

Effects of Aggression, Empathy, and Schadenfreude on Behavior and Thoughts in Violent and Prosocial Video Games

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1. Introduction

The development of technology has greatly contributed to the advancement of video games. With an increased demand for entertainment and the development of a high-speed society, video games have quickly become a necessary part of some people's life. In the 1950s and 1960s, the first video games were developed using simple computer systems and graphics. As technology advances, video games become more diverse and real. The introduction of home gaming systems in the 1980s led to an increase in the accessibility of video games. Such as the Atari 2600 and Nintendo Entertainment System. The 1990s brought about 3D graphics and the first-person shooter games. The new millennium ushered in online multiplayer and massively multiplayer online games, while mobile devices and smartphones led to the development of mobile gaming. With the increase of accessibility of video games, the enormous impact brought by the games has become a controversial topic. The two types of video games will have a completely different impact on people from various aspects. This paper will explore the effects of playing prosocial video games versus violent video games, drawing on previous studies.

2. Prosocial Videogames and Violent Videogames

A media platform is necessary for the entertainment form known as video games. The majority of prior research has focused on how video games affect teens' levels of aggression, and it has been found that there is a positive relationship between playing violent video games and teenagers' levels of hostility. As opposed to that, a few academics have found that teenagers can benefit from playing prosocial video games. Prosocial video games promote positive social behaviors and values, such as cooperation, empathy, and altruism [1]. These games encourage players to work together to achieve a common goal, help others in need, and make decisions that benefit the greater good. Examples of

prosocial video games include Minecraft and Animal Crossing. On the other hand, violent video games depict or simulate violent actions, such as killing, fighting, or injuring other characters or objects. These games often include graphic and realistic depictions of violence, blood, and gore, and may have themes of crime, war, or horror. Example of violent video games includes GTA and Bully. The purpose of the game is often to defeat enemies or complete missions by using weapons or physical force violently. Violent video games can be categorized based on individual perspectives, such as first-person shooter games that simulate snipers or war games that simulate conquering places. Several previous studies have concluded that there is a positive correlation between teenage aggression levels and playing violent video games.

3. The Consequences of Violent Videogames

Previous studies have suggested children's aggressiveness level and video game violence exposure are positively correlated. As mentioned before, violent video games that stimulate aggressive physical activity might have triggered people to do similar things to gain the feeling of happiness and achievement. In an empirical study conducted by Wei R, he discussed the impact of the attitude of contacting violent games on Chinese adolescents focusing on the consequences of exposure to online violent video game content on aggressive behavior, empathy, and attitudes toward violence in Chinese teenagers. There were 312 participants in the research, with a 65.1% male to 34.9% female ratio and an average age of 16.91 years [2]. The researchers multiplied the violence exposure rate of each collected violent game by the violence level of the game to construct the violence exposure index of violent games. Subjects were then asked to fill out the Attitudes to Violence Scale, the Compassionate Care Scale, and the Aggression Scale to measure their violent attitudes, empathy tendencies, and frequency of engaging in aggressive activities. The control variables are age, gender, household, and monthly household income. The findings indicated that playing violent video games had a favorable impact with violent attitudes and aggression. When exposure, gender, computer use, and Internet use were all taken into consideration, using hierarchical regression analysis, it was shown that exposure to violence and pro-violent sentiments were consistently correlated with empathy. However, aggression and exposure are no longer significantly correlated, demonstrating that the influence of playing violent video games was more on players' attitudes than on their outward behavior.

Further research is needed to discover the mechanism behind how violent video games affect adolescents' aggression level and other aspects. From Shao and Wang's paper, a more obvious relationship of adolescent's contact duration and their aggression level is shown. Additionally, it takes other variables into account to further investigate the mediating effect on teenager's aggression level. A group study was conducted in six randomly selected middle schools in China [3]. Four self-reported questionnaires were given to the participants to complete. The relationships between the research variables were examined using IBM SPSS Statistics 22. Mplus 7 was also applied to discover the verification of the moderated mediation model. It was determined that there is a clear association exists between adolescents' aggressiveness levels and their exposure to violent video games. Moreover, other factors like family environment will also have a mediating effect on adolescent's aggression level. For instance, playing violent video games only directly affects aggression in those with loving homes; in contrast, both an immediate and a secondary effect, facilitated by normative attitudes regarding aggressiveness, are evident for those with dysfunctional homes.

Overall, to measure the aggression level of people, an aggression scale formed in a previous study done by Orpinas and Frankowski is suggested. The Aggression Scale, which gauges the frequency of aggressive behaviors among middle school pupils, is described in this work along with its psychometric features. The method was tested mainly in junior high school students [4].

Eighty-five sixth-grade kids from three classes were given the 17-item Aggression Scale in two different schools. Six items were eliminated due to their poor long-term stability, one item did not evaluate interpersonal aggressiveness, one item had a double meaning and did not offer new

information, and one item was neither safe nor necessarily violent. The final aggression scale consists of eleven items following a few further tweaks. Overall, eleven items will be measured in this aggression scale from multiple aspects. Each item can range from zero times to six times. The final score range will be between 0-66 points.

This aggression scale has been proven to be accurate, effective, and convenient. Additionally, the scores being measured can be further divide into groups to see the change more obviously in aggression level.

4. The Consequences of Pro-social Videogames

The same reasoning leads to the assumptions that playing pro-social video games reduces aggression. There is an experimental design where participants are divided into two groups [5]. One group played Lemmings (a pro-social video game). Another group played Tetris (a neutral video game). After each group played for ten minutes, the experimenter stopped the game. Participants answered two questions that gauged gaming preference. None of the participants knew the purpose of the experiment.

There are two game types (prosocial & neutral) and three aspects of measured data (aggressive behavior, aggressive thoughts, and aggressive feelings). The final data are presented as mixed-model variance. The contrastive variance of each data set, the aggressive thoughts of neutral video games are at least 1.5 times higher than those of prosocial video games. The conclusion is as expected. Aggressive responses were reduced among those playing pro-social video games (as opposed to neutral games). In other words, the person being tested who played the prosocial video games reduced aggressive behaviors and thoughts toward others. It is worth noting that, these effects also occurred during the entire subject being tested for only ten minutes. For this experimental time, the experimental results are quite remarkable. It would be a good idea to take this experiment a step further, such as increasing the amount of time the participants played, to test the continuum of the aggressive effects of two different types of games (prosocial video games and neutral video games). Or from another point of view, the experimenter could test aggression every time a participant played for 30 to 60 minutes, repeating the cycle three to four times. The objective was to study the relationship between reducing aggressiveness and the time spent playing pro-social games (vs. neutral video games).

Playing pro-social videogames may increase empathy and decrease schadenfreude. An empathetic experiment split the participants into two equal groups. One group played the prosocial game and the other played the classic computer game [6]. After the participants have finished the game, the researcher gives them a short essay about the light that emerges from a difficult situation. The person being tested were invited to complete a scale on the short trial to gauge their levels of schadenfreude, relief, and blessing. Second, participants need to read two difficult articles and show empathy, sympathy, and tenderness for the protagonists of the articles. All these items were incorporated into the Empathy Scale. All participants were blinded to the hypothesis and purpose of the experiment, and they had no idea what the measurements were for.

All data are calculated using 7-point Likert-type scales filled out by participants. Consistent with the initial hypothesis, participants who played the pro-social video game had fewer schadenfreude than those who played the neutral video game. Experimental evidence suggests that playing pro-social (vs. neutral) video games enhance interpersonal empathy and reduces schadenfreude. Participants exposed to prosocial video games gloated only when the misfortune was deserved, not when it was unlucky. Second, two different types of essays explored participants' schadenfreude and empathy, two constructs where weak ties may lead to a diversity of goals. The process of the study was that the participants needed to read several tragic stories, and then report the degree of empathy for the stories. Because there are many variables in the experimental method, such as the patience of the participants in reading or the content of several tragic stories itself has a certain empathy gap (the quality of the

content of each story is different or the participants have different attitudes towards different stories). Therefore, the experimental data and results have certain uncertainties.

There is an experience in trying to figure out why playing pro-social video games promotes pro-social behavior [7]. The two subjects acted independently. Half of the participants played pro-social video games while the other half played neutral video games. After ten minutes, they write down all the thoughts they had in mind when they read the video game. The second experimenter (who did not know what the experiment was about) knocked the pencil and cup to the ground. Whether the participants came to help and how many pens they picked up were recorded. After picking up the pen, they complemented PANAS, answered two questions about prosocial thinking, and filled in how hard they thought the game was.

Found that individuals who played prosocial video games were more likely to take a pencil than those who played neutral video games. The variance of the two sets of data is 6.31. As expected, participants who played prosocial video games ($M = 0.06$, $SD = 0.24$) had more prosocial thoughts than those who played neutral video games ($M = 0.3.26$, $SD = 1.73$). In the state of a pro-social videogame, 63 percent of the participants would help pick up the pencil. Compared to only 22 percent of those who played neutral videogames. The data were obtained based on the bootstrapping analysis recommended by Preacher and Hayes (2004). The experiment provides evidence for the assumption that playing pro-social video games enhances pro-social behavior. It also shows that the activation of pro-social thoughts imprints pro-social behaviors. This experimental study could add that playing video games can also increase positive effects on social behavior.

5. Suggestions for Future Investigations

A large number of scholars have conducted in-depth research on social aspects, violence and sports activities, but each game has unique influences and cannot be studied as a single phenomenon, so in-depth research is required on multi-faceted phenomena. Most of the current research has looked at a prosocial game, a neutral game, and an antisocial game. Therefore, some sympathy or behavior is caused by a specific function in a certain game and cannot be empathized with other video games. Therefore, the experimental results are not completely universal, and more experimental data are needed to support them.

Comparing violent and prosocial video games, violent video games have increased the variables related to assault while diminishing prosocial behavior and thoughts. Prosocial video games have the opposite effect of violent video games. These different kinds include many variables, such as game graphics, background music, or character behavior [8].

A long-term study is needed to further confirm the subsequent behavioral impact of prosocial videogames. A complex experiment looked at the neural correlates of prosocial video games on prosocial behavior [9]. A weak data suggesting prosocial behavior, but it could not be determined that it was a condition provided after exposure to prosocial video games. The findings do not prove long-term effects. Considering the drawbacks of the limited sample size, it cannot be considered conclusive. Therefore, in future research, it is necessary to start a long-term, high-sample, multivariate experiment to further study and determine the factors that affect pro-social behavior of pro-social video games. Furthermore, most studies have focused on the short-term (within two years) effects of prosocial video games on cognitive empathy and prosocial behavior. Additionally, the majority of research has concentrated on the two-year and shorter-term effects of prosocial video games on prosocial behavior and cognitive empathy. Because this type of experiment has a large sample size, a lot of data, and requires a long time, it takes a lot of energy and has high requirements for participants. The long-term influences of prosocial videogames on prosocial behavior and empathy are unknown and should be explored in future research. Many people find entertainment from playing video games. It is undeniable that video games do have behavioral and psychological effects on people. A research is the first to propose that factors outside of gaming, such as personal and social environment, have a significant impact on the association between aggressiveness and

video game violence.[10]. Therefore, people need to maintain a dialectical attitude towards playing violent games, and it is not entirely that the harm outweighs the benefit. There are several components to video games have positive impacts on various aspects of wellness, depending on the elements involved, the degree of moderation and the motivation to play. Incorporating physical activity alongside video game play improves physical fitness and leads to high levels of enjoyment, increasing an individual's potential for persistence. At the same time, a study has shown that prosocial video games can be moderately increased in early childhood training [1]. This is an effective way for the positive development of children's prosocial behavior. However, the specific influence in this respect needs more experimental data to be measured and proved in the future.

6. Conclusion

According to research, different video game features might have distinct effects on players' behavior and thought. Some studies have shown that playing violent video games has more of an impact on attitudinal results than on apparent behavior. Therefore, it is not recommended that people, especially those who already have aggressive personality traits and are exposed to a high-pressure environment, should play less violent video games, in order to prevent people from excessive attitudes and behaviors. In looking at the closest step, with the well-known conclusion of the existence of a connection between playing violent games and a teen's level of hostility, actions or policies should be enforced to reduce the amount of time adolescent spend on violent games. For instance, parent can appropriately monitor their children, and governments should continue their restriction policy on violent video games. At the same time, studies have shown that playing pro-social video games reduces people's schadenfreude and aggressive behaviors and thoughts toward others and increases pro-social behavioral thoughts and empathy. Prosocial behavior will be enhanced by the activation of prosocial thinking. Therefore, it is recommended that people choose to play pro-social video games as much as possible instead of violent video games. Parents can choose to add an appropriate amount of pro-social video games to their children during the parenting period, which can increase their potential pro-social attitudes while entertaining and relaxing them. Similarly, government can help spread the conclusion that pro-social video games enhance adolescent's positive personality traits to parents and encourage parents to increase the time and degree of their children's exposure to pro-social video games. This help bring the greatest benefit to children's personality development while the children are spending their entertainment time. Teenagers and working people can also moderately play pro-social video games, which can not only relieve the mood and relax the body, but also reduce negative emotions about life, improve happiness, and maintain mental health.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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