

The Effect of Video Games on Moral Decision Making: Empathy as a Moderator

Marissa Tan Hui Yen

*Department of Psychology
HELP University*

Corresponding e-mail: [marissatan1129@gmail.com]

Past research indicates that video game playing can increase aggressive behaviours. Recent studies, however, show that video games can also lead to positive outcomes. Limited studies, however, show how video games affects moral decision making – and whether empathy moderates this relationship. This study investigates whether empathy moderates the relationship between video gaming and moral decision making. An online laboratory experiment was conducted with 100 participants who played a video game and then answered questionnaires assessing empathy and moral decision-making. Results indicate that video games did not influence altruistic moral decision making, $b = -.03$ $p = .460$. This relationship was also not moderated by empathy. The main effect of playing video games on altruistic moral decision making was also not significant, $b = -.03$ $p = .119$. Results suggest a more complex interplay between different forms of empathy, namely emotional and cognitive empathy, that were not assessed in the current study. Moral licensing may have also influenced the results given its interaction with moral decision making. As such, doing one altruistic task should lead to an egoistic task later on, creating an endless cycle of altruism and egoism. Further research into empathy and moral licensing in moral decision making research is recommended in light of the current results.

Keywords: video games, empathy, moral decision making, altruism, moral licensing

There has been an increase in video game consumption, more so during the COVID-19 pandemic (Zhu, 2020). This is because video games do not only act as a form of escapism with no real-world consequences, but it also acts as a social lifeline in times of lockdown (Zhu, 2020). Sales and increasing consumption of video games have also attracted interest in scholars, who examine the effects that video game consumption has on wellbeing. As such, this study would like to examine if video games are able to affect certain real-world behaviours.

Video Games

Video game researches have tended to focus on the negative repercussions it has on aggression and anti-social behaviours (Anderson et al., 2010; Mentzoni et al.,

2011; Gentile, Coyne, & Walsh, 2011). For example, there are many existing studies that focused on the effects of violent video games on one's empathy (Bartholomew, Sestir, & Davis, 2005; Bushman & Anderson, 2009; Gao, et al., 2017); they found that long-term exposure to video game violence can lead to desensitization.

Desensitization

Desensitization is a process that inhibits or limits one's ability to feel empathy (Scharrer, 2008), and it can affect one's empathy by making them desensitized from understanding another person's suffering (Funk, Baldacci, Pasold, & Baumgardner, 2004; Anderson et al., 2010). Lowered empathy levels then in turn can affect the extensiveness of player aggression towards meeting the game's goals, but this

aggression depended on the morality of characters (Gao, Weng, Zhou, & Yu, 2017).

Benefits of Video Games

Despite findings of negative effects, there have been studies that showed that there can be benefits from playing video games. Through playing action video games these benefits can include honing our visual acuity, attention flexibility, stimulus-response mapping, encoding speed and executive functioning (Peracchia, 2017). Moreover, emerging research suggest that playing video games that are prosocial can increase prosocial cognitions, helpful behaviours and empathy (Gentile, et al., 2009; Greitemeyer, Osswald, & Brauer, 2010; Prot, McDonald, Anderson, & Gentile, 2012). By playing prosocial video games, individuals were more predisposed to engage in prosocial behaviours than neutral video games (Greitemeyer et al., 2010). Empathy levels can also be increased by having cooperative team-play in both neutral and violent video games (Greitemeyer, 2013).

Video Game Effects on Decision-Making

One cognitive function which can be improved through video gaming is moral decision-making. Decision-making research shows that cognitive biases can adversely affect quality decision-making (Morewedge et al., 2015; Tversky & Kahneman, 1974). These errors can cloud judgement, and produce costly consequences (Tversky & Kahneman, 1974). However, some studies showed that video gaming can aid in the individuals detecting errors in their decision-making; thus, increasing the quality of decisions made.

Morewedge and colleagues (2015) found that using interactive games which provided players with feedback allowed them to be able to understand moments in which they committed a decision-making bias error. This was because the game would report back the errors that the players

committed, the game then provided them with opportunities to learn strategies to reduce bias errors (Morewedge et al., 2015); suggesting that playing such interactive games can enhance moral decision-making. The Morewedge and colleagues (2015) study showed that the interactive video game was more effective than the video because while the video watched only taught players how to avoid error biases in a specific scenario, the video game affected the user instead.

Effects of Empathy on Decision-Making, and Moral Decision Making

Empathy

Moral decision making is influenced by empathy. Empathy is the effort to identify with persons in fictitious or real-life situations (Leibetseder, Laireiter, & Köller, 2007). There are two types of empathy: cognitive empathy and emotional empathy, these types of empathy operate via distinct psychological and neurological processes (Shin & Ahn, 2013). As a result, they function differently from each other; differently albeit as a complementary system (Smith, 2006). Cognitive empathy is the mental perspective-taking, and it allows one to understand and predict the behavior of others such as their attributed mental states (Shin & Ahn, 2013). In contrast, emotional empathy is the spontaneous emotional reaction and/or the vicarious sharing of emotions to the experiences of other people (Davis, 1983; Rosen, Brand, & Kalbe, 2016). Emotional empathy is hypothesized to be the underpinning of moral development and may be one of the key mechanisms that inhibits violence (Hoffman, 1987).

Empathy and Morality/Moral Judgement

Morality comprises various norms regarding how an individual should treat another, these includes concepts such as justice, fairness, and rights (Decety & Cowell, 2014). Neuroscience research indicates that the brain regions underpinning morality shares resources

with circuits controlling emotional saliency, mental state understanding, and decision-making (Decety & Cowell, 2014).

Individuals who are more likely to make utilitarian decisions were associated with lowered activations in the ventromedial prefrontal cortex, which is also associated with lowered levels of empathic concern (Gleichgerrcht & Young, 2013). Whereas those with a deontological approach are less likely to sacrifice one to save others (Ellithorpe, Cruz, Velez, Ewoldsen, & Bogert, 2015).

Empathy and Moral Decision-Making

While research suggested that emotion and cognitive control modulates the efficacy of decision-making (Peracchia, 2017), it is different for moral decision-making. There is a relative increase in activation of several individual parts of the default mode network when individuals were faced with situations which required moral decision making as compared to non-moral decision making (Reniers, et al., 2012).

Emotional empathy was found to be significant in the process of altruistic moral decision making as it fully mediated the relationship of age and sex effects on moral decision making (Rosen et al., 2016). (Executive) reasoning did not mediate age and sex on altruistic moral decision making (Rosen et al., 2016); therefore, for the present study, participants' demographic information will be collected to exclude its influence on video game playing on moral decision making. Studies have not found a relationship between cognitive empathy on moral decision making despite its theoretical relevance (Rosen et al., 2016). However, it was noted that cognitive empathy is a multidimensional construct and could have a non-linear relationship between empathy and moral decision making (Rosen et al., 2016). In summary, Rosen and colleagues' (2016) study that emotional empathy is important in moral decision making and that cognitive

empathy's role in moral decision making requires further examination to understand its importance.

Moral Licensing

Moral licensing is a process of psychological bargaining whereby an individual who acts in a morally or socially acceptable way may later behave in the opposite way (Ellithorpe, et al., 2015). Moral licensing also stated that there is a certain moral quota that an individual must meet to fulfill their moral quota. The concept of moral licensing suggested that having higher scores of emotional empathy would predict more altruistic moral decision making.

A study to investigate if identity simulation and moral licensing via a video game would predict the real-world behaviours found that individuals who had chosen a deontological approach in a video game would then later perform less altruistic moral decisions in the subsequent real-world task (Ellithorpe et al., 2015); whereas choosing a utilitarian approach subsequently resulted in altruistic moral decision making (Ellithorpe et al., 2015). This constant cycle then continues between altruistic and egoistic behaviour task (Ellithorpe et al., 2015). Despite past studies suggesting both empathy and moral licensing as integral for predicting moral behaviour, currently there are no studies which examines the relationship between empathy and moral licensing in moral decision making.

Possible Effects of Video Gaming on Moral Decision Making

A past study has shown that it is possible for video games to influence moral decision making (Ellithorpe, et al., 2015); however, there has only been limited studies on this topic. In game behaviours, carried out by players can be internalized through a process called identity simulation. Identity simulation is the process whereby a game player embraces the playable character's decisions as their own, thus internalizing

the experiences of change in self-concept, attitudes, emotions, and behaviours even through different characters (Ellithorpe, et al., 2015). The effects of identity simulation can carry over outside of virtual reality which could influence a player's self-perception and morality, which could in turn impact real moral behaviours (Ellithorpe et al., 2015).

Holl and colleagues (2020) found that having high interactivity in a game played an important role for players to be truly affected by a video game. By having higher amounts of freedom, it allowed individual personality to play a more important role, this made moral transgressions harder for their participants to execute (Holl, Bernard, & Melzer, 2020). For example, a participant in their study found that moral transgressions (i.e., cannibalism) would be more tolerable in non-interactive cutscenes, but not in an interactive sequence where they themselves had to execute the moral transgressions (Holl, Bernard, & Melzer, 2020).

Their participants noted that greater freedom in making decisions (higher number of options available) lead to more enjoyment, was more likely to trigger moral reflection and higher emotional engagement (Holl, Bernard, & Melzer, 2020). Holl and colleagues' (2020) study also discussed reversibility of actions taken in a video game. Participants in their study believed that the restrictions of savegame mechanisms (the ability to reverse actions by saving the game at a certain point in time and loading the data, continuing from the save point), lead to a greater increase in realism and player involvement (Holl, Bernard, & Melzer, 2020).

Identity Simulation and Identification

Moral decision making could be influenced by playing video games via the process of identity simulation, the internalization of the player character's traits and attitudes can result in changes in self-concept, attitudes, emotions, and behaviours

(Ellithorpe, et al., 2015). Although, individuals could internalize the player characters' traits and attitudes, identification with the playable character is also important. Pohl (2008) suggested that video games vary from traditional media. In movies or television shows, the story is often told through the "eyes" of the narrator or protagonist (Pohl, 2008). It is through this, that individuals experience the story written by the writers of the show, individuals feel empathy for the protagonist or the narrator (Pohl, 2008). However, Pohl (2008) argued that video games "tell" their story differently in the sense that players do not feel empathy for the playable character in the game because the players experience the story. By controlling the player character, individuals would also identify with them, thus internalizing their traits and attitudes. Heron and Belford's (2014) argue that immersion and engagement are pre-requisites for individuals to be truly influenced by video games.

Focus of the Present Study

Based on past literature, research on the effects of video games on moral decision making is scarce; the aim of this study is to investigate the effects of video gaming on moral decision-making moderated by empathy. Smith (2006) hypothesized that emotional empathy and cognitive empathy are separable but complementary systems. Despite being able to have differing levels of emotional and cognitive empathy, components of empathy are often coactivated rather than individually (Weisz & Cikara, 2021), as such emotional empathy and cognitive empathy will be treated as a whole (empathy). Thus, this study investigates how empathy moderates the relationship between playing video games and moral decision making.

This study would answer the central question, which is: Does empathy moderate the relationship between video gaming and moral decision making?

Method

Participants

102 participants were recruited for the study. However, 2 sets of responses were excluded due to participants being unable to complete the game (N = 100). The initial sample size of 79 was determined via G*Power with 0.08 of effect size, 0.80 power and 0.05 alpha level. However, due to an oversight of recruiting for a control group, an additional 21 participants were recruited. Participants recruited were all students from a private university. Participants were recruited via haphazard sampling through voluntary participation. Participants received extra credit of 0.5%, for the course subject of their choice, for participating in the researcher's study. The participation criteria of this study were that participants had to be within the age of 18-years-old to 40-years-old, be enrolled in a private undergraduate university. They must not regularly play video games, indicated by the self-reporting of not playing video games regularly on the Google form; and they have to be all right with viewing violent elements in a video game. This is done so that the effects of long-term video game exposure potentially leading to desensitization may not affect the data collected. The study also sampled non-frequent gamers to limit the effects of skill or familiarity with games in potentially confounding the outcome variables.

Instruments

The materials utilized in this study was a consent form, a demographic form, the E-Scale, the Everyday Moral Decision Making Task (EMDM), a computer or laptop to play the game, the demo of the game Detroit Become Human, a phone so that participants can set a timer to play Detroit Become Human, and a Google form to collect participants' responses.

Video Games

Detroit Become Human was selected as the video game that participants will be playing in the manipulated group. The demo of the game Detroit Become Human was used as the game is free and has a relatively short amount of play time, averaging at 25 minutes to complete the demo. In Detroit Become Human, the game begins with a lady pleading with a man (the playable character) to help save her daughter. However, she soon stops upon realizing that the man she is pleading with is an android, she then screams for an actual human being to save her daughter instead as she is taken away from the scene. From there, the player is then tasked to gather information around a crime scene then attempt a hostage negotiation, in which the perpetrator is also an android.

Detroit Become Human possesses the qualities that is required for players to feel morally engaged as its gameplay contains features whereby every decision one makes, will have its own set of consequences (Quantic Dream, 2018). Once a decision is made, players will be unable to reverse the actions by simply loading up a save point; but rather, must live on with decisions made by the player; differing to other games where decisions do not affect the story. On the other hand, players in the control group will be playing a neutral game called Solitaire.

Age and Sex

Age is one's chronological age since birth (Symons, 2011), whereas its operational definition is the number of years that the participant has been alive for, as reported on the demographic form. Sex refers to a person's biological and physiological characteristics (Matthews, Blosnich, Farmer, & Adams, 2014). Both covariates were recorded with the demographic form. The demographic form required participants to fill in their sex and age. This

will be used to control the effect of age and sex on the moderator.

Empathy

Empathy is the effort to identify with persons in fictitious or real-life situations (Leibetseder, Laireiter, & Köller, 2007), operationally defined as the total average score of 25 items on the E-Scale (Leibetseder, Laireiter, & Köller, 2007), in which total higher score of these items indicate higher levels of empathy. The E-Scale consists of 25 items. The E-Scale is a 5-point Likert scale which required participants to answer how true the item is to them after playing Detroit Become Human. An example of the items is "Seeing people crying disconcerts me" to which participants would have to select from a 1 "Not like me at all" to a 5 "Very much like me". The E-scale measures 2 components of empathy, emotional empathy and cognitive empathy, as well as its sub-components emotional sensitivity ($r = .89$, $\alpha = .82$) and emotional concern ($r = .76$, $\alpha = .73$) for emotional empathy; cognitive sensitivity ($r = .89$, $\alpha = .84$) and cognitive concern ($r = .82$, $\alpha = .68$) for cognitive empathy. The higher the total average score indicates higher levels of empathy. Validity assessments of the E-Scale found the structure of the E-Scale was stable and replicable (Tran, Laireiter, Schmitt, Neuner, & Leibetseder, 2013).

Altruistic Moral Decision Making

The outcome, altruistic moral decision making, was conceptually defined as a conscious decision-making process that involves the evaluation of actions that considers the norms and values established in a social environment, resulting in an altruistic decision made (Starcke, Polzer, Wolf, & Brand, 2011); while the operational definition is the total average score on 20 items on the Everyday Moral Decision Making Task (EMDM), in which a higher score indicates higher levels of

altruistic moral decision making. In order to measure participants' altruistic moral decision, the modified Everyday Moral Decision Making Task (EMDM) was utilized (Starcke, Polzer, Wolf, & Brand, 2011); the original EMDM created by Stock (1987) consisted of 40 items. Reasons for choosing the modified version was that it comprised of items that are likely to occur in everyday life. Moreover, the EMDM's test-retest reliability shows that scores are relatively stable ($r = .89$). Additionally, the aim of this study would like to see if the effects of playing video games would carry over to everyday life. The EMDM consists of 20 items which required participants to answer "Yes" or "No" to the items, offering both egoistic and altruistic decisions. The EMDM has been used to assess moral decision making and has been used in previous studies (see Rosen, Brand, & Kalbe, 2016; Starcke, Polzer, Wolf, & Brand, 2011).

Results

Table 1

Correlation of Predictors

Variable	1	2	3	4	5
Age					
Sex	.086				
Condition	.173	.022			
Empathy	.014	.170	-.055		
Altruistic Moral Decision Making	-.198	.173	.140	-.116	

* $p < .05$, ** $p < .01$, *** $p < .001$

Before the calculation of scores, a multiple linear regressions test was carried out to check for outliers. The test utilized were Mahalanobis distance with the degrees of freedom at four, which followed the Chi-square value of 18.47 (at $\alpha = .001$); Cooks distance at .0421 and Leverage values at 0.1. Based on this, a total of 11 responses were removed. Then, the total average scores for empathy and altruistic moral decision making were calculated via SPSS. The predictor and moderator were also centered prior to calculation. Based on a histogram of residuals plotted against altruistic moral decision making and a P-P plot of regression standardized residuals, the assumption of normality can be assumed.

Inferential Statistics

This study's aim was to investigate whether empathy moderates the relationship between playing video games and altruistic moral decision making. As this study was a laboratory/survey-based research design, a control group was utilized in this study. Additionally, since the predictor was categorical, participants in the control

group were dummy coded as "0" while the participants in the manipulated group were dummy coded as "1".

Correlations between variables were also examined using Pearson's r (See Table 1); it is noted that playing video games and empathy show a non-significant positive relationship ($r = .06$, $p = .608$). Additionally, age and empathy were not found to have a strong relationship ($r = .01$, $p = .895$). There was no relationship between age and empathy ($r = .17$, $p = .111$). Moreover, age and altruistic moral decision making did not have a strong relationship ($r = -.20$, $p = .062$). There was no relationship between sex and moral decision making ($r = .17$, $p = .105$). The assumption of multicollinearity was met (Playing Video Games, Tolerance = .97, VIF = 1.04; Empathy, Tolerance = .97, VIF = 1.03; Age, Tolerance = .97, VIF = 1.04; Sex, Tolerance = .96, VIF = 1.04). Moreover, a scatterplot of residuals showed that the assumption of homoscedasticity can be assumed. The model summary to test for the assumption of independence of errors showed the assumption of the independence of errors was met (Durbin-Watson value = 1.78).

Table 2

Model Summary of Moderation Output

R	R-sq	MSE	F(HC4)	df1	df2	p
.362	.131	.005	2.631	5.000	83.000	.029

Note. Moderation output was calculated with Hayes' PROCESS macro for R via SPSS

The overall model (See Table 2) including playing video games, empathy, altruistic moral decision making, age and sex as the covariates, and the interaction term between playing video games and empathy significantly predicted altruistic moral decision making, $R^2 = .13$, $F(5, 83) = 2.63$, $p = .029$. The model summary shows that it was only able to account for 13% of variance in the regression model.

However, individually analyzing the predictors and the interaction effect (See Table 3) shows something different. Playing video games did not significantly predict altruistic moral decision making $b = -.03$, 95% CI [-.058, .007], $t(83) = -1.57$, $p = .119$. Empathy also did not significantly predict altruistic moral decision making $b = -.03$, 95% CI [-.058, .007], $t(83) = -1.57$, $p = .119$. Empathy also did not significantly predict altruistic moral decision making $b = -.03$, 95% CI [-.068, .012], $t(83) = -1.40$, $p = .168$. The interaction effect between playing video games and empathy was also found to have not significantly predicted altruistic moral decision making $b = -.03$, $t(83) = -.74$, $p = .460$, 95% CI [-.106, .048]. Rather, the covariates age $b = -.02$, $t(83) = -2.43$, $p = .017$, 95% CI [-.031, -.003] and sex $b = .048$, $t(83) = 2.59$, $p = .011$, 95% CI [.011, .085] was found to have significantly predicted the relationship instead.

Based on past research, post hoc tests were run, using emotional empathy and cognitive empathy as moderators in their respective analyses; age and sex were kept as covariates. In the model where emotional empathy was selected as the moderator, the overall model significantly predicted altruistic moral decision making, $R^2 = .11$, $F(5, 83) = 2.32$, $p = .051$. The model summary shows that it was only able to account for 10% of variance in the regression model. The interaction effect between playing video games and emotional empathy was found to have not significantly predicted altruistic moral decision making $b = .01$, $t(83) = .35$, $p = .730$, 95% CI [-.049, .069].

In the model where cognitive empathy was selected as the moderator, the overall model significantly predicted altruistic moral decision making, $R^2 = .11$, $F(5, 83) = 2.36$, $p = .047$. The model summary shows that it was only able to account for 10% of variance in the regression model. The interaction effect between playing video games and cognitive empathy was found to have not significantly predicted altruistic moral decision making $b = -.004$, $t(83) = -.15$, $p = .879$, 95% CI [-.060, .052].

The 42 participants who played Detroit Become Human ($M = .36$, $SD = .08$) and the 47 participants who played Solitaire ($M = .38$, $SD = .07$) did not show

Table 3

Model Parameters of Predictors on the Outcome, Altruistic Moral Decision Making

Variable	coeff	se(HC4)	t	p	LLCI	ULCI
constant	.642	.147	4.371	.0000	.3497	.9337
Condition	-.027	.016	-1.575	.1191	-.0578	.0067
Empathy	-.028	.020	-1.390	.1683	-.0675	.0120
Interaction	-.029	.039	-.743	.460	-.1059	.0483
Age	-.017	.007	-2.433	.017	-.0313	-.0031
Sex	.048	.019	2.587	.011	.0112	.0854

Note. Moderation output calculated with Hayes' PROCESS macro for R via SPSS.

a significant difference in altruistic moral decision making, $t(87) = -1.32, p = .190$.

Results of PROCESS Model 1 indicated that empathy does not significantly moderate the effect of playing video games on altruistic moral decision making, $b = -.03, t(83) = -.74, p = .460$, as the significance of the p value was attributed to the covariates.

Summary of results

The hypothesis of this study was that individual playing the video game Detroit Become Human will show greater altruistic moral decision making when empathy is high, than when it is low. However, based on the results, the hypothesis was not supported as the PROCESS Model 1 showed that the effect of video games on altruistic moral decision making was not significantly moderated by empathy, $b = -.03, t(83) = -.74, p = .4596, 95\% \text{ CI } [-.106, .048]$. Thus, the hypothesis was rejected.

Discussion

Interpretation of results

The results showed that empathy does not significantly moderate the relationship between playing video games and altruistic moral decision making. This could suggest that empathy does not influence the relationship of playing video games and altruistic moral decision making.

Emotional Empathy and Cognitive Empathy

Past studies suggested that emotional empathy considerably contributes to moral decision making by serving as a form of motivation for altruistic behaviours (Rosen et al., 2016). While other studies focusing on cognitive empathy suggested that cognitive empathy being relevant to moral decision making and facilitating egoistic moral decision making (Adolphs, 2001; Press & Dyson, 2012). Despite the results of the post hoc tests indicated that both emotional empathy and cognitive empathy being non-significant moderators of altruistic moral decision making, the coefficients of emotional and cognitive empathy differ from each other. The coefficient values of emotional empathy as a predictor showed a positive relationship with altruistic moral decision making, whereas cognitive empathy as a predictor had a negative relationship with altruistic moral decision making, thereby being consistent with the past studies mentioned above.

Literature suggested that the relationship of playing video games on altruistic moral decision making, with empathy as a moderator, should have predicted a positive correlation. Players that have high trait empathy tend to feel guilty when engaging in unjustified acts of violence in video games (Hartmann, Toz, & Brandon, 2010); this should result in players making more altruistic moral decisions. However, given the complex nature of empathy, other

possible influencing factors such as having high/low emotional and cognitive empathy could have influenced the relationship between playing video games and moral decision making. As mentioned above, emotional empathy motivates altruistic behaviours whereas cognitive empathy motivates egoistic behaviours. Thus, individuals with high cognitive empathy but low emotional empathy are more likely to engage in competitive, Machiavellian, and agonistic behaviour (Smith, 2006); while individuals with high emotional empathy and low cognitive empathy are more likely to engage helpful behaviours and more likely to have inhibitions of violence (Smith, 2006).

Moral Licensing

However, moral licensing may contradict the prediction patterns that empathy should have. The concept of moral licensing would contradict some of the past studies mentioned above which suggested that having higher scores of emotional empathy would predict more altruistic moral decision making. Following the theory of moral licensing, participants who had gotten a good ending in the demo should then later on make less altruistic moral decision making.

Identity Simulation and Identification

It is possible that participants in this study did not identify with the characters of Detroit Become Human. This could be due to the way that players are introduced into the game. Participants would walk out of an elevator then proceed to investigate a crime scene, then proceed to negotiating a hostage situation, all the while figuring out the existence of androids along with the player character being an android himself. Participants would not know much regarding the player character, the hostage or even the captor, thus participants would not empathize with the characters in Detroit Become Human.

Limitations and improvements

As stated above, one of the limitations of the study was that the ending achieved by participants was not recorded. In future studies, researchers should consider the possibility of the type of ending achieved when examining the effects of playing video games on altruistic moral decision making with empathy as a moderator.

This study only studied the short-term effects of playing video game. The participants had only played the demo of Detroit Become Human, rather than its entirety. Future researchers should consider selecting a game that is longer, while ensuring that the game selected has high interactivity with limited reversibility, for participants to identify more with the playable character.

Moreover, it is crucial that empathy be examined as components rather than a whole. As empathy is a complex multidimensional construct, it could be examined as, for example, perspective-taking, empathic concern, emotional sharing, and other components. This should allow future researchers to get a more in depth look into the effects of playing video games on altruistic moral decision making with empathy as a moderator.

Implications and Applications

Implications of this study suggested that empathy does not influence the effect of playing video games on altruistic moral decision making. Given the results of the present study, it might be useful for future research to examine other factors that might moderate the relationship between video gaming and moral decision-making; rather it could be a moderation in conjunction with other variables such as moral licensing. Moreover, there could be research to examine if there is a relationship between moral licensing and empathy in moral decision making.

Conclusion

This study was conducted to investigate the effects of playing video games on altruistic moral decision making with empathy as a moderator. Findings showed that empathy was not a significant moderator for the effects of playing video games on altruistic moral decision making.

Acknowledgement

There is no acknowledgement of funding involved.

References

- Adolphs, R. (2001). The neurobiology of social cognition. *Curr. Opin. Neurobiol.*, *11*, 231-239. doi:10.1016/s0959-4388(00)00202-6
- Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., . . . Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: a meta-analytic review. *Psychological Bulletin*, *136*, 151-173. doi:10.1037/a0018251
- Bartholomew, B. D., Sestir, M. A., & Davis, E. B. (2005). Correlates and consequences of exposure to video game violence: Hostile personality, empathy, and aggressive behavior. *Psychological Bulletin*, *31*, 1573-1586.
- Bushman, B. J., & Anderson, C. A. (2009, March). Comfortably Numb: Desensitizing Effects of Violent Media on Helping Others. *Psychological Science*, *20*(3), 273-277. doi:10.1111/j.1467-9280.2009.02287.x
- Davis, M. H. (1983). Measuring individual differences in empathy: evidence. *Journal of Personality and Social Psychology*, *44*(1), 113-126. doi:10.1037/0022-3514.44.1.113
- Decety, J., & Cowell, J. M. (2014). The complex relation between morality and empathy. *Trends in Cognitive Science*, *18*(7), 337-339. doi:http://dx.doi.org/10.1016/j.tics.2014.04.008
- Ellithorpe, M. E., Cruz, C., Velez, J. A., Ewoldsen, D. R., & Bogert, A. K. (2015). Moral License in Video Games: When Being Right Can Mean Doing Wrong. *Cyberpsychology, Behavior, and Social Networking*, *18*(4), 203-207. doi:10.1089/cyber.2014.0599
- Funk, J. B., Baldacci, H. B., Pasold, T., & Baumgardner, J. (2004). Violence exposure in real-life, video games, television, movies, and the internet: is there desensitization? *Journal of Adolescence*, *27*, 23-29. doi:10.1016/j.adolescence.2003.10.005
- Gao, X., Pan, W., Li, C., Weng, L., Yao, M., & Chen, A. (2017). Long-Time Exposure to Violent Video Games Does Not Show Desensitization on Empathy for Pain: An fMRI Study. *Front. Psychol.* doi:https://doi.org/10.3389/fpsyg.2017.00650
- Gao, X., Weng, L., Zhou, Y., & Yu, H. (2017). The Influence of Empathy and Morality of Violent Video Game Characters on Gamers' Aggression. *Front. Psychol.* doi:10.3389/fpsyg.2017.01863
- Gentile, D. A., A., A. C., Yukawa, S., Ihori, N., Saleem, M., Ming, L. K., & al., e. (2009). The effects of prosocial video games on prosocial behaviors: International evidence from correlational, longitudinal, and experimental studies. *Pers Soc Psychol Bull*, *35*, 752-763.
- Gentile, D. A., Coyne, S. M., & Walsh, D. A. (2011). Media violence, physical aggression and relational

- aggression in school age children: A short-term longitudinal study. *Aggressive Behavior*, 37(2), 193-206. doi:10.1002/ab.20380
- Gleichgerricht, E., & Young, L. (2013). Low levels of empathic concern predict utilitarian moral judgment. *PLoS ONE*, 8(4). doi:10.1371/journal.pone.0060418
- Greitemeyer, T. (2013). Playing Video Games Cooperatively Increases Empathic Concern. *Social Psychology*, 44, 408-413. doi:https://doi.org/10.1027/1864-9335/a000154
- Greitemeyer, T., Osswald, S., & Brauer, M. (2010). Playing prosocial video games increases empathy and decreases schadenfreude. *Emotion*, 10(6), 796-802. doi:https://doi.org/10.1037/a0020194
- Hartmann, T., Toz, E., & Brandon, M. (2010). Just a game? Unjustified virtual violence produces guilt in empathetic players. *Media Psychology*, 339-363. doi:10.1007/978-3-662-08870-8
- Heron, M., & Belford, P. (2014). "It's only a game" — ethics, empathy and identification in game morality systems. *The Computer Games Journal*, 3(1), 34-53. doi:10.1007/bf03392356
- Hoffman, M. L. (1987). The contribution of empathy to justice and moral judgement. (N. Eisenberg, & J. Strayer, Eds.) *Empathy and its development*, 47-80.
- Holl, E., Bernard, S., & Melzer, A. (2020). Moral decision-making in video games: A focus group study on player perceptions. *Human Behaviour and Emerging Technologies*. doi:10.1002/hbe2.189
- Leibetseder, M., Laireiter, A.-R., & Köller, T. (2007). Structural analysis of the E-scale. *Personality and Individual Differences*, 42, 547-561.
- Matthews, D. D., Blosnich, J. R., Farmer, G. W., & Adams, B. J. (2014). Operational Definitions of Sexual Orientation and Estimates of Adolescent Health Risk Behaviors. *LGBT Health*, 1(1), 42-49. doi:https://doi.org/10.1089/lgbt.2013.0002
- Mentzoni, R. A., Brunborg, G. S., Molde, H., Myrseth, H., Skouverøe, K. J., Hetland, J., & Pallesen, S. (2011). Problematic video game use: Estimated prevalence and associations with mental and physical health. *Cyberpsychology, Behavior, and Social Networking*, 14(10), 591-596. doi:10.1089/cyber.2010.0260
- Morewedge, C. K., Yoon, H., Scopelliti, I., Symborski, C. W., Korris, J. H., & Kassam, K. S. (2015). Debiasing Decisions: Improved Decision Making With a Single Training Intervention. *Policy Insights from the Behavioral and Brain Sciences*, 2(1), 129-140. doi:10.1177/2372732215600886
- Peracchia, S. (2017). Exposure to Video Games and Decision Making. *Encyclopedia of Information Science and Technology, Fourth Edition*, 3296-3308. doi:10.4018/978-1-5225-2255-3.ch287
- Pohl, K. (2008). Ethical Reflection and Emotional Involvement in Computer Games. *Postdam: University Press 2008*, 092-107.
- Press, W. H., & Dyson, F. J. (2012). Iterated Prisoner's Dilemma contains strategies that dominate any evolutionary opponent. *Proc. Natl. Acad. Sci. U.S.A.*, 109, 10409-

10413.
doi:10.1073/pnas.1206569109
- Prot, S., McDonald, K. A., Anderson, C. A., & Gentile, D. A. (2012). Video Games: Good, Bad, or Other? *Pediatric Clinics of North America*, 59(3), 647-658.
doi:10.1016/j.pcl.2012.03.016
- Reniers, R. L., Corcoran, R., Völlm, B. A., Mashru, A., Howard, R., & Liddle, P. F. (2012). Moral decision-making, ToM, empathy and the default mode network. *Biological Psychology*, 90, 202-210.
doi:10.1016/j.biopsycho.2012.03.009
- Rosen, J. B., Brand, M., & Kalbe, E. (2016). Empathy Mediates the Effects of Age and Sex on Altruistic Moral Decision Making. *Frontiers in Behavioral Neuroscience*. doi:https://doi.org/10.3389/fnbeh.2016.00067
- Scharrer, E. (2008). Media exposure and sensitivity to violence in news reports: evidence of desensitization? *Journalism and Mass Communication Quarterly*, 85(2), 291-310.
- Shin, D.-H., & Ahn, D. (2013). Associations Between Game Use and Cognitive Empathy: A Cross-Generational Study. *Cyberpsychology, Behaviour, and Social Networking*, 16(8). doi:10.1089/cyber.2012.0639
- Smith, A. (2006). Cognitive empathy and emotional empathy in human behaviour and evolution. *The Psychological Record*, 56, 3-21.
- Starcke, K., Polzer, C., Wolf, O. T., & Brand, M. (2011). Does stress alter everyday moral decision-making? *Psychoneuroendocrinology*, 36, 210-219.
doi:10.1016/j.psyneuen.2010.07.010
- Stock, G. (1987). *The Book of Questions*. New York: Workman Publishing.
- Swing, E. L. (2012). Plugged in: The Effects of Electronic Media Use on Attention Problems, Cognitive Control, Visual Attention, and Aggression (Unpublished doctoral dissertation).
- Symons, D. K. (2011). Psychological Age. *Encyclopedia of Child Behavior and Development*. doi:https://doi.org/10.1007/978-0-387-79061-9_2298
- Tran, U. S., Laireiter, A.-R., Neuner, C., Schmitt, D. P., Leibetseder, M., Szent-Voracek, S. L., & Voracek, M. (2013). Factorial Structure and Convergent and Discriminant Validity of the E (Empathy) Scale. *Psychological Reports*, 113(2), 441-463.
doi:10.2466/03.02.pr0.113x20z9
- Tversky, A., & Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases. *Science*, 185(4157), 1124-1131.
doi:10.1126/science.185.4157.1124
- Weisz, E., & Cikara, M. (2021). Strategic Regulation of Empathy. *Trends in Cognitive Sciences*, 25(3), 213-227.
doi:https://doi.org/10.1016/j.tics.2020.12.002
- Zhu, L. (2020). The psychology behind video games during COVID-19 pandemic: A case study of Animal Crossing: New Horizons. *Hum Behav & Emerg Tech*, 1-3.
doi:https://doi.org/10.1002/hbe2.221