And How Does That Make You Feel? A Psychological Approach to a Classic Game Studies Debate – Violent Video Games and Aggression

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Abstract

In many media outlets, researchers, organisations and government representatives claim that violent video games can cause aggression. The present study adopted a psychological approach to examine this claim. The study had participants (N=36) play violent and non-violent video games and measured aggression after gameplay. The current study also examined the influence of the psychological concepts of personality and perception. The susceptibility of a personality type called the Dark Triad (individuals high on psychopathic, narcissistic and machiavellian traits) and camera styles (first or third-person) of violent games were examined. Two-way ANOVAs were used for statistical analysis to compare groups. The main finding was that violent video games and video game camera-style had no effect on participant's aggression measures. Participants with high Dark Triad scores had a statistically significant higher mean score of aggression. The findings suggest that high scoring Dark Triads have a higher susceptibility to aggression, but that this susceptibility is unrelated to violent video game play. Limitations of the current study and possible applications of these findings are provided and discussed.

Keywords

Video Games Effects; Violent Video Games; Aggression; Dark Triad

Introduction

In 2013, *The Mirror* newspaper ran a headline claiming that Aaron Alexis, a gunman equipped with a shotgun who killed twelve people in the Washington Navy Yard mass shooting, had been influenced by the first-person shooter video game *Call of Duty* (Activision, 2003). By 2015, violent video games (VVGs) were blamed for mass shootings an additional fourteen times (Fletcher, 2015). The media's fascination with linking mass shootings to violence in video games led the American Psychological Association to issue a very strong and controversial statement calling for the "reduction of all violence in videogames and interactive media marketed to children and youth" (Peckham, 2013). This statement was issued despite video game research still being in its infancy, and with a minimal focus placed thus far on investigating the link between VVGs and aggression (Peckham, 2013). More recently, in February 2018, a gunman killed 17 students and staff members at a School in Parkland Florida using an AR-15 assault-style rifle (Siddiqui and Solon, 2018). One week after the tragic event, US President Donald Trump suggested that violent video games played a role in this mass shooting (Gilbert, 2018). He set up a meeting at the White House and invited executives from the video game industry to discuss the link between violent video games and gun-related deaths (Gilbert, 2018).

Video games have permeated modern culture, with multiple reports concluding that video games have a significant presence in the lives of both children and adults (Funk, Buchman, Jenks & Bechtoldt, 2004). Violent content was found in over half of all games owned by children, with a preference for VVGs over non-violent games (Funk et al. 2004). Video games have a large reach, with sales reaching over 30 billion dollars in 2016 (ESA, 2017). In 2016, over 27.5% of video games sold were of the shooter genre, and 67% of households in the United States own a device that is used to play video games (ESA, 2017).

Researchers have outlined various processes that explain how VVGs increase aggressive responses (Sherry, 2001). The most commonly cited process is social learning theory. This posits that behaviour is learned through imitation (Sherry, 2001). A second mechanism is the general arousal model. This theory suggests that VVGs increase arousal and subsequently heighten aggressive responses (Sherry, 2001). Another alternative process is the neo-associative networks or priming effect mechanism. This theory outlines how cues from VVGs prime a series of semantically related nodes associated with aggression. These primed aggressive thoughts can then translate into aggressive behaviour (Sherry, 2001).

In a meta-analysis, Anderson & Bushman (2001) reviewed 33 studies involving more than 3,033 participants, and found an average effect size of $r = .19^2$ between video game violence and aggression. VVGs were found to increase aggression in males and females, children and adults,

and in both experimental and non-experimental studies. A more recent meta-analysis in 2010 (Anderson et al.) strengthened the hypothesis that exposure to a VVG "increases the likelihood of aggressive and violent behaviour in both immediate and long-term contexts" (p. 151). Institutions including the American Psychological Association (Eron, Gentry & Schlegel, 1994; Carll et al., 2005) and the National Institute of Mental Health (Rubinstein, 1983) supported this claim by conducting reviews of the available evidence on the topic to support their position. Recommendations for future studies highlight a need for experimental and empirically driven studies on VVGs. One recommendation is for research to pinpoint the features of VVGs that cause the largest aggressive effects (Anderson et al. 2010).

The supposed link between VVGs and aggression has, however, been criticised (Ferguson & Kilburn, 2010). One critique is that the features of VVG research limit the conclusions and generalisations that can be made. Ferguson and Kilburn (2010) suggest that many of the measures of aggression used in the VVG field are invalid, as they do not measure what they claim. This creates an over-interpretation and misestimation of the effects of VVGs, which leads focus away from third variable effects (Ferguson and Kilburn, 2010). This means that factors such as depression, poverty, socio-economic status and peers are overlooked. A publication bias is also apparent in VVG research, as articles with positive and statistically significant results are published much more frequently than those which report negative results (Ferguson, 2007). Therefore, the literature in the field seems to be biased and portrays more positive findings, making negative findings that refute the link between aggression and VVGs obsolete. Ferguson & Kilburn (2010) provide examples of citation biases occurring, where researchers even ignore their own results if they do not agree with the current paradigm in this field of study. Ferguson (as cited in Hamilton, 2010) explains that "violent games are like peanut butter, harmless for the vast majority of people but to a small minority with personality problems that can be harmful". This statement is relevant to the current study, as a composition of personality features called the Dark Triad (DT) will be investigated.

The DT of Personality (Paulhus & Williams, 2002) is a term used to explain a group of three highly integrated personality features. They are psychopathy, narcissism, and machiavellianism. A psychopath can be described as a selfish, callous individual who has a superficial charm but is remorseless in their impulsive lifestyle (Jacokbitz & Egan, 2006). A machiavellian is an ambitious individual who uses strategies that rely on deception, manipulation, and flattery to exploit others, to manipulate social interactions, and to reach their goals (Jacokbitz & Egan, 2006). A narcissist is an individual in a state of self-love, in which the individual has a grandiose feeling of worth, and a strong sense of entitlement (Jacokbitz & Egan, 2006). A person exhibiting all three of these

characteristics is said to have the DT of personality. The reason that these three personality features are grouped with one another to form the DT is because all three correlate with each other on a singular level. An individual's measure of any one trait is a suitable measure for the other two traits (Jacokbitz & Egan, 2006). Therefore, the DT measure is comparable to any one of the three features within it.

The DT was included in the current study as research begins to focus on investigating which personality types are more and less affected by VVGs. Past research indicates that psychopathic individuals had higher levels of aggressive thoughts after playing a VVG than a non-psychopathic control group (Markey & Scherer, 2009). Individuals with psychopathic tendencies were also found to be at a much higher risk for the adverse effects of violent stimulus (DeLisi, Vaughn, Gentile, Anderson & Shook, 2012). This suggests that aggression is best predicted when you take an individual's personality and environment into account. The vulnerability of other personality types to the negative effects of VVGs has also been investigated, with the Five Factor model being used to highlight which kinds of individuals are at risk (Markey & Markey, 2010). Those most vulnerable were highly neurotic (cold and aloof), low on agreeableness (an indifference and lack of concern to others) and exhibited a low level of conscientiousness (not keeping promises). These personality traits are comparable to the description of DT characteristics.

Research is now aiming to identify specific features of VVGs which may cause aggression. The camera style of a game could be one such factor. In a first-person shooter, the game is viewed through the playable character's eyes, and in a third-person shooter, the game is viewed through a puppeteer-style camera. These differing camera styles in the game are features for which the current study will test.

The current study will aim to use findings from the field of psychology to try to theorise, test and explore psychological concepts that are of interest to the discipline of game studies. The first investigation will explore whether VVGs increase aggression more than a video game with no violent content. The present study will also investigate whether the camera style of VVGs influences aggression. Finally, the effect of personality (Dark Triad score) on aggression will be examined. This research should be viewed as an independent, small-scale study used to highlight areas that may merit further research.

Methodology

A SurveyMonkey link was sent to participants who agreed to volunteer for the study. The link stated that no experience in playing video games was necessary and asked participants to fill out the Dirty Dozen questionnaire. The DT scores were used to divide participants into groups (low, average and high) according to the parameters set out by Johnson & Webster (2010). Scores over forty-five are classified as high.

Scores between thirty-six and forty-five are average and scores under thirty-six are classified as low. All the participants were randomly assigned by using a research randomiser to play either the violent or the non-violent games. The study took place in Laboratory 8 in the Enterprise Centre, University College Cork. On arrival, the participants read a briefing form, and signed a consent form. An official manual of the game was provided so that participants could learn the controls. A five-minute trial period was given in which participants could familiarise themselves with the controls. Once this was finished, the participants would begin to play their assigned game. The video game session lasted for a total of ten minutes. A stopwatch was used to time this. Once ten minutes had passed, the participants took the Word Completion Task and the State Hostility Scale. When the experiment was over, the participants were debriefed and thanked for taking part. Analysis consisted of a 3(DT Score: High, average and low) x 3(Video Game: First-person violent shooter, third-person violent shooter, nonviolent) factorial analysis of variance (ANOVA) which was conducted for each of the two measures of aggression. This method ensured that each two-way ANOVA had one continuous dependent variable with normal distribution (the measure of aggression) and two or more categorical independent variables (the DT groups and the video game groups). ANOVAs were conducted with the data file split for sex, and again for both measures of aggression. In total, six ANOVAs were completed.

Participants

The participants consisted of eighteen males and eighteen females (N=36). Equal numbers of males and females and of high, average, and low scoring DT participants were run in each condition. Participants were asked to refrain from alcohol, caffeine, exercise, and tobacco for the twelve hours prior to the study, and were randomly assigned to play either the control (non-violent game) or one of the two violent games. All of the participants were assigned using the computer programme Research Randomiser (Urbaniak & Plous, 2013). Participants were not told what game they would be playing until they arrived for the experiment.

Materials

Videogames

The first-person, violent game was *Call of Duty: Modern Warfare 2* (COD; Infinity Ward, 2009). This game was chosen as the first-person shooter game as the game is experienced through the eyes of the playable character. The game was chosen due to a specific level with high violence called "No Russian", which participants were asked to play. The player takes the role of an undercover CIA agent who has infiltrated a Russian terrorist group. While undercover, he is forced to take part in a terrorist act in the form of a massacre at an airport, firing upon civilians. The third-person shooter game selected was *Grand Theft Auto*

V (GTA; Rockstar North, 2013). Participants were asked to play the level "Rampage". This involves the playable character (Trevor) having a psychotic episode and massacring everyone around him. The levels for both of the violent games were chosen due to the high intensity violence. Both playable characters have similar weapons within the game that allowed for a high rate of violence if the player chose to use it. Both begin with the simulated slaughter of innocent non-player characters. Both games utilise infinitely 'respawning' non-player controlled enemies that the player can eliminate. Both levels had killable characters constantly appearing so that there was no break in the violence. Due to these factors, the two levels were deemed to be similar enough to be used for comparison in this study, although they appeared in separate games.

The non-violent control game was *Need for Speed: Undercover* (NFS; EA Black Box, 2008). The level in particular was a sprint race, where the player has to race a car against seven rivals. The participants were asked not to drive aggressively to discourage aggressive driving. The rivals are non-player controlled and were set not to drive aggressively. The race was conducted on a closed-circuit track to eliminate any forms of violence against other road users. All the games were played on an Xbox 360, using a seventeen inch television.

Word Completion Task

The word completion task (Anderson, Carnagey, & Eubanks, 2003) is a list of ninety-eight words which have one or more letters missing. The participants must try to fill in the missing letters to form words. The missing letters are strategic, so that each word fragment can make more than one word. For example, one word is "ki_ _", can be filled as "kill" or "kiss". Participants were given four minutes to fill as many of the blank words to make whole words. In total, forty-nine of the ninety-eight words can be turned into an aggressive word. The measure is calculated by taking the total number of aggressive words written by a participant and dividing that number by the total number of words which were filled out. This yields an "accessibility of aggressive thoughts score". Past research indicates that the accessibility of aggressive thoughts relates to aggression (Moss, 2016). Words that coincide with aggressive actions, such as "punch", are likely to be accessible when an individual is inclined to act aggressively. The Word Completion Task is also in line with past research measuring aggressive responses after violent video game play (Gunter, 2016).

State Hostility Scale

The State Hostility Scale (Anderson, Deuser & DeVeve, 1995) is a self-report measure that contains thirty-five sentences that describe current mood and feelings. These can be either hostile or friendly. The friendly sentences are reverse scored. An example of a sentence is "I feel as if I'm about to explode". Participants were asked to rate each sentence on

a five point Likert scale, with one representing "strongly disagree" and five representing "strongly agree". This yields a "hostility score".

The Dirty Dozen

The DT score was measured using "The Dirty Dozen" scale (Jonason & Webster, 2010). This is a twelve item scale, which is answered using a seven-point Likert scale, with one representing "strongly disagree" and seven representing "strongly agree". An example of a question is "I tend to manipulate others to get my way". The questionnaire was distributed using SurveyMonkey, an online questionnaire making tool.

Ethical Issues

Participants were instructed that they would be asked to play VVGs, and were warned that some of the content could be distressing. All games were rated for adults over eighteen, so it was ensured that all participants were over that age. Participants were also warned that a small percentage of people can suffer from photosensitive epileptic seizures from visual images, flashing lights, and patterns that appear within video games. Participants were instructed of the symptoms and measures were taken to reduce the risk of seizures. No one suffering from or with a history of epilepsy in the family was permitted to take part in the experiment.

Results

Word Completion Task

A two-way between groups ANOVA was conducted to explore the impact of video game and DT score on the accessibility of aggressive thoughts, as measured by the Word Completion Task. The mean Word Completion Task scores that were generated by each group were calculated to provide a visual representation of the results (Table 1).

The low scoring DT group had the lowest mean score, followed by the average scoring group and then finally the highest scoring group. *Need for Speed: Undercover* (NFS) had the smallest mean score, followed by the first-person shooter *Call of Duty: Modern Warfare 2* (COD), while the third-person shooter *Grand Theft Auto V* (GTA) had the highest mean.

Dark Triad Group	Video Game	Mean
Low	GTA	.22
	COD	.16
	NFS	.15
	Total	.17
Average	GTA	.23
	COD	.17
	NFS	.17
	Total	.19

High	GTA	.25	
	COD	.30	
	NFS	.22	
	Total	.26	
Total	GTA	.23	
	COD	.21	
	NFS	.18	
	Total	.21	

Table 1. Means Scores of Aggression as Measured by the Word Completion Task

The interaction effect between game played and DT group was not statistically significant, $F(4, 27) = 1.2$, $p = .33$ (Appendix A). There was a statistically significant main effect for DT group, $F(2, 27) = 7.84$, $p = <.05$. The effect size was small (partial eta squared $= .37$). Post- hoc comparisons using the Tukey HSD test indicated that the mean score for the high DT group ($M = .26$, $SD = .06$) was significantly different from both the average scoring ($M = .19$, $SD = .05$) and the low scoring ($M = .17$, $SD = .06$) DT groups. The average and low scoring groups did not differ significantly from one another. The main effect for game played $F(2, 27) = 2.8$, $p = 0.77$, did not meet statistical significance.

The data file was split to investigate sex differences, but no interaction or main effects reached significance. In all three of the DT groups, males had higher aggression mean scores than females. Males also had higher mean scores than females for every video game played.

Discussion

The current study had three aims. The first aim was to investigate if VVGs increase aggression more than non-violent games. The second aim was to investigate if different camera styles (first or third-person) in games had an effect on aggression. The third was to investigate if personality (as measured by the DT) would influence aggression. The current study found that VVGs did not increase aggression, and by default, did not raise aggression more than non-violent games. The camera styles of the video games had no effect on aggression. A significant main effect was found for the video game that participants played, but subsequent post-hoc tests indicated that the different video games did not differ from one another.

The major finding of the current study was that personality had an influence on aggression. The high scoring DT group had a much higher aggression score than the other participants. Statistical analysis revealed that individuals with high DT scores were significantly different to the low and average DT groups when measuring aggression with the Word Completion task. It appears that individuals that had high levels of DT traits (psychopathy, narcissism and machiavellianism) had higher

baseline levels of aggression. These high levels were not evident when the State Hostility Scale was used to measure aggression, as the high scoring DT group had less aggression than both the low and average groups after playing video games. These findings contrasted each other, as the high scoring DT group had both the highest and the lowest aggression response depending on the measure that was used.

The main difference between the two measures is that the State Hostility Scale is subjective. Participants are asked to carefully consider how they feel and then respond accordingly, while the Word Completion Task is an objective measure. Individuals who score highly on the DT measure often use aggression to obtain what they want in life, to the point where they have reductions in their emotional reactions to violence (Paulhus & Williams, 2002). The regular use of aggressive tactics creates a desensitisation effect, which is where cognitive responses to stimuli are eliminated (Funk et al., 2004). It is possible that a desensitisation effect occurred in the high scoring DT group in the present study, as the lack of an emotional response to violence would explain the incongruence between the two measures. Furthermore, people high in DT traits find it difficult to express their emotions due to a lack of empathy (Hastings, Tangney & Stuewig, 2008). This could explain the low aggression scores measured by the subjective State Hostility Scale in the current study. The present study theorises that the Word Completion Task effectively measured the aggression responses of high scoring Dark Triads, as it did not require them to be cognitively aware of their emotions.

The finding that VVGs do not increase aggression contrasts many of sources reviewed in the literature. One possible interpretation for this finding is that VVGs have become a scapegoat for violence due to the limited resources that are available to properly investigate how to reduce aggression in society (Ferguson, as cited in Vincent, 2014). The danger in incorrectly focusing on VVGs is that it can shift attention away from more important risk factors for aggression such as poverty, education, and mental health (Ferguson, as cited in Vincent, 2014). Other factors that would be more worthy of investigation in VVG research could be the amount of time individuals spend playing VVGs, an individual's environment, and, as the current study has demonstrated, the personality of the individual.

When interpreting the findings of the current study and its disparity to many of the sources reviewed in the literature, it is important to consider the methods used in VVG research, as many of the measures used for aggression do not translate into real-world violence. An increase in measures of accessibility of aggressive thoughts or hostility levels, such as the ones used in the current study, do not necessarily indicate that a person will act out aggressively. Meta-analyses are then skewed by the limitations of the research methods in the studies they analyse. Researchers also face publication biases, where failure to

create a headline by confirming a link between VVGs and aggression results in work being unpublished. This creates an incentive to skew data so that it conforms to the consensus (Ferguson, 2007, Ferguson, 2010).

Limitations

Thirty-six participants took part in the current study, which is a relatively small sample size. A larger sample could have provided a more reliable effect. The small sample size is important to note when considering the dissimilar results of the current study compared to many of the sources in the literature. As a result of the small sample size and simple statistical analyses in the present study, its findings should not be interpreted as equal to larger scale research studies on the topic of VVGs. All of the participants in the present experiment were healthy college students. Research conducted on people who commit violent crimes would be much more valuable than college students, as the construct of interest (aggressiveness) would be relatively lower in college students in comparison to perpetrators of violent crimes. The current study tested if the use of VVGs predicts aggression, but it could also be the case that aggressive people seek out VVGs. This confounding factor known as the selection hypothesis was uncontrolled for in the current study. Research on aggression should also always take the effects of the "third variable" into account (Ferguson, 2007). While all participants were from a college population, this study could not hope to control for all the possible biological, social and family influences on aggressive behaviour. Another uncontrolled variable is the difference between the two VVGs used in the present study. Finally, a criticism of the measures of aggressive thoughts and hostility like the ones used in the current experiment is that they do not translate directly into aggressive behaviour (Ferguson, 2007). Due to these various limitations, the current study should not be interpreted as equal to the contributions of larger scale research studies on the topic of VVGs.

Future Study

A replication study with a larger sample size is a possible area of future study. While the two violent games chosen in the study were deemed similar enough to compare, future studies could use the same game in different camera modes to avoid any confounding effects. The non-violent game *Need for Speed: Undercover* (NFS) in this study had the potential to be played aggressively, which could be avoided in future studies by choosing games with no aggressive content whatsoever. Special attention should be given to individuals high on DT traits, especially in future research concerning aggression. The impact of the amount of time spent playing VVGs could also be investigated. The role of personality and environment in aggression is a logical sequential area of interest arising from the findings of the current study. In future studies aggression could be measured in a manner that more accurately predicts real-world application of aggression, as opposed to an

accessibility to aggressive thoughts. Potential measures could include the dispensation of aversive stimuli or self-report measures (Moss, 2016).

Conclusion

To summarise the findings of the study, VVGs were found not to significantly increase aggression more than non-violent games. Video game camera style was not found to have an effect on aggression. People with high DT scores had more aggression, but this was unrelated to video games. These findings would suggest that VVGs do not cause increases in aggression after gameplay. However, these findings must be taken in the context of the limitations in the current study that were previously outlined. This study should be seen to provide avenues for future study and discourse on the topic of VVGs. One interesting finding that could merit further investigation is that an individual's personality is more indicative of aggression than VVGs. Individuals with the traits highlighted in this study could be the focus of other similar small-scale research projects interested in examining the influence of psychological factors on the VVG debate.

To conclude, the purpose of this research was to use findings from the field of psychology to try to theorise, test, and explore psychological concepts that are of interest to the discipline of game studies. To that end, the study succeeded by highlighting areas of interest for future research in the game studies field.

Acknowledgements

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Appendix A

Appendix A. ANOVA for Video Game and Dark Triad

Source	df	F	Sig	Partial Eta Squared
DT	2	7.844	.002*	.368
Game	2	2.829	.077	.173
DT * Game	4	1.215	.328	.153
Error	27			