal fears, but it’s impact on the relationship between society and video games was immense. For legislators to reinforce claims that video games were ‘rotting children’s brains’ added onto the already growing stigma surrounding video games. Even though Clinton’s anti video games bill was never passed, it’s implications were enough to worsen adult’s ideas about video games.

Markey and Ferguson describe this phenomenon as a “moral panic,” which commonly happens whenever new media is released into the world. They define a moral panic as a phenomenon that occurs whenever society’s fear about an item or activity largely exceeds the actual threat of the item or activity. Markey and Ferguson also claim that the moral panic

regarding violent video games caused “politically motivated and funded psychological research about why violent video games were a menace to society and the future of American youth” that was biased and unreliable (100). Research is intended to be based on facts and reliable data, but the data collected because of the moral panic often contained biases in order to support societal beliefs. In this case, the research collected is more pseudoscience than real, factual science. These researchers collect and publish “faux data to fuel… and stoke the flames of a moral panic” (Markey and Ferguson 105). In a moral panic, not only do researchers bend the truth, but the government and media are “pressured to both validate and address the fear,” which is what Clinton did in 2005, using the research created by the moral panic. This only worsens the situation, as legislators try to tell the public what they want to hear while the media creates as many over the top, eye catching titles about video games as possible (Markey and Ferguson 113). The reason that the stigma against video games has been so prolonged is because of this moral panic phenomenon. It is important to be able to identify a moral panic, so that one can separate facts from opinions in the face of a panicking society. After the Columbine shooting, society became scared and blamed video games. The government, media, and scientific researchers contributed to the moral panic by repetitively using and creating false data and headlines. This is how the connection between video games and violence grew to the stigma it is today, despite being based off of assumptions, racism, classism, and scapegoatism.

As previously stated, initial research on the connection between video games and violence was extremely flawed due to the moral panic surrounding the topic. As Markey and Ferguson describe it, “the focus of scholarship changed to fit the moral panic,”because the public demanded answers that reinforced their fears and beliefs, rather than go against them. Due to this

bias, Markey and Ferguson claim that the research studies that validated the connection between video games and violence were actually “dubious social science” and not factual with real evidence (106). Calls for research that backed up the idea that video games cause violence started in the 1990s and only ended in 2012 with the Sandy Hook Shooting (Markey and Ferguson 107). For 20 years scientists and researchers published false data that incriminated video games. While now research published with bias towards supporting the moral panic is discredited, these initial research studies still had a heavy impact on the stigma surrounding video games.

Even with the bias caused by the moral panic, the actual data collected through these studies that caused video games to be linked to signs of aggression and violence was unreliable. Markey and Ferguson listed off, “poor measures of aggression, lack of standardization, lack of careful matching of games to ensure they varied only in violent content, and a failure to control for other variables in correlational studies” as some of the issues with data collection within these studies, essentially summing it up to be “a huge pool of junk science” (107). Therefore, most of the research that connected video games and violence contained basic flaws in order to weigh the evidence in their favor. By slightly modifying something that the average person would not notice or care about, they created false data, in turn prolonging and supporting the idea that video games cause violence. Even without modifying the data itself, simply by calculating something differently, there could be completely different results. German scholar Malte Elson proved that simply by calculating a score differently, it is easy to make it look like video games increase, decrease, or have no effect on levels of aggression, all while using the exact same data (Markey and Ferguson 111). This lack of standardization within calculating scores also supports

the idea that this science was pseudoscience. Researchers did not bother to standardize procedures so that studies could be compared to one another. In doing so, they ignored the scientific method and carried out research that made it seem like video games caused violence. Porter and Starcevic also list flaws in the research, mentioning "genetic predisposition, socioeconomic status, violence in the home, substance abuse and psychiatric disorders" as specific background items that researchers did not check or measure before conducting research (425). This yet again points out that the research was not conducted in a scientific manner, as researchers failed to consider other major qualities that could contribute to evidence that video games cause violence. Therefore, the research that supported the connection between video games and violence was biased, lacked control variables, lacked standardization of scoring, and lacked full study into other contributing factors that may have caused the results that claimed video games cause an increase in violence, making it wholly unreliable. One must check if the data and research has been reliably collected and calculated according to scientific procedures and standards, because if it is not, it may be the unreliable product of a moral panic.

Regardless of how blatantly manipulated the data collected by researchers who claimed video games and violence were connected, the data that they claimed supported their findings showed an extremely low correlation. These studies display only a 0.4 to 3.2 percent correlation between various minor forms of aggression and violent video game play (Markey and Ferguson 112). This shows that the supposed correlation was miniscule compared to what the moral panic made it appear to be. Many people in power used these tiny correlation percentages to declare a war against violent video games. However, another point that disproves the claimed correlation between violence and video games is that these studies created the link based off of minor forms

of aggression. It is extremely unlikely that such minor aggressions caused by violent video games would translate into real-world aggressive behaviors or crimes (Markey and Ferguson 112). Other real world data also refutes the claims that video games cause aggression. Between the mid-1990s to 2004, U.S. annual video game sales rose by 3 billion dollars, from 4 billion to 7 billion. However, despite such a dramatic increase in video game sales, violent crime rates in the U.S. were actually steeply falling (Porter and Starcevic 423). These statistics suggest that an increase in video game play does not lead to an increase in violent crime in the United States. In fact, it suggests the opposite; that an increase in video game play could lead to a decrease in violent crimes and aggression. A meta-analysis of this phenomenon was conducted in 1997, stating that video games do not lead to aggression while also suggesting that playing video games may actually help children express their aggression (Kovess-Masfety et. al 350). This would mean that video games function as a medium for children to release their pent up anger in a constructive way. Therefore, video game play would actually be lessening aggressive behavior and violent thoughts, rather than causing them.

Video games have been proven innocent of their claimed connection to violence and aggression, but their effect on humans goes beyond that, as video games have been stigmatized to lessen mental health, but actually they can improve mental health. One of the identifying factors of a moral panic is that people will make it about the children (Markey and Ferguson 108). So, they began to question the connection between video games and mental health for children. Society is always focusing on how different industries or media affect children, because society expects children to be innocent and pure. In a moral panic, these fears are taken to the extreme, as anyone who questions the viability of the moral panic will be accused of not caring

about the children. In the violent video games moral panic, this was no different. Yet, this is another disproven piece of this moral panic. A study of over 3000 children in European countries found that high usage of video games was not linked to any type of disorder or suicidal thoughts. Not only that, high video game usage actually was "associated with higher intellectual functioning, increased academic achievement, a lower prevalence of peer relationship problems and a lower prevalence of mental health difficulties" in the children studied (Kovess-Masfety et. al 355). Therefore, the idea that violent video games are bad for children is invalid. In fact, video games themselves have positive effects on children. It can improve their intellect, performance in school, sociability, and mental health. Also, for young players, video games have caused "greater self-esteem regarding intelligence, computer skills, and mechanical ability" (Jones et. al 7). Self-esteem is consistently linked to mental health, so higher self-esteem puts people at a lower risk for mental health issues. Therefore, despite what the moral panic stated, video games do not put children and adolescents at risk. Rather, video games have a multitude of positive effects on children who play them.

These positive mental effects are not limited to children, however, as video game players of all ages have been seen to benefit from video game play. For regular players, "improved mood, reduced emotional disturbance, improve emotion regulation, relaxation, and stress reduction" have all been results of video game play (Jones et. al 7). All of these point to better overall mental health in connection to playing video games. Playing video games is no different than any other hobby, as video game play has similar effects when compared to any other hobby, like decompressing from a long day. Another part of video games that can better mental health is the social piece. Many people who play online games with other players build meaningful and

important friendships. These friendships end up being places of social and emotional support, regardless of if they have never met each other physically. Social video games can also help continue pre-existing friendships and lessen feelings of loneliness. For people who have friends and family living far away, there are many games that they can play with each other to stay in touch (Jones et. al 5). Video games are actually not a way of being anti-social, it is more accurate to consider them tools for facilitating even more social contact with diverse groups of people. Even people who are active and social can use video games as a fun activity to play with friends. Societyalso tends to associate anxiety and depression with people who play video games often. For regular video game players, this is not true. It was found that people who regularly play video games felt less depressed than those who had never played video games or those who played an excessive amount of video games (Jones et. al 2). This is why it is important to draw a distinction between video game engagement and video game addiction.

There is a misconception that anyone who regularly plays video games is addicted to them. This is most certainly not true. Video game addiction is defined as having negative consequences. This means that those who are addicted would experience mental, social, and physical decline. Video game addicts are also more likely to have heightened stress levels, anxiety, and depression. Meanwhile, high levels of engagement would not experience such things (Loton et. al 566). Engagement is defined as “an emotional involvement or commitment to some object or domain of interest and to the experiential intensity of a relationship or interaction” (Jones et. al 4). It is completely possible to play video games often and only have high levels of engagement, not addiction. As previously said, engagement is the most beneficial for mental health compared to not playing at all or playing too much. Therefore, it is better to be

engaged than not play video games at all. As long as game play is considered engagement and does not hurt other aspects of your life the way it does for video game addicts, then it is better than not playing at all. There are many negative effects of video game addiction, but video game engagement is characterized extremely differently and is beneficial for the player.

Not only does video game engagement positively affect mental health, video game play also improves many other cognitive functions. Action games like 'first person shooter' style games are actually the most beneficial for cognitive processes. Specifically for action games, reaction time can greatly improve, meaning that one's brain is able to process information faster. This information processing is a common indicator of efficiency of cognitive function. Along with processing information faster, video game players are also able to flexibly switch between tasks and visualize object rotation better than normal people (Bavelier and Green). These cognitive functions affect daily life for many people, and bettering them can be helpful and make life easier. Having a fast reaction time can be useful in a multitude of real life situations. Reaction times can help people be better at sports or quicker to respond in an emergency situation. Fast processing of information can also make learning, test taking, and answering questions in school faster for students. Multitasking also applies to everyday life, as often people need to be able to focus and work on many different things at the same time. Game play also seems to increase video game players' ability to make correct decisions under pressure. This is a skill that could help people get jobs, as it is a quality that many employers look for (Bavelier and Green). An example of video game play helping people in their professions is seen in a study of surgeons. Surgeons who played video games were able to complete more surgeries with the same precision required compared to those who were not video game players (Bavelier and Green).

Video games not only lead to better mental health for those who are engaged, but they also cause an increase in many different cognitive functions that translate into real world situations.

The initial belief regarding these cognitive functions was that action game players benefitted the most, but that belief is now shifting along with the gaming industry. Action games simply produced the clearest gains cognitively, while other types of games produced less of an impact. However, early on it was suggested that other games could "enhance social behaviors or empathy" (Bavelier and Green). Therefore, all types of video games did have some type of positive impact, however cognitive benefits were most clearly seen for people who played action video games. As time has passed, the video game industry has changed and different video game genres have become less clear. 'Hybrid genres' are genres that mix together game mechanics from multiple previously defined genres. Examples of these could be the action-RPGs (Role Playing Games) or action-adventure hybrid genres (Dale et al 5). These action game hybrids have been seen to cause cognitive skill enhancement similar to what has been previously seen in action games. Games from the "action-RPGs, RTS and racing games, and MOBAs" genres have specifically been seen to improve cognition through various studies that implemented different testing methods (Dale et al 5). Therefore, cognitive benefit has expanded from just action video games to many other hybrids as the video game industry has changed over time. So, not only people who play action video games are getting the cognitive benefits of video games, due to other genres increasingly shifting mechanics, many other video game players will also benefit cognitively.

Since the connection between cognitive skills and video game play has been so clearly distinguished, research regarding video games is shifting into how these benefits can be used

clinically. “Posit Science, Pear Therapeutics and Akili Interactive” are all examples of companies that are performing such research. At Akili Interactive, they are developing a therapeutic game that is intended to enhance attention and limit distraction. This could be used for children with attention-deficit disorders or older adults who are experiencing early cognitive decline (Bavelier and Green). There are many games being created for clinical use in hopes of improving cognitive abilities of patients, from children to elders. Even as research is being applied to create solutions, the actual research is continuing. Going forward, researchers plan to clearly re-classify video games into groups with regard to their effect on cognition because of the growing hybrid genres of video games. Another issue that researchers have encountered is that more people are playing video games, so it is harder to find a control group of people that have never played video games. Therefore, in the future, researchers will have to assess people’s gaming background in order to have an accurate sample (Dale et al 6). Researchers have also suggested taking a new angle on cognitive function research, by studying the similarities and differences between cognitive function in males and females, because of the increase of females playing video games (Dale et al 8). There is still much left to research regarding video games and their effect on the brain, but at this point researchers are also able to apply their research to create meaningful products that assist with cognition.

Since their creation, video games have been increasing in popularity. Along with increased usage of video games, many stigmas arose, with an emphasis on the suspected connection between violence and video games. Factually, there is little to no scientific evidence that video games cause violence, despite what news headlines and politicians said in the 1990s and 2000s. Claims that video games cause or worsen stress, depression, and anxiety have also

been debunked by researchers. In fact, video games can actually improve mental health in a multitude of ways. Not only does mental health improve for those who play video games, brain cognition also does. Playing video games can help increase information processing and decision making, both of which are extremely useful in real life situations. It is important to know when a stigma lacks foundation. Video games are useful learning and cognition tools, not violence causing wastes of time.

Works Cited

Bavelier, Daphne, and C.Shawn Green. "The Brain-Boosting Power of Video Games." *Scientific American*, vol. 315, no. 1, July 2016, pp. 26–31. *EBSCOhost*, doi:10.1038/scientificamerican0716-26.

Dale, Gillian, Augustin Joessel, Daphne Bavelier, and C. Shawn Green. "A New Look at the Cognitive Neuroscience of Video Game Play." *Annals of the New York Academy of Sciences*, vol. 1464, no. 1, 28 Mar. 2020, pp. 192–203., doi:10.1111/nyas.14295.

Jones, Christian M., Laura Scholes, Daniel Johnson, Mary Katsikitis, and Michelle C. Carras. "Gaming Well: Links between Videogames and Flourishing Mental Health." *Frontiers*, Frontiers Psychology, 10 Mar. 2014, www.frontiersin.org/articles/10.3389/fpsyg.2014.00260/full.

Kovess-Masfety, Viviane, Katherine Keyes, Ava Hamilton, Gregory Hanson, Adina Bitfoi, Dietmar Golitz, Ceren Koc, Rowella Kuijpers, Sigita Lesinskiene, Zlatka Mihova, Roy Otten, Christophe Fermanian, and Ondine Pe. "Is Time Spent Playing Video Games Associated with Mental Health, Cognitive and Social Skills in Young Children?" *Social Psychiatry & Psychiatric Epidemiology*, vol. 51, no. 3, Mar. 2016, pp. 349–357. *EBSCOhost*, doi:10.1007/s00127-016-1179-6.

Loton, Daniel, Erika Borkoles, Dan Lubman, and Remco Polman. "Video Game Addiction, Engagement and Symptoms of Stress, Depression and Anxiety: The Mediating Role of Coping." *International Journal of Mental Health & Addiction*, vol. 14, no. 4, Aug. 2016, pp. 565–578. *EBSCOhost*, doi:10.1007/s11469-015-9578-6.

Markey, Patrick M., and Christopher J. Ferguson. "Teaching Us to Fear: The Violent Video

Game Moral Panic and the Politics of Game Research." *American Journal of Play*, vol. 10, no. 1, Fall 2017, pp. 99–115. *EBSCOhost*, search.ebscohost.com/login.aspx?direct=true&db=aph&AN=127477163&site=ehpl-live.

Porter, Guy, and Vladan Starcevic. "Are Violent Video Games Harmful?" *Australasian Psychiatry*, vol. 15, no. 5, Oct. 2007, pp. 422–426. *EBSCOhost*, doi:10.1080/10398560701463343.