RATED "M" FOR MORAL: HOW VIOLENT GAMES INFLUENCE GUILT AND THE SUBSEQUENT EFFECTS ON MORALITY, PSYCHOLOGICAL NEEDS, AND PROSOCIAL BEHAVIOR

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ABSTRACT

Research investigating violent video games tends to focus on negative outcomes such as antisocial behavior and oftentimes ignores questions regarding whether these same violent video games contribute to prosocial behavior. Building on research by Olah (2023), the current study tests a model predicting conditions under which violent video game play can increase prosocial behavior. The model suggests that (1) playing a violent video game increases players' feelings of guilt, (2) an increase in guilt leads to an increase in approval of deontological moral thinking, and (3) this increased deontological moral thinking leads to an increase in prosocial behavior. Additionally, the model investigates the indirect relationship suggesting that basic psychological need satisfaction can mediate the influence of violent video game play on prosocial behavior. Finally, prior research tends to investigate the influence of violent video game play on moral judgments that are made within a video game, with little attention to game-play's influence on judgments made outside of a video game. The model tested in the current study attempts to address this oversight by measuring moral judgment made after game play with the moralization of everyday life scale. Participants were randomly assigned to one of two video game conditions, where they played versions of *Minecraft* that varied only whether the tasks performed by the player to advance through the game were violent or nonviolent acts. In one game version, participants could only kill villagers and livestock. In the other version, participants could only feed villagers and livestock. After playing, participants completed survey items measuring (1) guilt, (2) deontological moral thinking, (3) moral judgment, (4) basic psychological need satisfaction, (5) prosocial behavior, (6) moral self-image, and (7) perceptions of violence, justification, realism, graphicness, and enjoyment. Analyses indicated the violent condition predicted both increases in guilt and basic psychological need satisfaction. Additionally, higher

guilt scores predicted higher prosocial behavior. Implications of the model regarding the influence of playing violent video games on judgments outside of game play are discussed.

"I wumbo, you wumbo, he she me wumbo, wumbo, wumboing, we'll have thee wumbo, wumborama, wumbology, the study of wumbo? It's first grade, SpongeBob!"

Patrick Star, SpongeBob SquarePants

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INTRODUCTION

The video game industry is one of the largest entertainment markets in the world. According to the Entertainment Software Association (2022), in 2021 the United States spent a total of \$60.4 billion on video game content, hardware, and accessories. This total does not include the money spent on digital purchases such as those made on consoles or personal computers. Moreover, this total does not include the cost for electronic sports (esports) and marketing. In a different industrial vein, take for instance Twitch.tv, where those who enjoy video games can watch streamers play the newest release or a favorite video game. Moreover, viewers can watch streamers while either at work, relaxing at home, or simultaneously playing their own games on a separate screen or monitor. Twitch reported in 2021 that there are 2.5 million viewers on their platform at any given moment and the amount of time that users collectively spent watching totaled 1.3 trillion minutes (Twitch, 2021). Overall, the video gaming industry has made an impact on the entertainment industry during its rise in popularity.

The influx of video game consoles and gaming PCs making their way into many American homes over the past few decades has not come without public concern. New technologies tend to bring with them a rise in the fear of the outcomes associated with the technology's use. For example, researchers have pointed out *moral panic* surrounding games like *Mass Effect* for the brief nudity it contained, which news outlets blew out of proportion (Markey & Ferguson, 2017a). These researchers go on to say that moral panic associated with new technology is often fueled by a "Save the Children" mentality, which is typically not backed by any kind of scientific evidence. One type of moral panic seen linked to video games has to do with whether these games have an addictive component. Indeed, internet gaming disorder is one of the two only non-substance abuse disorders to be recognized by the DSM-5, where the other

disorder is gambling disorder. Notably, however, Przybylski et al. (2017) found that the prevalence rates of internet gaming disorder were considerably lower than the prevalence rates of gambling disorder, which can range between 1.0% for participants who are 18 years and older and 2.6% for young adults 18 to 24 years old. They found that 2.4% of participants across their studies met five or more criteria for internet gaming disorder, which is lower than previously reported prevalence rates of 3.1% (Ferguson et al., 2011). They then accounted for participants' reported distress levels stemming from their gaming behavior. With participants' reported distress accounted for, they found that across the United States, Germany, Canada, and the United Kingdom, prevalence rates of internet gaming disorder for young adults was 1%, and among all adults it was .05%. These researchers go on to say that "...Internet based games might be less dysregulating than gambling" (p. 235). Markey and Ferguson (2017b) followed up on this research stating that the low support for internet gaming disorder based on Przybylski et al.'s (2017) findings may indicate that internet gaming disorder does not exist. The authors make the argument that these kinds of moral panics may cause more harm than good. As a case in point, they note that though research surrounding internet gaming addiction disorder shows a lack of support, the public mostly still believes that video games are addictive.

Central to the current study is similar moral panic associated with concern that violent video games lead to aggression. Considerable published research has examined whether violent content contained within video games leads to aggressive and/or antisocial outcomes for those who regularly play video games. There is no question about this relationship; playing violent video games can cause aggression (Anderson, 2004; Anderson & Dill, 2000; Anderson et al., 2010, 2012). There are, however, several caveats to this relationship. For example, evidence suggests publication biases in favor of findings supporting claims that violent video games

predict aggression (Ferguson, 2018). Moreover, that effect sizes associated with this evidence are relatively small, even smaller than evidence of the relationship between violent television and aggression (Sherry, 2001). Additionally, not only does any evidence of aggressive outcomes after game play suggest that the effects are short lived, but evidence supporting longitudinal effects is lacking (Coyne et al., 2018).

Although there has been a great focus on violent video games' impact on aggression and other negative outcomes, there is not as much focus on the positive impacts of violent video games. Research on the positive outcomes of prosocial video games exists. Indeed, researchers have found prosocial video games related to increased prosocial thoughts (Greitemeyer & Osswald, 2011), prosocial behavior (Gentile et al., 2009; Greitemeyer & Osswald, 2010), and a decrease in aggressive cognition, affect, and behavior (Greitemeyer & Mügge, 2014). There is much less research, however, investigating potential positive outcomes of violent video games. Ferguson (2010) identified three areas where violent video games may be related to positive outcomes, such as visuospatial cognition, social involvement, and education. For example, a meta-analysis (Ferguson, 2007) on research examining the outcome of violent video games showed that game play was associated with increased visuospatial cognition. At the same time, however, this analysis showed no support for the relationship between violent video games and aggression.

Given the moral panic associated with video game play (Markey & Ferguson, 2017a), we might expect considerable research examining the impact of game play on *moral judgment* outcomes. Surprisingly, this research is greatly lacking. Some of the arguments made for why video games (violent or not) may influence our morality are mainly philosophical claims (e.g., McCormick 2001; Staines, 2010) without work testing related hypotheses. Studies that do

investigate moral judgment and/or morality in video games tend to study just that; moral judgments *in* video games (Ryan et al., 2020; Tamborini et al., 2018; Weaver & Lewis, 2012). In other words, few empirical studies specifically investigate the impact on participants' real-world moral judgments after engaging with a violent video game.

One notable exception to this is a recent study by Olah (2023) offering an initial attempt to examine the influence of violent games on moral judgment and prosocial outcomes. In effort to test the ability of violent video game play to influence deontological versus utilitarian moral thinking, Olah tested a model describing that violent games could increase deontological thinking, psychological need satisfaction, and prosocial behavior through game play's influence on negative affect outside of game play. Unfortunately, events halting data collection prior to its completion reduced the power needed to confidently test the model. Despite this, however, analyses on the curtailed sample clearly indicated the ability of violent games to increase feelings of player guilt, one component in the study's conception and measure of negative affect. Though the small sample size greatly hampered effort to examine the influence of guilt on other outcomes, it draws attention to questions regarding the potential for violent video game induced guilt to influence moral thinking and prosocial behavior. The current paper attempts to examine some of those questions.

In particular, the current study builds on the efforts of Olah (2023) to examine the potential that guilt produced by playing violent video games can have positive effects on players in everyday life (outside of game play). Specifically, it examines whether game-play induced guilt can increase deontological thinking, satisfy basic psychological needs, influence moral judgments, and promote prosocial behavior. Toward this end, a model examining the outcomes from potential increases in guilt after participants play a violent video game is developed and

tested. The model describes that participants who play a violent video game will experience increased levels of guilt. This increased guilt then increases deontological moral thinking. Subsequently, deontological moral thinking increases psychological need satisfaction, moral judgment, and prosocial behavior. The model also describes the influence of both violent video game play on psychological need satisfaction and prosocial behavior.

Figure 1.



Overall Model for the Current Study

Beginning here, violent video games are explored, explicated, and defined. Following this, guilt in relation to violent video games is explored. Next, moral judgment is defined through the three moral philosophical lenses of deontology, utilitarianism, and virtue ethics. Then, outcome variables such as prosocial behavior, basic psychological need satisfaction, and morality of everyday life are discussed. Finally, an experiment designed to test the proposed model is described in detail.

Violent Video Games

It is easy to understand why violent video games have received a negative reputation.

Many of the images portrayed in violent video games can oftentimes be worse than those portrayed on television and in movies. Popular series such as *Mortal Kombat*, *Grand Theft Auto*, *Fallout*, and *Resident Evil* to name a few contain overtly graphic images and scenarios in which main characters and enemies alike are killed in brutal fashions. Take for instance the *Mortal Kombat* series, which is a series of fighting games famous for its "fatalities" that players can perform after winning a match. A fatality is a combination of directional and button presses that players can perform to finish their opponent. The fatalities are typically gruesome displays of the winning character dismembering, beheading, disemboweling, burning, freezing, or any other combination of bodily harm being performed on the losing character. In games like *Fallout*, a first-person shooter role playing game where the player can zoom in on targets with their weapons and specifically target limbs to shoot. When successful and upon killing the enemy, limbs will often time fly off in an explosion of blood and gore.

For those who do not regularly play video games, it would be logical to assume that these kinds of images may have a negative influence on those who engage with them. For example, after the Uvalde school shooting, a poll conducted by CBS found that 37% of respondents blamed violent video games for the shooting (Keller, 2022). Typically, media outlets and policy makers tend to blow the negative outcomes associated with violent video games out of proportion, with most of the claims unsupported (Ferguson, 2007, 2008; Sherry, 2007). Indeed, violent video games are oftentimes the strawman in the wake of tragedy such as school shootings (Ferguson, 2008). Many of these unsubstantiated claims come from the idea that video games lead to desensitization and focus on overtly violent content for the sake of being violent. Interestingly, many of these media outlets and policy makers tend to focus solely on violent

video games and the potential negative outcomes but do not give coverage to video games that are much less violent but just as popular (e.g., *Animal Crossing, Super Mario*, etc.). This heavy focus on violent video games and their potential outcomes brings into question just how violent video games should be defined.

The definition of violence in general is aggression with extreme intent to harm, cause physical pain, or kill (Anderson & Bushman, 2002). Researchers have offered different definitions for violence depending on the medium wherein the violence is being portrayed. Regarding violence in television, the National Television Violence Study (Smith et al., 1998) defined televised violence as: Any overt depiction of a credible threat of physical force or the actual use of such force intended to physically harm an animate being or group of beings. Violence also included certain depictions of physically harmful consequences against an animate being/s that results from unseen violent means (p. 30). Regarding violence in video games, Hartmann (2011) suggested that the type of virtual violence perpetrated in video games could be defined as "any user behavior intended to do harm to perceived social agents who apparently try to avoid the harm-doing" (p. 34). Denham and Spokes (2019) made the distinction between violence in video games that is optional and violence that is necessary to continue in the game. That is, simulated violence occurs when violence is an optional part of the game, but not required for the game to progress. For example, a player may be given a quest where they have the option to kill all enemies in a compound to obtain an item or they can stealthily move throughout the compound, grab the item, and leave without harming anyone. On the other hand, in systematic violence, violence must occur to progress through the game. Some examples of this would be first-person shooter games wherein the story mode has players engage in violence to get through to the next level. The definition of video game violence used in the current study is any behavior

that is a direct cause of harm, regardless of whether the violence is systematic or simulated. As such, the outcomes would remain the same regardless of if the violence is either systematic or simulated. It is the *exposure* to violent behavior (mere presence or absence) that is important.

As indicated above, the belief that violent video games will ultimately lead to negative outcomes is popular in many circles. Indeed, there is a plethora of research on violent video games and concern about their potential negative effects. The largest of these concerns is aggression (Anderson & Bushman, 2001; Anderson & Dill, 2000; Anderson et al., 2010; Griffiths, 1999). There are, however, claims that violent video games do not lead to aggression (Sherry 2001, 2007) or that there are other variables that can better explain antisocial or prosocial behavior, such as whether a game has a competitive element (Adachi & Willoughby 2011a, 2011b, 2013, 2016). Conversely, it may be that violent video games have no effect on either (Dorantes-Argandar, 2021; Tear & Neilsen, 2013, 2014). While most research examines violent media's potential negative influence, limited recent research has begun to look at its potential positive effect. One study of interest investigated violent video games' impact specifically on prosocial behavior. Shoshani and Krauskopf (2021) investigated the impact of video game content (violent or nonviolent) on outcomes such as psychological need satisfaction and prosocial behavior.¹ They found that the relationship between violent video games and prosocial behavior was mediated by basic psychological need satisfaction. Aside from this research, however, the literature does not dive deeply into the potential positive outcomes of violent video games. The main purpose of the current study is to investigate potential positive outcomes of playing violent video games that might be explained through the mechanisms of guilt and

¹ Shoshani & Krauskopf (2021) additionally investigated how cooperative versus single-player game play influenced psychological need satisfaction and prosocial behavior; however, their examination of this variable is unrelated to the current study.

perceptions of morality. As such, it is important to understand these concepts.

Guilt and Violent Video Games

Emotions are nebulous and have been debated heavily within research. Nabi and Wright (2008) state that there are two competing views on emotions in communication research: the dimensional and the discrete. The dimensional view posits that emotions are motivational states that are comprised of valence and arousal. Emotions underneath the dimensional umbrella are fleeting, lend themselves to psychophysiological measures, and can be tracked across real-time communication processes (Bolls, 2010). Conversely, the discrete view posits emotions as states but places emphasis on the cognitive patterns that brings about those states. Indeed, Nabi (2010) states there are certain thought patterns about stimuli in one's environment that leads to an action tendency. These action tendencies then motivates one to a certain behavior. For example, one may be the cause of a transgression and may cognitively appraise that transgression. In turn, this will give way to the emotion of guilt and feelings of guilt would then cause motivation for one to atone for their transgression. Both perspectives are important to understanding emotion in communication and media research (Bolls, 2010) and can be thought of as unconscious (dimensional) and conscious (discrete) routes to study emotion. Within the current study, guilt is believed to be a discrete emotion where participants have time to think about their transgressions made within a video game environment.

Guilt is a complicated emotion. In health research, some have stated that guilt is a positive factor because it correlates negatively with depression by defining guilt as a catalyst to inducing atonement (Tangney, 1991; Tangney et al., 1992; Williams & Bybee, 1994). Therefore, when one atones because of feeling guilty, depressive symptoms are alleviated. Meanwhile, others have found that it correlated positively with depression after defining guilt as a reflection

of internal psychological pain (Harder, 1995; Kugler & Jones, 1992). That is, as psychological turmoil and pain increases so did depressive symptoms. Indeed, Tilghman-Osborne et al., (2010) coded definitions of guilt and found agreement that guilt (1) always involved a moral transgression, regardless of level of development (i.e., moral transgressions were consistent amongst children, adolescents, and adults), (2) can be situational, but (3) also has a trait-like quality, and (4) has a component of atonement, but only in children. The researchers go on to say that measurements of guilt moving from children to adults also changes and therefore makes it difficult to interpret results of guilt in a clinical context.

From a different perspective, Baumeister et al. (1994) state that guilt is a negative emotion that arises from distress that is separate from anger and fear; guilt deals with the unpleasantness that results from one's own actions, lack of action, intentionality, and/or circumstances. Baumeister et al. (1994) take an interpersonal approach and state that guilt may be best explained by communal relationships. They go on to reason that prosocial behaviors may arise from guilt because acts that would induce guilt are acts that harm these communal relationships. If one feels guilty, they may turn to prosocial behaviors to reverse the harm caused. Moreover, Baumeister et al. (1994) argue that guilt can lead people to direct this prosocial behavior at the person who their act affected, *or* toward a third party.

Guilt has been hailed as a moral emotion and is classified as a self-conscious emotion (Tangney et al., 2007). That is, these emotions are self-conscious because they involve self, where self-reflection or self-evaluation is present. Feelings of guilt, shame, and embarrassment are typically seen as negative moral self-conscious emotions while positive self-conscious moral emotions include feelings of pride. These emotions act as gauges for one's moral behavior. In other words, when one does wrong negative self-conscious moral emotions will arise and when

one does good positive self-conscious moral emotions will arise.

Guilt is oftentimes accompanied by shame when moral emotions are discussed and researchers have debated about if guilt and shame differ (Tangney et al., 2007). That is, researchers have investigated if the distinctions between guilt and shame are due to the type of situation where some make the claim that shame can be evoked from both moral and nonmoral situations and guilt only by way of moral situations (Ferguson et al., 1991; Sabini & Silver, 1997; Smith et al., 2002). Moreover, some researchers have made the claim that shame is linked with public moral transgressions and that guilt is associated with private reflections that weigh heavily on one's own conscience (Smith et al., 2002). Researchers, however, have also claimed that the private versus public argument has no support (Tangney, 1994; Tangney et al., 1996). Additionally, Tangney et al. (2007) states that guilt prompts desire to amend and atone for situations, that guilt elicits empathy that is aimed towards others, and evokes constructive behavior. Moreover, Teroni and Brunn (2011) make the argument that both guilt and shame may have a prosocial component, but guilt is typically the one that is seen as the more moral emotion and make the argument that shame should also be considered just as moral. They state that when one feels shame, one may feel like withdrawing from others. By contrast, guilt may motivate people to make amends, which could be seen as prosocial behavior.

Though limited, several areas of violent video game research have touched upon the role of guilt in shaping the outcomes of gameplay. For example, guilt has been used as a mechanism in video game research attempting to explain why players find violent video games enjoyable. Some researchers have made the argument that violent video games elicit feelings of guilt that can hinder enjoyment: As such, this guilt needs to be reduced via morally disengaging factors to facilitate enjoyment (Hartmann et al., 2010; Hartmann et al., 2014; Hartmann & Vorderer, 2010).

In his work on this topic, Bandura (2002) identified dehumanization, justification, sanitization of language, and diffusion of responsibility as factors engendering moral disengagement. Researchers have argued that video game developers purposefully place these disengaging factors into video games to reduce players' feelings of guilt. Indeed, Hartmann and Vorderer (2010) found these mechanisms in violent video games and conclude that they (1) reduced players' guilt and negative affective reactions and (2) increased enjoyment after playing the game. Another study found that opponent type (monsters vs. humans) influenced participants' levels of guilt and subsequent enjoyment (Lin, 2011). That is, participants playing a game in which they killed zombies (i.e., dehumanized) felt less guilt than those playing a game in which they killed humans. In line with this logic, participants reported higher levels of enjoyment when killing monsters as opposed to humans.

Another line of research, more central to issues examined in the current study, looked at the influence of violent video game induced guilt through the lens of moral sensitivity. One study found that the moral choices made by players in a video game were successfully predicted by participants' answers to questions dealing with moral foundations (Weaver & Lewis, 2012). In line with Hartmann et al. (2010), this study found that participants who made antisocial choices in the video game felt higher levels of guilt than those who made prosocial choices in the same video game. Interestingly, guilt scores were unrelated to participants' level of enjoyment, which is counter to the belief that guilt levels need to be reduced to increase players' enjoyment. Grizzard et al., (2014) found that increased feelings of guilt from exposure to a violent video game made participants morally sensitive. That is, having participants play a violent video game induced guilt, which increased participants sensitivity to moral foundations such as care. Then again, repeated exposure to violent video games reduced the ability of game play to induce

feelings of guilt (Grizzard et al., 2017).

Finally, as mentioned above, in research likewise showing that violent games can increase feelings of player guilt, Olah (2023) considered how such guilt could affect moral judgment, psychological need satisfaction, and prosocial behavior. Though that study's small sample size prevented careful consideration of these outcomes, several observations can be gleaned from work by Olah and other scholars working in this area. Research has shown that guilt motivates perpetrators to make amends. Moreover, violent video games and the atrocities that players may commit in them can induce feelings of guilt. Therefore, if a violent video game induces guilt and guilt motivates efforts to make amends or to act in a morally upstanding manner it stands to reason that guilt induced by violent video game play may prompt different forms of moral thinking, as well as outcomes associated with those thoughts. Many researchers have shown interest in how moral judgments are formed (Gray & Schein, 2012), but little work has considered its relationship to guilt. In the main, debate about the formation of moral judgments centers on differences underlying three perspectives on moral philosophy often referred to as utilitarianism, deontology, and virtue ethics. As foreshadowed, only deontological thinking is included in the model tested here; however, all three are discussed to improve deontology's understanding.

The Case for Deontology, Utilitarianism, and Virtue Ethics

Some scholars believe moral judgments are (or should be) free of emotion, and result from rational thought processes (Bentham, 1789; Kohlberg, 1984). This belief is known as consequentialism. *Utilitarian* moral judgment is a derivative of consequentialism, and reasons that the "right" moral judgment is the one that produces the best outcomes for the most people (e.g., kill five to save 100). Other scholars believe that moral judgments are innate, automatic

responses, that are oftentimes emotionally charged (Haidt & Joseph, 2007). This belief is known as intuitionism. *Deontology* is a derivative of the intuitionist approach.

Deontology was proposed by Immanuel Kant (1873), who stated that "man and generally any rational being exists as an end in himself, not merely as a means" (p. 12). Kant then went on to say that "I cannot, therefore, dispose in any way of a man in my own person so as to mutilate him, to damage or kill him" (p. 13). As suggested in this statement, deontological moral judgment is primarily concerned with care; that is, it supposes that a moral judgment is "right" when harm is avoided. Additionally, deontology focuses on adherence to duties and rules, almost like an ethical code. McNaughton and Rawling (2006) give a good example where one promised to help friend A, but friend B also needs help. If one cannot help both friends, and choosing to help friend B and breaking the promise to friend A would maximize the good (which is utilitarian), one should ignore the maximization of good and adhere to the duty or principle that one should not break a promise. Therefore, deontological thinking would conclude that one should keep the promise to friend A and help them instead of friend B.

Two additional features of deontology's comparison to utilitarianism are worthy of note. First, deontology is typically considered to be agent-relative whereas utilitarianism is considered agent-neutral (McNaughton & Rawling, 1998). An agent-relative judgment occurs when the decision includes the agent. For example, a person might say that they regularly go to the gym because exercise is best for their *own* well-being. Conversely, an agent-neutral judgment occurs when the decision does not include the agent. For example, a person might instead say regularly exercising is beneficial to anyone's general well-being overall. Second, some researchers argue that moral judgments are a combination of both rationally and emotionally charged decisions operating on two separate continuums (Greene 2007, 2014). It should be stated, however, that

moral philosophy and moral psychology do not hold either deontological or utilitarian moral judgments as one being better than the other. That is, neither is definitively right nor wrong.

Although the moral judgments reached by utilitarian and deontological philosophies are most often the same, the two perspectives are based on principles that can be irreconcilable. When discussing these irreconcilable differences, scholars often consider a third philosophical approach to moral judgment, *virtue ethics*. A virtue "…is a disposition to act…in certain ways and not others…for reasons" (Annas, 2006; p. 516).

Virtue ethics is broadly concerned with living a *flourishing* life, which is understood to mean that one should act in a manner that facilitates feelings of a whole or fulfilled life. Utilitarianism would define a flourishing life as bringing pleasure or passive happiness, which is a goal of utilitarian moral judgment. Virtue ethics, on the other hand, states that a flourishing life is an "agent's final end" and is acquired by "...the active living of a life" (Annas, 2006; p. 530). Some may conflate the idea of a flourishing life with a successful life, but this is simply not the case. For example, one may become rich in a manner that is not virtuous nor indicative of a flourishing or fulfilled life, but how one *acquired* wealth could have been virtuous or not (Annas, 2006). Therefore, if wealth in this example was acquired virtuously (e.g., through honesty, benevolence, courage, etc.) then acquisition of wealth would ultimately lead to a more fulfilling life than if wealth was acquired by ignoring or not engaging in virtues.

Virtue ethics was discussed by Socrates, Plato, and Aristotle, but it underlies a lot of discussion in philosophy (Annas, 2006). Virtue ethics should not be confused with utilitarianism, but it has oftentimes been reduced to endorse these kinds of moral judgments. Annas (2006) states that if you disregard the practical reasoning for why an actor felt compelled to act virtuously (e.g., to be honest, to be benevolent, etc.), then all that is left is a utilitarian tool. In

other words, if one is not able to rationalize and think through why they act virtuously but only acts virtuously because they were taught that it will cause "good" then that is not a decision based on virtue ethics, it is a decision based on utilitarianism.

Moral Judgments and Video Game Research

Ryan et al., (2020), describe a rising interest in research on video games and morality, and identify two questions that have been the focus of scholars in this area. These questions ask (1) "How does a player's morality affect the way they play games?" and (2) "How do the games they play affect a player's morality?" (pp. 55-56). Much of research in this area attempts to answer the first of these two questions. The current paper, however, attempts to shed light on issues related to the second and more underrepresented question in this area.

Although scarce, initial insights can be gained from two experimental studies that have examined this second question. The first investigated how moral decisions made in a video game influenced moral behavior outside of a video game (Ellithorpe et al., 2015). Essentially, these researchers found that deontological and utilitarian moral judgments made during video gameplay increased moral licensing after game play ended. More specifically, players that made a more moral choice during play behaved more aggressively afterwards. When asked to determine the level of punishment given to a target person, making a moral choice in the game led players to deliver a more punishing noise blast to the target. Although informative, this study did not include virtue ethics. A second experimental study (Krcmar & Cingel, 2016) built on moral foundations theory to investigate two questions. First, do participants rely more on moral or strategic reasoning when making decisions in video games? Second, which moral foundations, if any, were mentioned the most in moral reasoning? During video game play, researchers had participants record their reasoning during think-aloud play sessions. Findings showed that

players utilized moral reasoning while playing video games at about the same rate that they use strategic reasoning. Their results showed that in-game decisions by experienced players were more often based off moral reasoning, as opposed to strategic reasoning. Additionally, they found that participants frequently referenced the care/harm, authority, loyalty, and fairness foundations while making in-game decisions.

Insight can also be gathered from several other non-experimental studies touching upon this question regarding how game play affects a player's morality. First, a study by Hodge et al., (2020) found no relationship between playing video games and the development of moral reasoning amongst university students. These authors went on to say that their findings may suggest a separation of morality within video games and morality in real life. A related study found there was no relationship between playing video games and altruistic moral decision making (Yen, 2021), where altruistic moral decision making was measured by asking participants yes or no questions using an everyday moral tasks questionnaire. Moreover, Yen (2021) looked to see whether trait empathy might moderate the relationship between playing a video game and altruistic moral decision making but found no evidence of this moderation. Conversely, research on adolescents by Bajovic (2013) found a negative relationship between time spent playing violent video games and sociomoral development. That is, for eighth grade adolescents, those who played violent video games more frequently were more likely to be at stage two of Kohlberg's (1984) moral development stages, based on a measure of Kohlberg's stages by Gibbs et al., (1992). Stage two of this developmental process posits that morality is seen more as "tit-for-tat" where all basis of morality is exchanging favors. Bajovic (2013) goes on to say that the lack of sociomoral development in those who were exposed to violent video games for longer periods of time may be due to a lack of opportunities to engage with others,

where traits like empathy and trust could develop.

As previously stated, few studies have investigated how video games have addressed Ryan et al.'s (2020) question about how violent games affect a player's morality. Overall, the influence of video games on moral reasoning and behavior remains nebulous. Some studies have shown that playing a video game can influence players' moral thoughts and acts in real life, but others show that there is virtually no relationship. The current study is an attempt to help clarify the narrative regarding this topic. Specifically, building on belief that the importance of moral judgment has been overlooked in research on the effects of playing video games, this study examines the effects of violent video games resulting from game-play's influence on forms of moral thought. For example, research on deontological and utilitarian moral judgment has found that emotions can influence the adoption of certain moral perspectives. Specifically, when participants are exposed to negative emotions, they are more likely to make more deontological moral judgments (Greene, 2007), whereas elicitation of positive emotions can lead participants to make utilitarian moral judgments (Valdesolo & DeSteno, 2006). Overall, it stands to reason that because violent video games elicit feelings of guilt (a negative emotion), the evocation of guilt may increase deontological moral decision making among participants.

Finally, though speculative, an argument can be made for the claim that this increase in deontological moral decision making will lead to positive outcomes related to basic psychological need satisfaction, moral judgment, and prosocial behavior. In this argument, positive outcomes are understood as feelings of psychological well-being and benevolent decision-making that can increase prosocial behavior.

The Potential for Positive Outcomes from Playing Violent Video Games

The model tested in this study describes how playing violent video games can impact

positive outcomes. Positive outcomes here is a term that encompasses three separate constructs of interest: basic psychological need satisfaction, moral judgment, and prosocial behavior. Basic psychological needs are broadly understood here as a set of natural cognitive resources that drive individuals to self-organize and adjust to environmental challenges in a way that leads individuals to flourish (Ryan, 1995). When these needs are satisfied, they contribute to a person's overall psychological well-being. Moral judgment is understood as the appraisal of everyday life behavior in a manner consistent with what would be normatively considered as either morally correct or incorrect. In the current study, this would be considered a positive outcome from playing violent video games, when considered in comparison to an existing narrative that violent video games lead to antisocial thoughts. That is, if playing a violent video game affords one to discern what others may consider immoral, then this would be considered a positive outcome. Prosocial behavior is focused on others. That is, actual behavior that benefits someone other than self. It is important to point out there are arguments that prosocial behavior does benefit self (Badhwar, 1993), but this is a debate outside of the scope of this study. These three components make up what is called positive outcomes of playing violent video games in terms of (1) being compared to a narrative that typically associates playing video games with antisocial or maladaptive thinking and/or behavior and (2) representing behavior that directly benefits (rather than harms) self, other, or both.

Basic psychological need satisfaction

SDT states that behavior is not only driven by biological needs but also by basic psychological needs (Deci & Ryan, 2013; Ryan & Deci, 2002). The theory outlines three psychological needs that contribute to the overall well-being of individuals: autonomy, competence, and relatedness. Autonomy is the drive to have free choice and the ability to pursue

what one wants. Competence motivates participation in a task by allowing those to exhibit skills and overcome challenges. Finally, relatedness needs are concerned with feeling connected to close others (either platonically or romantically). These basic psychological needs have been examined as motivating factors in many areas of research, and violent video games are not the exception.

In research examining all three SDT components, Ryan et al., (2006) suggested that single-player video games can satisfy competence and autonomy needs, and multiplayer video games can satisfy all three psychological needs. These findings are unsurprising because video games offer challenges and, when those challenges are overcome, competence needs may be satisfied. Additionally, some video games allow players to choose what they do within the virtual world, so autonomy needs may also be satisfied. Overall, these researchers concluded that satisfaction of these psychological needs contributed to game enjoyment, presence within the game, intentions to play in the future, and overall well-being. In related research on violent video games specifically, Przybylski et al. (2009) examined psychological needs satisfaction (both competence and autonomy) as motivational factors. In four of five studies, results showed a weak association between violent video games and the satisfaction of autonomy. Though similar findings were not observed for competence needs, it would make sense that video games (even violent ones) could contribute to the satisfaction of competence, autonomy, and relatedness.

Relatedness may be the one psychological need that is difficult to explain when players play a video game alone. Relatedness needs would more than likely be satisfied if participants were playing cooperatively or competitively with friends or other players. Take for instance several studies showing evidence that being social was a motivation for playing violent video games (Ferguson & Olson, 2013; Kneer et al., 2018). These studies did not test for playing

cooperatively with other players, but simply asked players what their motivations were. One interpretation is that people may play violent video games (even if they are a single player) to foster social interaction with others in the future. This is akin to how one may watch a football or baseball game over the weekend in hopes to discuss it with coworkers or friends in the immediate future. Moreover, relatedness could happen retroactively. That is, even though participants are playing a game alone, it might make them feel more connected to someone they know (a relative or friend) that has played the game they are playing. Overall, it makes sense that basic psychological need satisfaction could occur from multiple avenues when engaging in violent video games.

The model proposed in the current study suggests that playing a violent video game can affect basic psychological needs both directly and indirectly through game-play's effect on increased deontological moral thinking, respectively. Subsequently, satisfaction of basic psychological needs would then predict prosocial behavior, another one of the three positive outcomes within the model.

Moral Judgment

Moral judgment is defined in terms of Lovett et al.'s (2012) conceptualization of moral judgment and moralization of everyday life. These scholars believed that moral philosophers often defined moral judgments based on ethical concerns about improbable and fantastic social dilemmas. Instead, Lovett et al., conceived of moral judgment as an understanding of right or wrong behavior in everyday life, and judgments of people's social obligations in this regard. At the root of this conception is consideration of how people appraise realistic moral dilemmas, or what Lovett et al. refer to as moralization of everyday life. For example, whether it is morally wrong to lie about a test score when reporting performance to a teacher. Apparent in these

dilemmas are indications of social rules and the importance of one's duty to obey them. As such, this conception of moral judgment might be seen in line with deontological thinking.

The problem Lovett et al. identified was based on the observation that morality researchers have oftentimes turned to unrealistic moral dilemmas when investigating topics such as moral judgment. Classic moral dilemmas such as the trolley car or footbridge dilemmas are just a couple examples. The trolley car dilemma depicts a scenario where a trolley car is on a track that is heading towards five civilians tied to the track. The participant is given the option to either do nothing or pull a lever. If the lever is pulled, the trolley will switch tracks which has only one civilian tied to the track. The footbridge dilemma is similar in that instead of pulling a lever that switches the trajectory of the trolley, the participant is standing on a bridge over the track next to a random person. They then must make the decision to physically push the person onto the track to stop the trolley from hitting the five civilians.

One major contention with the use of moral dilemmas to determine participants' moral thinking and moral judgment is the concern that many of the moral dilemmas often used in research are too farfetched (Lovett et al., 2012) or that they really do not give us much insight into moral judgments (Kahane, 2015, Kahane et al., 2015). In response to concerns that classical moral dilemmas may be too unrealistic, Lovett et al. (2012) developed a 30-item scale with scenarios that are more realistic, more mundane, and more likely to occur in real life. Upon validating the scale, the 30-items fell into six subscales: *deception, harm to members of one's social community, laziness, failure to take opportunities to do good, body violations*, and *disgusting behaviors*. Definitionally, the six dimensions identified in these subscales comprise the essential components of the concept.

The current study investigates how deontological moral thinking may be influenced by

guilt elicited from playing violent video games. It stands to reason that a potential outcome of these guilt induced shifts in deontological moral thinking may influence what participants see as morally right or wrong. Specifically, deontological thinking should bias moral judgments toward placing a premium on respecting rules and duty to society. The effect of this violent game and guilt induced deontological thinking on these moral judgments is examined in the current model. The argument in the current study is that deontological moral thinking will increase moral judgments demonstrating Lovett et al.'s moralization of everyday life.

Prosocial Behavior

Video games have received a bad reputation within the public eye, with many people having the perception that there is a direct, causal link between video games (both violent and nonviolent) and antisocial behaviors. Yet evidence for this is uncertain. Take for instance a study that investigated the growth of video game stores and found no evidence of a relationship between the availability of violent video games and an increase in crime and mortality rates in affected locations (Ward, 2011).

In fact, the author suggests that results lean more towards the opposite end of the spectrum, wherein the presence of more video game stores is related to a *decrease* in crimes and mortality within the counties that the stores appear. This would make sense if the thing (i.e., video games) thought to cause violence kept people at home instead of out in the world causing violence. Of course, this supposition does not consider instances of domestic violence. Nevertheless, the data do not support contentions that video games lead to antisocial outcomes.

The same uncertainty exists for research on the potential prosocial effect of violent video game play. Different studies have supported claims that violent video games can decrease (Anderson & Bushman, 2001; Anderson et al., 2010) or virtually have no effect on (Dorantes-

Argandar, 2021; Tear & Nielsen, 2013, 2014) prosocial behavior. Research on non-violent games has demonstrated that playing a *prosocial* video game, also known as *serious games* (where the goal is to teach, educate, or some other goal aside from entertainment) can increase prosocial behavior (Gentile et al., 2009; Greitemeyer & Osswald, 2010; Harrington & O'Connel, 2016; Li & Zhang, 2023).

Less understood and researched, however, is how prosocial behaviors may arise from games that contain at least some levels of violence. Limited research has suggested that other factors within a violent game (e.g., cooperativeness vs. competitiveness) can increase helping, cooperative, and/or related prosocial behaviors (Greitemeyer & Cox, 2013; Velez & Ewoldsen, 2013). Other studies have shown that mediating variables can lead to both increased and decreased prosocial behavior from playing violent video games. For example, one study suggested that a violent game's influence on psychological need satisfaction could increase prosocial behavior (Shoshani & Krauskopf, 2021). Conversely, others have found that lowered empathic concern from playing a violent video game mediates the relationship between violent video games and decreased prosocial behaviors (Coyne et al., 2018; Fraser et al., 2012).

As stated before, the impact of violent video games on *prosocial* outcomes is heavily under researched. The current study investigates these potential positive outcomes of violent video games. The argument in the current study is that these three positive outcomes arising from violent video game play works through a mechanism involving guilt and moral thinking.

The Current Model

The current paper tests a model describing how guilt and moral thinking can mediate the effect of a violent video game on positive outcome variables such as basic psychological need satisfaction, prosocial behavior, and moral judgment.

Figure 2.

Overall Model for the Current Study



First, research has shown that violent video games tend to elicit negative emotions (Hartmann et al., 2010; Grizzard et al., 2014). Given that guilt is a negative emotion, our model begins with a path predicting that participants who play a violent video game will experience higher levels of guilt than those who play a nonviolent game (H1).

Second, past research has found that exposure to negative emotions increases approval of deontological moral judgments (Greene, 2007). It stands to reason that exposure to higher levels of guilt may influence participants' deontological moral thinking. Therefore, guilt will be a positive predictor of deontological moral thinking (H2).

Third, several outcomes of interest are believed to be related to deontological moral thinking. The first of these is the path to basic psychological need satisfaction. That is, due to the agentic relativity of deontological moral thinking, it would make sense that an increase in deontological thinking would come with an increase in concern for self and self-related needs (McNaughton & Rawling, 1998). Therefore, (H3) deontological moral thinking will be a positive

predictor of basic psychological need satisfaction (i.e., autonomy, competence, and relatedness). The second of these is the path from deontological thinking to moral judgment. Deontological moral thinking is concerned with one's adherence to societal rules and a duty to uphold those rules. Lovett et al.'s (2012) moralization of everyday life can be conceptualized as one's approval or disapproval towards those societal rules. Therefore, deontological moral thinking will positively predict moral judgment as conceptualized by moralization of everyday life (H4). The third of these is the path from deontological moral thinking to prosocial behavior. For prosocial behavior, there is evidence that both deontological and utilitarian moral framing were positively associated with donation behavior (Friedland et al., 2020), but only deontological moral framing significantly predicted the amount that was donated. Therefore, deontological moral thinking will positively predict prosocial donation behavior (H5).

Next, replicating the findings of research by Shoshani and Krauskopf (2021), the model includes three paths describing both a direct and indirect effect (through basic psychological need satisfaction) of violent video games on prosocial behavior. Specifically, those who play a violent video game will have higher prosocial behavior than those who play the non-violent video game (H6). Those who play a violent video game will have higher basic psychological need satisfaction than those who play a non-violent video game (H7). Moreover, basic psychological need satisfaction will positively predict prosocial behavior (H8).

Finally, building on contention that guilt motivates atonement (Tangney et al., 2007; Teroni & Brunn, 2011), which is indicative of prosocial behavior, the last hypothesis is that guilt will be a positive predictor of prosocial behavior (H9).

METHOD

Participants

According to a meta-analysis investigating the outcomes of violent video games, the average effect size of violent video games on behavior, cognition, affect, and arousal within studies utilizing an experimental design was .20 (Pearson's r; Greitemeyer & Mügge, 2014). Additionally, a task force with the American Psychological Association conducted a more recent meta-analysis on violent video games with outcomes such as aggressive cognition, behavior, affect, and decreased empathy, in which they found the composite effect size to be .31 (Cohen's d; Calvert et al., 2017). Overall, these effect sizes are small according to Cohen's (1988) criteria. For the current study, a power analysis was conducted using the G*Power software to determine the required sample size for an a priori fixed model linear multiple regression with two predictors. To obtain the estimated effect size coefficient (f_2) within the current research, both the Pearson's correlation coefficient (r = .20) from Greitemeyer and Mügge (2014) and Cohen's d (d = .31) from Calvert et al., 2017 were converted to Cohen's f and then squared. This resulted in f^2 values of .04 and .03, respectively. Therefore, the expected effect size for the current investigation is $f^2 = .03$ to .04. Based on this, a G*Power analysis was conducted to investigate the sample size needed to observe a small effect size ($f^2 = .035$) at 80% power with a 95% confidence interval. The power analysis indicated a total of 279 participants are needed to observe an effect of this magnitude within the sample.

A total of 300 undergraduate students from a large Midwestern university were recruited to participate in the study. Three students were removed from final data analysis due to incomplete measures leaving a total of 297 students ($M_{age} = 20.10$, $SD_{age} = 1.53$, 52.19% Female, 76.77% White, 6.73% Black or African American, 7.74% Asian, 5.05% Hispanic/Latino, 3.70%

Other) for final data analysis. All participants received course credit for completing the study. The study was approved by the university's institutional review board.

Procedure

Participants were randomly assigned to either the violent video game condition or the nonviolent video game condition. Upon agreement of participation in the study, participants were brought to the lab and instructed that they would be playing a game. Participants were given a cover story notifying them that the purpose of the study was to give feedback to faculty and students, who were developing a game utilizing assets (i.e., environments, weapons, items, etc.) from *Minecraft*. Moreover, participants were told that the game in development was in the beginning stages. Depending on which condition participants were in, they played the violent or nonviolent version of the game. *Minecraft* is known as a "sandbox" game where there is no strict objective, and players are free to pursue whatever they would like. Mostly, players destroy their surroundings and build whatever they like. There are many activities that players can engage in including, but not limited to, crafting items, fighting monsters, and farming. Due to the design of *Minecraft*, the researchers made two environments that were consistent for all participants: a tutorial environment and a town environment.

Participants began with a tutorial of *Minecraft* to help them become familiar with the controls and the tasks to be completed within the game. Initially, they were placed into a small environment within the game that was separate from the town environment later in the experiment. Depending on condition, they were instructed to either feed villagers and livestock (nonviolent) or to kill villagers and livestock (violent). Participants were instructed to either feed/kill all the villagers and livestock within the tutorial before moving on to the next part of the study. They were given five minutes to complete the tutorial.

Next, players were placed in a small village that was inhabited by significantly more villagers and livestock. Participants were then instructed to carry out the same tasks that they practiced in the tutorial. The only difference between the two conditions was that participants were told to carry out different tasks within the village. All other elements within the village were the same (i.e., number of villagers, buildings, etc.). Participants were given 15 minutes to complete this portion of the experiment. During the 15 minutes of gameplay, behavioral activity (i.e., the number of mouse clicks and keystrokes) was recorded for each participant using the program WhatPulse. This behavioral activity was utilized to investigate differences in players' active engagement across conditions. Once participants complete this portion of the study, the experimenter instructed them to complete measures presented on Qualtrics. In order, these items included measures of (1) guilt, (2) deontological moral thinking, (3) moralization of everyday life scale, (4) psychological needs satisfaction, (5) prosocial behavior, (6) perceptions of justification, realism, and graphicness, (7) perceptions of video game violence, (8) participant enjoyment, and (9) demographic variables. Upon completion of the experiment, participants were debriefed and thanked for their time.

To control various confounding variables that could occur within *Minecraft*, the "creative" mode was selected with the addition of allowing cheat codes to control those possible confounds. The researchers used console commands to make dynamic elements, like the time of day and weather effects, constant across all conditions and players. That is, these effects were turned off so that participants did not experience day/night cycles, weather effects, differing music, or any other potentially confounding game elements. Additionally, some keyboard controls were rebound to different keystrokes to ensure that participants were not opening menus (e.g., inventory) that may introduce confounds. Please see Appendix B for all the steps taken to

control confounds within the game.

Measures

Guilt

Guilt was measured using a scale developed by Hartmann and Vorderer (2010). Hartmann and Vorderer (2010) adapted and gave participants a three-item measure of state guilt after having played a violent video game. The three questions ask on a scale from 1 (*Rarely or Never*) to 5 (*Very Often*) "*While playing the game how often did you*…" (1) "*feel regret, sorry about something you did,*" (2) "*feel like you did something wrong,*" and (3) "*feel like you ought to be blamed for something.*" Hartmann and Vorderer found an acceptable reliability for these three questions ($\alpha = .93$). Moreover, this measure has been used in subsequent research where adequate reliabilities have been found ($\alpha = .88$, Grizzard et al., 2014; $\alpha = .94$, Hartmann et al., 2010). Reliability in the current study is acceptable ($\alpha = .87$). Overall, higher scores on this scale are indicative of higher state guilt, which is understood as a negative emotion in the current study.

Deontological Moral Thinking

The Preferences for Precepts in Implied Moral Theories (PPIMT; Dubljević et al., 2022) is an 11-item scale that measures participants' preferences for the rules implied by three moral theories. Participants were asked to rate the statement "*When thinking about what is moral or immoral in a situation, it is important to me whether the involved persons*..." on a scale from 1 (*Strongly Disagree*) to 7 (*Strongly Agree*) for each of the items in the three subscales. The three subscales for this measure are virtue ethics (e.g., "...*have good or bad intentions*"), deontology (e.g., "...*respect or do not respect certain rules*"), and consequentialism (e.g., "...*cause happiness or suffering*"). Reliability in the current study for virtue ethics ($\alpha = .88$), deontology (α
= .89), and consequentialism (α = .82) were found to be acceptable. Higher scores on these subscales are indicative of participants' preferences towards each respective overarching moral theory. Of particular interest to the current study is the deontology subscale. Cacace et al. (2022) utilized this scale and found reliability to be acceptable (ω = .92). Overall reliability for the PPIMT in the current study was found to be acceptable (α = .93).

Moral Judgment

The Moralization of Everyday Life Scale (MELS; Lovett et al., 2012) is a 30-item measure that contains six subscales intended to measure participants' perceptions of how morally wrong a mundane moral dilemma is on a scale from 0 (Not wrong at all, a perfectly OK action) to 6 (Very wrong; an extremely immoral action). In Lovett et al.'s research, each subscale contained five items showing adequate reliability, with subscales pertaining to deception ($\alpha =$.88; e.g., "Keeping extra money accidentally dispensed from an ATM"), harm to members of one's social community ($\alpha = .85$; e.g., "Parking in a 'handicapped' parking spot when not handicapped"), laziness ($\alpha = .80$; e.g., "Choosing to wake up late, despite having a busy day *ahead*"), failure to take opportunities to do good ($\alpha = .87$; e.g., "Ignoring a driver whose car is stuck in the snow"), body violations ($\alpha = .78$; e.g., "Drinking 10 beers at a party and vomiting several times"), and disgusting behaviors ($\alpha = .86$; e.g., "Failing to shower for four days due to *lack of time*"). Reliabilities in the current study for deception ($\alpha = .75$), laziness ($\alpha = .76$), and failure to take opportunities to do good ($\alpha = .73$), were considered acceptable. Reliability scores, however, for harm to members of one's social community ($\alpha = .64$), body violations ($\alpha = .61$), and disgusting behaviors ($\alpha = .63$) were lower than desirable. Higher scores are indicative of higher moral disapproval of the behavior. Lovett et al. (2012) found that the overall reliability of the MELS was acceptable ($\alpha = .93$). Taken altogether, reliability in the current study for the

entire 30-item MELS was found to be acceptable ($\alpha = .88$).

Basic Psychological Need Satisfaction

Participants completed the Basic Psychological Needs Scale (BPNS; Deci & Ryan, 2000) to assess basic psychological need satisfaction. The scale contains 21 statements in which participants indicate from 1 (*Not at all true*) to 5 (*Very true*) how the items relate to their life. Statements for the three basic psychological needs include competence (e.g., "*People I know tell me I am good at what I do*"), autonomy (e.g., "*I generally feel free to express my ideas and opinions*"), and relatedness (e.g., "*I consider the people I regularly interact with to be my friends*"). A review of basic psychological need satisfaction research found average reliability scores for competence ($\alpha = .82$), relatedness ($\alpha = .82$), and autonomy ($\alpha = .68$; Van den Broeck et al., 2016), suggesting the scale has acceptable reliability. Within the current study, reliability scores for competence ($\alpha = .72$), relatedness ($\alpha = .78$), and autonomy ($\alpha = .72$) were found to be acceptable. Overall, reliability for the BPNS was acceptable ($\alpha = .86$). Higher scores are indicative of higher competence, autonomy, and relatedness needs satisfaction.

Moral Self-Image Scale

The Moral Self-Image scale (MSI; Jordan et al., 2015) was developed to assess one's self-evaluation after making a moral decision. That is, how moral or immoral one believes oneself to be after a decision is made. The MSI contains nine items in which participants are given the statement "*Compared to the X person I want to be, I am*" and then asked to indicate where they would place themselves on a scale from 1 (*Much less than the X person I want to be*) to 9 (*Much more than the X person I want to be*). The "X" is replaced with nine different words (i.e., *caring, compassionate, fair, friendly, generous, hard-working, helpful, honest*, and *kind*). Higher scores are indicative of a higher moral self-image. Reliability in the current study was

found to be acceptable (α = .82). Importantly, the MSI is used strictly in exploratory analyses as the MSI scale was not included in any of the current study's hypotheses.

Perceived Violence, Justification, Realism, Graphicness, Enjoyment, and In-Game Autonomy

To account and control potential differences between conditions where participants may vary in their level of perceived violence, and therefore influence outcomes, measures of perceived violence were included. Prior research by Olah (2023) showed that players in the two different conditions of the *Minecraft* game induction were clearly aware "that they were killing or feeding villagers in their game version. As such, participants were aware of the tasks that they had to complete (p. 49)." Nevertheless, the possibility that these perceptual differences might affect outcomes cannot be overlooked. Past research on perceptions of violence in films and video games investigated contextual features of violence-portrayals that can influence participants' perceptions of violence within media (Tamborini et al., 2013). Specifically, these researchers investigated how realism (e.g., could happen in real life, is a recreation of reality, etc.), justification (e.g., is excusable by the plot) and graphicness (e.g., blood, gore, viscera) influenced the degree to which participants perceived media to be violent. Additionally, it examined the influence of these perceptions on whether participants enjoyed a film and/or video game. Findings showed that justification was the strongest predictor of whether participants perceived the media to be violent. That is, justification was negatively related to perceived violence. Realism was the second most important, and graphicness was the least important, both positively related to perceived violence. The current study adopted measures used in this prior study.

First, to assess perceptions of video game violence, participants were asked how violent the video game they played was on a scale from 1 (*Not at all violent*) to 5 (*Extremely violent*).

Next, according to the research conducted by Tamborini et al., (2013), attributes of media behavior can be split into three separate dimensions that influence participants' perceptions on whether a media act is violent or not. Therefore, participants answered questions corresponding to the three single-items used by Tamborini et al. to determine whether they feel that the actions of their in-game character were "*justified* (*i.e.*, *actions were done for a good reason*)", "*realistic* (*i.e.*, *the actions performed in the game could happen in real life*)," and "graphic (*i.e.*, *blood/gore*)" on scale from 1 (*Not at all*) to 5 (*Extremely*).

Second, an additional item investigating graphicness was added to the measures, but unlike the above graphicness item asking about perceptions of blood and gore, participants were asked on a scale from 1 (*Not at all realistic*) to 5 (*Extremely realistic*) to indicate how much they felt the game was or was not graphically realistic. That is, participants were asked if they believed the graphics of the game to look like real-life.

Third, participants' perceptions of enjoyment while playing the game were investigated. Three items measured enjoyment on a scale from 1 (*Not at all*) to 5 (*Extremely*) in which participants were asked if they found the video game they played today to be "*enjoyable*", "*exciting*", and "*fun.*" Reliability for this scale was found to be acceptable ($\alpha = .92$).

Finally, two items measured participants' perceptions of their in-game autonomy. One item measured participants' perceptions of how compelled they felt to complete actions in the game. The other item measured how free participants felt to do whatever they wanted in the game. These two items are independent of each other and were measured on a scale from 1 (*Strongly Disagree*) to 5 (*Strongly Agree*). The purpose of these measures was to investigate (1) whether participants in both conditions differed on their levels of in-game autonomy and (2) whether they felt compelled to complete tasks on their own or forced to complete the tasks by the

experimenters or instructions within the experiment.

Prosocial Behavior

Participants were given a donation task in which they were told they would be entered into a raffle with a \$50 prize. They were then asked to indicate how much of the prize money, should they win, they would like to donate to a local charity. Participants were instructed that the amount of money donated does not increase their odds of winning the raffle. The higher amount of money that the participant donated was indicative of higher levels of prosocial behavior. During the debriefing, all participants were notified that there was no local charity, and that the winner of the raffle would be allowed to keep any pledged monies. Once data collection was completed, a winner was drawn, and the \$50 prize was awarded. Finally, participants were asked to indicate (1) if they had played *Minecraft* in the past and for how many hours in the past two weeks and (2) if they regularly play video games and for how many hours in the past two weeks. Additionally, participants were asked to complete demographic measures (i.e., gender, age, ethnicity, religion, and political affiliation).

RESULTS

Descriptive statistics were conducted prior to testing the predicted model to determine whether the induction created the intended different levels of the independent variable (video game violence), and how the induction influenced several perceptual variables thought to covary with perceptions of video game and media violence. These analyses began by examining conditional differences in participants' behavioral activity, perceptions of overall violence, perceptions of justification, realism, and graphicness, and how compelled and/or free participants' felt when they were playing the game. First, an independent samples t-test was conducted on behavioral activity to investigate if participants had equal mouse clicks and keystrokes. A significant difference (t(295) = -10.65, p < .001, d = -1.24) for behavioral activity was found between the nonviolent (M = 592.13, SD = 273.16) and violent (M = 1049.12, SD = 453.01) conditions. This difference makes sense given that only one keystroke was required to feed an animal and/or villager in the nonviolent condition, whereas multiple clicks were required to hit them and eventually kill an animal or villager in the violent condition.

Next, independent samples t-tests were conducted to investigate if participants did indeed view the violent condition as violent. To start, a t-test was conducted for participants' perceptions of overall violence, t(295) = -17.99, p < .001, d = -2.09. As expected, those in the violent condition (M = 2.81, SD = 1.10) perceived the game to be more violent than those in the nonviolent condition (M = 1.11, SD = .43). Moreover, an independent samples t-test was conducted on each component of violence as outlined by Tamborini et al., (2013). A significant difference was found between groups for justification (t(295) = 16.09, p < .001, d = 1.87), realism (t(295) = 7.05, p < .001, d = .82), and graphicness (t(295) = -6.08, p < .001, d = -.71). For justification, those in the nonviolent condition (M = 3.75, SD = 1.01) found the actions in the

game to be more justifiable than those in the violent condition (M = 1.73, SD = 1.15).² For realism, those in the nonviolent condition (M = 2.99, SD = 1.25) perceived the game to be more realistic (i.e., the events in the game could happen in real life) as opposed to those in the violent condition (M = 1.99, SD = 1.18). For graphicness (i.e., blood/gore), those in the violent condition (M = 1.63, SD = .83) found the game to be more graphic than those in the nonviolent condition (M = 1.13, SD = .57). For graphical realism (i.e., how much participants thought the graphics imitate real-life) a significant difference was found, t(295) = 5.08, p < .001, d = .59. Participants that were in the nonviolent condition (M = 1.91, SD = .88) found the game to be more life-like than those in the violent condition (M = 1.44, SD = .71). Based on measures suggesting that the induction was viewed as violent by participants, especially evidence pertaining to participants' overall perceptions of violence, the video game violence induction was judged to be successful in creating the intended levels of video game violence, and appropriate for use in testing the model predicting that violent video game play will influence outcomes such as guilt, basic psychological need satisfaction, and prosocial behavior.³

Finally, analyses examined how much participants enjoyed the game and felt either compelled or free to do what they wanted within the game. First, an independent samples t-test on enjoyment revealed no significant difference (t(295) = .44, p = .66, d = .05) between the nonviolent (M = 2.85, SD = 1.12) or violent (M = 2.79, SD = 1.07) conditions. Next, analyses were conducted investigating this relationship to ensure that participants felt autonomous in both conditions and did not feel compelled or pushed to enact violence or nonviolence simply because

² Notably, and in line with Tamborini et al., (2013), those who perceived violence to be less justified in a piece of media perceived the piece of media to be more violent.

³ Although not all factors are indicative of participants viewing the game as violent (i.e., realism and graphical realism), factors such as justification and graphicness (blood/gore) indicate otherwise.

they were instructed to do so. No significant differences were found for participants feeling compelled to complete game actions, t(295) = .48, p = .65, d = .06 ($M_{nonviolent} = 3.80$, SD = 1.05; $M_{violent} = 3.74$, SD = 1.14), or for feeling free to do whatever they wanted in the game, t(295) = -.47, p = .64, d = -.06 ($M_{nonviolent} = 2.72$, SD = 1.05; $M_{violent} = 2.79$, SD = 1.14). These findings have implications on the model's relationship investigating basic psychological need satisfaction. It is believed that because neither condition differed in their feelings of autonomy for both questions, that there will be no impact of this potential effect on the relationships in the model involving basic psychological need satisfaction, specifically the autonomy subscale. Beyond these t-tests, the correlations among all key variables in the study are presented for inspection in Table 1. Additionally, given that the size of the table makes it difficult to read on printed pages, the full correlation table that includes all variables of interest can be found on OSF (https://osf.io/g7m9e/).

Testing the Overall Model

Similar to Olah (2023), the model was tested using structural equation modeling (SEM) by way of the *lavaan* (Rosseel, 2012) package in RStudio. Importantly, debate has surrounded questions about appropriate criteria for acceptable fit indicators in confirmatory factor analysis. Hu and Bentler (1999) suggested cut-off scores for *close* fit indices should be set at RMSEA < .06, CFI > .95, and TLI > .95. Previous researchers report that cut-off points for *adequate* goodness of fit indices have traditionally been set at RMSEA < .08 (Browne & Cudeck, 1993; Jöreskog & Sörbom, 1993), CFI < .90-95 (Bentler, 1990), and TLI < .90-95 (Bentler & Bonett, 1980). Marsh et al. (2004) notes, however, that these points were set arbitrarily, whereas Hu and Bentler's (1999) suggestions were based on statistical evidence and reasoning. Clouding the issue even more, some researchers believe that debate over hard cut-off points for fit indices is

Table 1.

Correlation Analyses

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Condition	-															
2. Guilt	.217***	-														
3. Deontology	114*	.029	-													
4. MELS	078	.091	.05	-												
5. BPNS	007	039	.188**	.011	-											
6. Autonomy	.012	028	.196***	.055	.875***	-										
7. Competence	063	022	.132*	.013	.795***	.571***	-									
8. Relatedness	.026	046	.144*	034	.850***	.637***	.471***	-								
9. MSI	.012	.133*	042	.06	.129*	.071	.164**	.094	-							
10. Violence	.723***	.359***	063	045	046	054	073	.006	.075	-						
11. Justification	- .684 ^{****}	309***	.119*	.101	.051	.031	.101	.005	.007	614***	-					
12. Realism	.380***	.012	.053	.160**	016	.012	.016	062	.018	247***	.429***	-				
13. Graphic	.334***	.223***	026	.121*	093	067	064	1	.132*	.380***	256***	.033	-			
14. Graphical Realism	.283***	006	.001	.101	001	.028	.045	066	.208***	178**	.251***	.323***	.053	-		
15. Enjoyment	026	283***	.049	.072	.137*	.140*	.058	.143*	.071	056	.242***	.146*	041	.204***	-	
16. Donation	.032	.143*	.053	.061	.06	.052	.048	.053	086	.082	.024	007	006	126*	043	-
*p < .05, **p < .01,	, ***p <	< .001														

futile, that *adequate* fit should *not* be ignored, and that arguing about whether CFI or TLI should be set at .90 or .95 is like arguing about whether p-values should be set at .05 or .01 (Mulaik, 2007). Therefore, the following study utilizes these two cut-off points for close and adequate fit. Finally, all models within the current study are reported using standardized coefficients.

To begin, the condition variable was coded as a dummy variable, where 0 indicates the absence of violence (the nonviolent condition) and 1 indicates the presence of violence (the violent condition). All relationships were entered in the structural equation model with the relationships from guilt to basic psychological needs, basic psychological needs to moral judgment, and moral judgment to donation being constrained to 0 as no hypotheses were made about these relationships. Overall, the model shows marginal goodness of fit, $\chi^2(1861, 297) = 3806.35$, p < .001, CFI = .68, TLI = .67, RMSEA = .06, where RMSEA indicates adequate goodness of fit, but both CFI and TLI do not indicate goodness of fit. The poor fit dictates that discussion of individual paths in the model should be interpreted with reservation, as the low CFI and TLI for these models not only suggest poor fit but potential model misspecification. As such, discussion of the model's paths continues with caution.

Three covariates of a priori concern were included to control for (1) the amount of behavioral activity across conditions, (2) whether participants had played *Minecraft* in the past, and (3) whether participants regularly played video games. Inspection of the model produces several observations of note. First, in line with H1, the pathway from condition to guilt was significant ($\beta = .27$, SE = .15, p < .001, CI = .30 - .87). Next, the pathway from guilt to deontology was not significant ($\beta = .02$, SE = .07, p = .79, CI = -.12 - .16), therefore lending no support for H2. Third, consistent with H3, the pathway investigating deontology to basic psychological needs was significant ($\beta = .24$, SE = .05, p < .001, CI = .08 - .27). Notably, basic

psychological need satisfaction in the overall model is the combination of the individual three subscales (competence, autonomy, and relatedness). Later analyses explore each subscale in relation to the model. Fourth, both pathways from deontology to moral judgment (β = .03, *SE* = .05, *p* = .68, *CI* = -.08 - .12) and deontology to donation behavior (β = .05, *SE* = 1.08, *p* = .48, *CI* = -1.35 - 2.90) were found to be nonsignificant. Therefore, neither H4 nor H5 were supported. Finally, consistent with H9, the pathway from guilt to donation was found to be significant (β = .15, *SE* = 1.18, *p* = .022, *CI* = .39 – 5.01) (See Figure 3).

Figure 3.





* *p* < .05

Post Hoc Analyses

Testing Replication of Shoshani and Krauskopf

Separate analyses investigated the direct and indirect effect (through basic psychological need satisfaction) of violent video games on prosocial behavior as partial replication of findings suggested by Shoshani and Krauskopf (2012). First, within the overall model the pathways from

condition to donation (β = .09, *SE* = 2.70, *p* = .28, *CI* = -1.96 – 8.61), condition to basic psychological need satisfaction (β = .06, *SE* = .12, *p* = .39, *CI* = -.13 – .33), and basic psychological need satisfaction to donation (β = .07, *SE* = 1.51, *p* = .34, *CI* = -1.38 – 4.53) were all found to be nonsignificant. Therefore, H6 – H8 were not supported. Moreover, following the guidelines posited by Baron and Kenny (1986), no relationship exists between condition and donation as shown in both correlational analyses and subsequent test examining the effect of condition on donation (t(295) = .55, *p* = .581, *d* = -.06), thus indicating no potential for basic psychological needs to mediate a relationship between condition and donation behavior. Overall, similar to Olah (2023), no partial replication of Shoshani and Krauskopf (2021) was found.

Revised Models for Autonomy, Competence, and Relatedness

To further investigate the impact that deontology scores had on the three components of basic psychological need satisfaction, three additional models were computed similarly to the overall model, where the basic psychological need scale was replaced by the autonomy, competence, and relatedness subscales for each model. To start, the models for autonomy $(\chi^2(1098, 297) = 2317.73, p < .001, CFI = .72, TLI = .70, RMSEA = .06)$, competence $(\chi^2(1051, 297) = 2333.56, p < .001, CFI = .70, TLI = .68, RMSEA = .06)$, and relatedness $(\chi^2(1146, 297) = 2423.62, p < .001, CFI = .72, TLI = .71, RMSEA = .06)$ show marginal goodness of fit, where RMSEA indicates a close fit for each of the three subscales, but CFI and TLI indicates poor fit. Given that these models were both revised and had poor fit, detailed discussion is not included here. For completeness, discussion of the revised models for autonomy, competence, and relatedness can be found in Appendix C.

Exploratory Analyses using Moral Self-Image

To investigate whether the overall model might be influenced by moral self-image,

exploratory analysis was conducted with moral self-image in place of moral judgment (See Figure 4). That is, the 30-item moralization of everyday life scale was replaced with the nineitem moral self-image scale. Like the post hoc analyses on original model, an initial test of the model with moral self-image was conducted using the composite measure of SDT and three subsequent analyses examined the model with the separate subscales for autonomy, competence, or relatedness replacing the composite SDT measure. As with the earlier models investigating the SDT subscales, the covariates of behavioral activity, whether participants have played *Minecraft* in the past, and whether participants play video games regularly were included in the model. In all these analyses, however, the only relationship that was constrained to 0 was the relationship between guilt to basic psychological needs satisfaction. Therefore, unlike the earlier models, the relationships from basic psychological need satisfaction to moral self-image and moral self-image to donation behavior were not constrained.

Similar to the original model, the MSI model showed marginal goodness of fit where the RMSEA was adequate, but CFI and TLI were neither close nor adequate, $\chi^2(788, 297) = 1632.24$, p < .001, CFI = .80, TLI = .78, RMSEA = .06. Once again, given that this model was both revised and had poor fit, detailed discussion is not included here. For completeness, discussion of this revised model can be found in Appendix D.

The Moral Self-Image Models Separated for Autonomy, Competence, and Relatedness

As indicated, three subsequent analyses examined the model containing moral self-image in the placed of moral judgment. In each of the three analyses, the composite measure SDT was replaced by measures of the separate subscales for autonomy, competence, or relatedness. Importantly, the models for autonomy ($\chi^2(319, 297) = 563.08$, p < .001, CFI = .90, TLI = .89, RMSEA = .05) and relatedness ($\chi^2(346, 297) = 600.80$, p < .001, CFI = .91, TLI = .89, RMSEA = .05) show adequate goodness of fit for CFI, marginal adequate goodness of fit for TLI, and close goodness of fit for RMSEA. The model for competence ($\chi^2(293, 297) = 645.79$, p < .001, *CFI* = .86, *TLI* = .84, *RMSEA* = .06) shows close goodness of fit for RMSEA, but does not show good fit for CFI and TLI (See Figures 4-6). Although the goodness of fit indicators for the individual models were not exceptional, the marginally adequate to close fit for models containing autonomy and relatedness offers reason for further consideration.

Figure 4.

Results for the Autonomy and Moral Self-Image Model



* *p* <. 05

Figure 5.

Results for the Competence and Moral Self-Image Model



* *p* <. 05

Figure 6.

Results for the Relatedness and Moral Self-Image Model



* *p* <. 05

Inspection of individual links in figures 4 through 6 began with paths from condition and guilt. Due to their locations in the model, the paths from condition to guilt and guilt to deontological thinking would not be expected to (and did not) vary from the original moral selfimage model. Notably, the paths from deontological thinking to each of the SDT subscales were significant for autonomy ($\beta = .25$, SE = .06, p = .001, CI = .08 - .30), competence ($\beta = .21$, SE = .21, SE = .21.05, p = .005, CI = .04 - .25), and relatedness ($\beta = .21, SE = .05, p = .002, CI = .06 - .26$). From this point, inspection of individual links focused on paths to and through moral self-image. Related findings show that the pathway from deontology to moral self-image in the competence model was significant ($\beta = -.14$, SE = .08, p = .044, CI = -.31 - -.004), however, while in the same direction, this pathway fell just below significant in the autonomy model ($\beta = -.13$, SE = .08, p = .060, CI = -.31 - .006) and relatedness model ($\beta = -.13, SE = .08, p = .054, CI = -.30 - .006$) .002). The path from moral self-image to prosocial behavior fell below significance in all three models: in the autonomy model ($\beta = -.12$, SE = .97, p = .06, CI = -3.70 - .08), in the competence model ($\beta = -.13$, SE = 1.74, p = .18, CI = -1.06 - 5.74), and in the relatedness model ($\beta = -.12$, SE= .97, p = .06, CI = -3.77 - .04). Lastly, the pathways from autonomy to moral self-image ($\beta =$.15, SE = .11, p = .046, CI = .004 - .44), competence to moral self-image ($\beta = .21$, SE = .13, p =.007, CI = .09 - .59, and relatedness to moral self-image ($\beta = .18, SE = .11, p = .010, CI = .07 - .010$.48) were all found to be significant. As a final point, though not focused upon in discussion of the original model, the significant pathway from the induction to prosocial behavior through guilt, in all three models, seems worth mentioning.

DISCUSSION

The current study is an attempt to counter the narrative that violent video games tend to lead to negative outcomes. This is done by testing a model similar to Olah (2023) describing how guilt elicited from violent video games might influence deontological moral thinking and to promote a set of positive psychological and behavioral outcomes. As well, this model was an attempt to replicate research by Shoshani and Krauskopf (2021) suggesting that basic psychological need satisfaction mediates the relationship of violent video games on psychological need satisfaction and prosocial behavior. In the main, the findings of this study did not either (a) support a model indicating that guilt induced by playing a violent video game influenced deontological moral thinking to promote subsequent outcomes, or (b) replicate or show support for the findings of Shoshani and Krauskopf (2021). That said, the findings provided several observations of note, which are examined in this section. The section begins by examining participant perceptions of the stimuli used in this study, violent or nonviolent versions of a game created in *Minecraft*. This is followed by a review of findings: first on tests on the predicted model and then test on several extensions and exploratory models, including one suggested by Olah (2023). After this review, the implications of these findings are overviewed. Finally, this study's limitations are identified and directions for future research are considered.

Perceptions of the Violent/Nonviolent Minecraft Game Versions

The stimuli used in the present study can be considered unique in research on the effects of violent video game play. Whereas almost all prior experimental studies varying exposure to video game violence have used existing games that could not be manipulated to create violent versus nonviolent versions of the same game, the present study used a game created to do just that. For example, researchers may use a shooter game (e.g., *Call of Duty, Doom, Fortnite*, etc.)

for the violent condition while also using a different game, many times from an entirely separate genre (e.g., *Mahjongg: Clicks, Pinball FX2*, etc.), for their nonviolent condition (Shoshani & Krauskopf, 2021; Uhlmann & Swanson, 2004). It may be that the effects observed in almost all prior research varying exposure to video game violence is not attributable to the absence or presence of violence but instead attributable to other factors inherent to the two different games themselves. That is, the mechanics, controls, goals, characters, environments, graphics, and a host of other factors may be the reason why differences are observed and not the difference in levels of violence. The current study accounts for these extraneous variables by having participants play the same game in both conditions. Moreover, participants play in the same environment where the only manipulation was whether the task they completed in-game was violent. Given its the unique qualities, examination of how participants perceived different versions of the game would seem of value.

Perhaps most importantly, measures reflect the intended effect of the manipulation. First, participants differed in their levels of perceived violence as expected, where those in the violent condition perceived *Minecraft* to be more violent than the nonviolent condition. Though the statistical strength of the induction's effect shows the violent condition was clearly perceived as more violent than the nonviolent condition, the induction might be considered a marginally violent video game, as the mean score for perceived violence was below the scale midpoint. Potentially, the violence in this game was not strong enough to reach some unidentified "tipping point" needed to induce certain effects (e.g., antisocial behavior). At the same time, however, the induction was strong enough to measurably influence feelings of guilt in the violent game players. This indicates clearly that while the perceived violence in the game might not have been strong, the induction was strong enough to influence conscious thought. As such, arguments that

the induction could not make related thoughts accessible in game players seem inconsistent with the findings.

Beyond perceptions of violence, differences were also observed on the three factors posited by Tamborini et al. (2013) to shape perceptions of violence. For example, the findings showed that participants in the nonviolent condition felt more justified in their behaviors than the violent condition. This is in line with Tamborini et al.'s research where lower levels of justification for violence are related to higher perceptions of violence. Similarly, those in the violent condition rated the game higher in terms of graphicness (i.e., blood/gore) as compared to the nonviolent group. At the same time, however, perceived realism was higher in the nonviolent group than the violent group, which on first thought seems counter to beliefs that higher levels of realism are related to higher levels of perceived violence. This may be explained, however, by logic suggesting participants simply find a character feeding villagers and livestock as more commonly occurring in everyday life than a character going into a village and killing everyone and everything.

Second, participants did not differ by condition in their levels of perceived enjoyment. Similarly, participants did not differ in how compelled they felt to complete tasks in the game nor how free they felt to do whatever they pleased in the game. As such, enjoyment or feeling compelled had little or nothing to do with the effect of playing the violent game on different outcomes. Importantly, however, mean scores for participants in both groups on how compelled they felt to complete game tasks was about one point higher than mean scores for how free they felt to do as they pleased. This difference may have occurred because participants were given strict instructions on the in-game tasks that they were to complete during the experiment. As such, it may have impacted the relationship between condition and basic psychological need

satisfaction for autonomy specifically. Nevertheless, participants reported that they felt some levels of freedom in doing as they pleased in the game. Moreover, it may be that the relationship between deontological moral thinking and autonomy would have been diminished if participants felt like they had no sense of autonomy while playing the game, which did not appear to be the case within the current study.

Third, though how this might have influenced outcomes in the present study seems unclear, participants differed by condition on measures of behavioral activity. The nonviolent version of *Minecraft* produced lower levels of behavioral activity (i.e., the total number of mouse clicks and keystrokes combined) than the violent version. This is because in the nonviolent condition participants were instructed to press the "Q" key to drop food for villagers and to right click the mouse one time to feed each animal. Importantly, feeding livestock is done only once for each animal. On the other hand, participants in the violent condition were instructed to kill each villager and livestock. To do this, participants had to go up to each villager and animal with their sword or axe and attack by using left click. Each villager and animal, however, takes multiple hits from a weapon before they are killed. With this, those in the violent condition would naturally have to click more times to complete their task because it takes multiple mouse clicks to kill one villager or animal. By contrast, those in the nonviolent condition only had to press one button to feed a villager or click the mouse one time to feed an animal.

Tests of the Predicted Model

As already stated, the findings in this study did not support the hypothesized model predicting that guilt induced by playing a violent video game would influence deontological moral thinking to promote subsequent outcomes. Failure to find a good fit for this model was unchanged regardless of whether it was tested with a composite measure of psychological need

satisfaction or in three separate models replacing psychological need satisfaction with individual measures for satisfaction of competence, autonomy, or relatedness needs. Although there was evidence supporting some parts of the composite and individual need satisfaction models, indicators showed a poor model fit, particularly concerning CFI and TLI. Thus, any discussion of the model should be considered with uncertainty. With this in mind, three individual paths in the model were in line with H1, H3, and H9. These paths predicted that violent game play would predict increased guilt (H1), deontological moral thinking would predict greater psychological need satisfaction (H3), and guilt would predict increased prosocial donation behavior (H9). Discussion here expands on observations associated with deontological thinking and findings based with H3, while findings associated with H1 and H9 are discussed in the next section on exploratory analyses.

The central role of deontological moral thinking in the predicted model was not supported by the findings. Nevertheless, findings associated with paths to and from this variable are worth mentioning. Although guilt did not predict higher deontological moral thinking as hypothesized, deontological moral thinking successfully predicted increased satisfaction of basic psychological needs. When basic psychological needs were investigated further in the models observing each subscale separately, deontological moral thinking successfully predicted autonomy and relatedness, but not competence. Once again, while remaining skeptical due to poor model fit, this pattern might be seen in line with the view that deontological moral thinking is agent relative, as posited by McNaughton and Rawling (1998, 2006). That is, the belief that one is duty bound to both uphold societal rules and cause no harm to others can sate the basic psychological need for autonomy and satisfying relationships. The same pattern is not, however, true of competence. There may be something about deontological thinking that does not satisfy

one's needs to be successful in overcoming challenges. The relationship between deontology and competence did not trend in a negative direction, so it would be unwise to suggest that deontology has a debilitating effect on competence.

Exploratory Analyses

Exploratory analyses tested several models, some showing better fit than others. Discussion of these models begins here with brief consideration of an attempt to replicate Shoshani and Krauskopf (2021). Following this, discussion turns to a more detailed consideration of tests on modified models, including one test replacing moral judgment in the original model with moral self-image, and three additional tests on the moral self-image model while replacing composite psychological need satisfaction with individual measures for satisfaction of competence, autonomy, or relatedness needs. Finally, discussion turns to consideration of a model suggested by Olah (2023) suggesting the potential for guilt to mediate the influence of playing a violent video game on prosocial behavior.

First, as stated above, the observations in this study failed to show support for the previous findings of Shoshani and Krauskopf (2021). One of this study's goals involved the attempt to replicate the findings of Shoshani and Krauskopf (2021), which suggested that playing a violent video game could have a direct positive effect on prosocial behavior. In line with the underpowered study by Olah (2023), no support was found for this model in the present, sufficiently powered, study. Olah (2023) offers two suggestions for this. First, differences between the protocols and measures used in the two studies (i.e., Shoshani and Krauskopf, 2021 versus Olah, 2023) may have caused the failure to replicate. Second, Shoshani and Krauskopf's findings might be unreliable, suggesting the need for revisions of their model. Given that the present study did not replicate Shoshani and Krauskopf's protocols and measures, the failure of

the present study cannot rule this dissimilarity out as a possibility. At the same time, some of the findings in the present study are consistent with revisions to Shoshani and Krauskopf's model suggested by Olah (2023).

Second, while tests of the hypothesized model showed poor fit, tests of the modified model (replacing moral judgment with moral self-image) were better, particularly when those tests replaced composite psychological need satisfaction with individual measures of autonomy or relatedness. Again, given the autonomy and relatedness models were modified models with marginally adequate to close fit, interpretation must be considered with great caution. That said, the two modifications made for these models can be considered in line with the underlying logic for the original model (replacing moral judgment with moral self-image essentially replaces moral judgment of others with moral judgment of self) or somewhat minor (replacing the composite measure of SDT needs with individual measures of autonomy and relatedness needs). While interpretive caution must be taken, the findings seem worthy of consideration. This consideration begins with discussion of the competence model.

Examination of individual paths in the revised moral self-image model with competence in place of the composite SDT measure revealed, as expected, no changes in paths unaffected by moral self-image and competence. Thus, the model shows that game-play condition was still a positive predictor of guilt. Beyond this, several significant paths were observed. First, guilt was still a positive predictor of prosocial donation behavior. In addition, deontological moral thinking was a positive predictor of competence needs and a negative predictor of moral self-image. Finally, competence needs predicted greater moral self-image.

A closely matching pattern of relationships was found for the revised moral self-image model with autonomy in place of the composite SDT measure, with the only notable difference

being that the path from deontological moral to moral self-image fell just below significance. Taken together, the two models suggest a pattern of relationships among deontological moral thinking, competence, and moral self-image that might be worth pursuing in their own right. However, as these patterns show little relevance to violent-game play (the central interest in this study), discussion is reserved for later (see Appendix D).

Third, while the best fit for models tested in this study were marginal, one pattern was observed consistently in all tested models. This was the pattern among violent game play, guilt, and prosocial donation behavior. Consistent with past research (Hartmann et al., 2010; Grizzard et al., 2014), playing a violent video game predicted higher guilt amongst participants. Next, guilt predicted increased donation behavior, which is consistent with claims that guilt may elicit atonement (Teroni & Brunn, 2011). Both patterns were observed in models 3 and 4, the two revised moral self-image models (with competence and autonomy replacing the composite SDT measure). Given the marginally adequate fit in these models, there seems reason for further consideration. Together, these patterns are in line with Olah's (2023) suggestion that guilt can mediate the positive influence of violent game play on prosocial behavior. The direct influence of the violent game play induction on guilt was clearly apparent in the data, as was the significant correlation between guilt and the subsequently taken measure of prosocial donation behavior.

The idea that performing one good behavior may allow one to bank a bad behavior for future use is known as *moral self-licensing* (Merritt et al., 2010). Relevant here, moral selflicensing has been used to explain findings in research by Ellithorpe et al. (2015), who found that once participants perceived they made the morally correct choice in a video game, they were more likely to decrease rewards given during a subsequent task. On the flipside, *moral cleansing*

happens when people who have behaved immorally, subsequently behave more cooperatively, as if they need to "cleanse themselves of" their bad deeds (e.g., Conway & Peetz, 2012; Jordan, Mullen & Murnighan, 2011). Moral cleansing has also been found across different domains, including cooperation (Conway & Peetz, 2012), and cheating (Jordan et al., 2011). More importantly, it has been directly applied to violent video game play (Gollwitzer & Melzer, 2012). Importantly, however, this research examined the influence of violent video game play on physical cleansing, as in the selection of hygiene products after playing a violent video game. It did not examine violent game play's influence on social behavior. Nevertheless, the logic underlying moral self-licensing seems to apply well here, suggesting that guilt induced by playing a violent video game led players to behave in a prosocial manner (i.e., donating to a local charity) in order to cleanse themselves of moral taint. With this, it may be that participants in the violent condition had higher guilt, and to atone for their guilty feelings they felt compelled to donate money to the fake charity. Moreover, these relationships remained after controlling for behavioral activity, whether the participant had played *Minecraft* in the past, and if the participant regularly played video games.

Notably, Carnagey and Anderson (2005) found that when violent behavior in a violent video game is rewarded, this leads to increases in aggressive affect, cognition, and behavior. To explain this, they posit that rewarding violence leads to aggressive thinking which, in turn, increases aggressive behavior. In the current study, participants were neither rewarded nor punished for their actions in the game. That is, participants were not given any indications by either in-game notifications or experimenters that they were doing a good or poor job. Moreover, there were no competitive elements like a leaderboard or scoreboard (Carnagey & Anderson, 2005; Velez et al., 2018) that could have influenced the relationships from condition to guilt and,

subsequently, guilt to donation behavior. Future research would benefit from investigating this model to see if other factors such as reward and/or punishment along with competition would act as potential moderators that may either strengthen or weaken these relationships. The implications of this, as well as other findings, are discussed.

Implications

The theoretical and practical implications of the current study are far reaching for moral and media psychologists, policy makers, and video game developers. This section discusses some of these in turn, including findings suggesting (violent game play induced) guilt's ability to predict donation behavior, guilt's failure to predict deontological moral thinking, and different predictors of moral self-image.

First, though the impact of violent game play on guilt has been observed several times in previous research, the relationship between game-play induced guilt and donation behavior has not. Those that felt guilty in this study felt more compelled to donate money to a local charity. Theoretically, this is important to research investigating how the reduction of guilt might increase enjoyment of video games (Hartmann et al., 2010; Hartmann et al., 2014; Hartmann & Vorderer, 2010). From a social benefit perspective, the current study might argue that it may *not* be best for game design to reduce a violent game players' guilt. Though decreasing guilt may lead to higher player enjoyment, the egoistic hedonic value to the player must be weighed against the social benefit of increased altruistic behaviors. That is, researchers studying violent game-design might focus less on learning how guilt can be reduced (to increase enjoyment) and more on how guilt can be increased to foster social benefit. Moreover, while this might seem to overlook commercial implications, the findings of this study suggest that enjoyment scores did not differ between groups, suggesting that though violent game play increased guilt, enjoyment

seemed generally uninfluenced. This has important implications for policy makers and video game developers because it lends support to the idea that a violent video game can lead to prosocial behaviors. If this is true, video game developers would benefit from creating scenarios in video games that increase levels of guilt, as those feelings of guilt may lead to prosocial behavior in real life without sacrificing commercial profit. Additional research, however, would be needed to test varying degrees of violence, guilt, enjoyment, and prosocial behaviors.

Second, the increase in guilt did not successfully predict deontological moral thinking. Unfortunately, the importance of deontological moral thinking in the overall model may be misplaced as there is no evidence that it increases by way of guilt. These findings are not in line with the research posited by Greene (2007, 2014) that states increased negative affect increases approval of deontological moral judgments. It may be that deontology may have a place within the model, but not in its current position. Deontological moral thinking, however, did have an influence on autonomy and relatedness, though not a significant effect on competence. Several researchers have discussed how moral action can be *integrated* (Arvantis & Stitcher, 2023; Ryan & Deci, 2020). That is, any action that is morally charged can be brought to align with one's own personal values. Ryan and Deci (2020) make the claim that an integrated intrinsic motivation is based on one's sense of values, where one will still complete the action because one views it as beneficial, even if the actor views the action as unenjoyable. It may be that those who integrated deontological moral thinking and see deontology as most beneficial may believe that their psychological needs of autonomy and relatedness are satisfied. This is theoretically important, as it contributes to SDT research by identifying an antecedent that fosters overall psychological well-being. Moreover, this is one of the first studies to the author's knowledge that investigates the impact of deontological moral thinking on basic psychological need satisfaction.

It is also important to recognize that deontological moral thinking did not predict moralization of everyday life or prosocial behavior. Both findings have theoretical value. Regarding everyday life moralization, there was no relationship between deontology and moral dilemmas, which is consistent with Olah (2023). In the current study, however, the MELS overcomes criticisms regarding the mundane validity of classic moral dilemmas measurements of deontology and utilitarianism. Unfortunately, it seems that the MELS was not adequate in highlighting the relationship between deontological thinking and scenarios that are more realistic, aside from a weak, positive correlation with one subscale of the MELS (i.e., Harm to members of one's social community). Regarding prosocial behavior, the idea that deontology successfully predicts donation behavior conflicts with past research (Friedland et al., 2020). Third, exploratory analyses found several relationships of moral self-image with variables from the original overall model. Although not included in the original, moral self-image was successfully predicted by both deontological moral thinking and basic psychological need satisfaction. Moreover, we must consider the ability of moral self-image to predict donation behavior, though this finding fell just below significance. Deontological moral thinking negatively predicted moral self-image, suggesting that deontology may have a debilitating effect on moral self-image. It may be that those high on deontological thinking take time to self-reflect on their own moral image. On the other hand, basic psychological need satisfaction positively predicted moral self-image. It may be that basic psychological needs mediate the negative relationship between deontology and moral self-image.

Interestingly, moral self-image showed a tendency to negatively predict donation behavior. In other words, those who had higher moral self-image seemed less likely to donate to a fake charity. This may suggest that those low on moral self-image felt compelled to donate to

charity to increase their own moral self-image. Past researchers have posited that moral identity is central to whether one engages in prosocial behavior (Aquino et al., 2009), but results of the current study are not in line with these findings. Moreover, these prior researchers state there may be situational factors that either increase or decrease accessibility to moral identity. For example, priming deontological moral thinking may decrease accessibility while situations that satisfy or frustrate basic psychological needs may increase accessibility.

Overall, the findings associated with the ability of guilt and moral self-image to predict donation behavior beg a classic debate for those that investigate altruistic behavior: Do people truly engage in altruistic behavior for no personal benefit? The current study lends credence to the idea that prosocial behavior may need to be elicited from others by way of either guilting them, dismantling moral self-image, bringing into light one's negative moral self-image, or a combination of these things. In the main, the observed relationship of violent video game play induced guilt to donation behavior is in line with contention that playing a violent video games can have a prosocial effect. At the same time, however, the lack of support for other relationships in the model limits inferences that can be drawn from the current study. And of course, since the relationships observed and suppositions based on exploratory analyses were not predicted, they offer avenues for future research more than foundations for confident beliefs.

Strengths and Weaknesses

The current study offers a novel attempt at explaining how violent video games may lead to positive outcomes, such as increases in basic psychological need satisfaction, moral judgment, and prosocial behavior. Some strengths of the current study are the procedure used to investigate the model, the stimuli, and the overall contribution that the current model offers to the body of video game literature.

To begin, the stimuli itself (i.e., playing *Minecraft*) was found to have its intended effect on participants. That is, participants in the violent condition did view the violent condition to be more violent than those in the non-violent condition. Moreover, levels of violence (or lack thereof) did not lead participants to differ in their levels of enjoyment.

The convincing nature of this finding should not be underestimated, given that the procedure used in the current study purposefully utilized the same game in both conditions instead of opting to use two different games. Typically, in studies investigating video games, researchers will use one game for the violent condition and another game for the nonviolent condition (e.g., Shoshani & Krauskopf, 2021) instead of using the same game for all conditions and manipulating the elements within the game. This may be because it is simpler to get two games that are different in their levels of violence than having to manipulate violence in the game itself. It is possible, however, that any outcome difference observed between groups are a function of game characteristics that differ in the two video games other than the presence or absence of violence.

Of course, there is always room for improvement with the stimuli used. For example, participants did differ in their levels of behavioral activity. In addition, for both groups, perceptions of feeling compelled to complete tasks in the game were higher than their feelings of being able to do as they please. Future research utilizing these stimuli would benefit from addressing these two concerns. The current study, however, addresses this concern by having all participants play the same video game where only the violence resulting from the task within the game differs. With this, the differences found between conditions can confidently be attributed to whether the game was violent or non-violent and not due to different fundamental characteristics of the game itself. On the whole, the stimuli used in the current study would be beneficial for use

in future studies that investigate violent versus non-violent conditions. With this, the stimuli have been placed on the Open-Science Framework should any future researchers desire to utilize the conditions (<u>https://osf.io/g7m9e/</u>).

No study is without its limitations and the current study is no exception. First, the moralization of everyday life scale was not correlated with any variables of interest. This is akin to Olah (2023), where moral dilemmas were used and no relationships of note with scenarios were found. This is the second study that found no relationship between deontological moral thinking and moral scenarios, either farfetched or realistic. Future researchers investigating the relationship from moral thinking to moral judgments made in real life would benefit from investigating or creating a scale that can ascertain moral judgment stemming from different moral perspectives.

Second, deontological moral thinking was not as essential in the overall model as was originally predicted. While there are some insightful relationships between deontology and other variables of interest (BPNS, MSI, etc.) the main supposition that guilt would significantly and positively predict deontological moral thought was not supported. It may just be that deontological moral thinking is not predicted from guilt and that deontology belongs elsewhere in the model. For example, deontological moral thinking may be a moderator between condition and guilt or even guilt to donation behavior. With this, future researchers would benefit from investigating how deontology, or other moral thinking perspectives such as utilitarianism and virtue ethics, may fit into this model differently. Finally, moral self-image, although exploratory, yielded notable results. Future researchers are encouraged to include moral self-image in related models to investigate it further, as it may play a pivotal part in this line of research.

Conclusion

Overall, the current study was an extension of Olah (2023) and an attempt at explaining if and how violent video games may influence positive outcomes. Not all relationships hypothesized were supported, but some important relationships did surface that have implications both theoretically and practically. Perhaps the most important outcome of the current study is to beg another question: if violent video games evoke guilty feelings in players, but those guilty feelings can lead to prosocial behavior, does this benefit outweigh other consequences of playing violent video games? Future researchers would benefit from investigating this relationship further to understand this important relationship regarding the effects of violent video games. The current study is a step in that direction. Ultimately, the current study set out to combat a narrative that violent video games lead to negative outcomes and do not have the potential to have positive outcomes. The results of the current study challenges criticisms suggesting violent video games produce antisocial outcomes by showing that while some responses to playing a violent video game may seem initially negative (i.e., increases in guilt) those negative responses can lead to positive outcomes that could, in the long run, lead those that engage in violent video games to be more prosocial.

REFERENCES

- Adachi, P. J., & Willoughby, T. (2011a). The effect of violent video games on aggression: Is it more than just the violence? *Aggression and Violent behavior*, 16(1), 55-62. <u>https://doi.org/10.1016/j.avb.2010.12.002</u>
- Adachi, P. J. C., & Willoughby, T. (2011b). The effect of video game competition and violence on aggressive behavior: Which characteristic has the greatest influence? *Psychology of Violence*, 1(4), 259–274. <u>https://doi.org/10.1037/a0024908</u>
- Adachi, P. J., & Willoughby, T. (2013). Demolishing the competition: The longitudinal link between competitive video games, competitive gambling, and aggression. *Journal of youth and adolescence*, *42*, 1090-1104. <u>https://doi.org/10.1007/s10964-013-9952-2</u>
- Adachi, P. J., & Willoughby, T. (2016). The longitudinal association between competitive video game play and aggression among adolescents and young adults. *Child development*, 87(6), 1877-1892. <u>https://doi.org/10.1111/cdev.12556</u>
- Annas, J. (2006). Virtue ethics. In D. Copp (Eds.), *The Oxford Handbook of Ethical Theory* (pp. 515-534). Oxford University Press, Inc. DOI <u>https://doi.org/10.1093/oxfordhb/9780195325911.003.0019</u>
- Anderson, C. A. (2004). An update on the effects of playing violent video games. *Journal of adolescence*, 27(1), 113-122. <u>https://doi.org/10.1016/j.adolescence.2003.10.009</u>
- Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological science*, 12(5), 353-359. <u>https://doi.org/10.1111/1467-9280.00366</u>
- Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, 53(1), 27-51.
- Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of personality and social psychology*, 78(4), 772. <u>https://doi.org/10.1037/0022-3514.78.4.772</u>
- Anderson, C. A., Gentile, D. A., & Dill, K. E. (2012). Prosocial, antisocial, and other effects of recreational video games. In D. G. Singer & J. L. Singer (Eds.), *Handbook of children* and the media (pp. 249–272). Sage Publications, Inc.
- Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., Rothstein, H. R., & 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*(2), 151–173. https://doi.org/10.1037/a0018251
- Aquino, K., Freeman, D., Reed II, A., Lim, V. K., & Felps, W. (2009). Testing a social-cognitive model of moral behavior: the interactive influence of situations and moral identity

centrality. Journal of personality and social psychology, 97(1), 123.

- Arvanitis, A., & Stichter, M. (2023). Why being morally virtuous enhances well-being: A selfdetermination theory approach. *Journal of Moral Education*, 52(3), 362-378. https://doi.org/10.1080/03057240.2022.2066640
- Badhwar, N. K. (1993). Altruism versus self-interest: Sometimes a false dichotomy. *Social Philosophy and Policy*, *10*(1), 90–117. <u>https://doi.org/10.1017/S0265052500004039</u>
- Bajovic, M. (2013). Violent video gaming and moral reasoning in adolescents: is there an association? *Educational media international*, *50*(3), 177-191. https://doi.org/10.1080/09523987.2013.836367
- Bandura, A. (2002). Selective moral disengagement in the exercise of moral agency. *Journal of Moral Education*, 31(2), 101-119. <u>https://doi.org/10.1080/0305724022014322</u>
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182. <u>https://doi.org/10.1037/0022-3514.51.6.1173</u>
- Baumeister, R. F., Stillwell, A. M., & Heatherton, T. F. (1994). Guilt: an interpersonal approach. *Psychological bulletin*, *115*(2), 243.
- Bentham, J. (1789). The principles of morals and legislation. New York.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2), 238.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, 88, 588–606. <u>https://doi.org/10.1037/0033-2909.88.3.588</u>
- Bolls, P. D. (2010). Understanding emotion from a superordinate dimensional perspective: A productive way forward for communication processes and effects studies. *Communication Monographs*, 77(2), 146-152. <u>https://doi.org/10.1080/03637751003790477</u>
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing Structural Equation Models* (pp. 136–162). Newbury Park, CA: Sage.
- Calvert, S. L., Appelbaum, M., Dodge, K. A., Graham, S., Nagayama Hall, G. C., Hamby, S., Fasig-Caldwell, L. G., Citkowicz, M., Galloway, D. P., & Hedges, L. V. (2017). The American Psychological Association Task Force assessment of violent video games: Science in the service of public interest. *American Psychologist*, 72(2), 126–143. <u>https://doi.org/10.1037/a0040413</u>

- Carnagey, N. L., & Anderson, C. A. (2005). The effects of reward and punishment in violent video games on aggressive affect, cognition, and behavior. *Psychological science*, *16*(11), 882-889. https://doi.org/10.1111/j.1467-9280.2005.01632.x
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Conway, P., & Peetz, J. (2012). When does feeling moral actually make you a better person? Conceptual abstraction moderates whether past moral deeds motivate consistency or compensatory behavior. *Personality and Social Psychology Bulletin, 38*, 907-919. <u>https://doi.org/10.1177/0146167212442394</u>
- Coyne, S. M., Padilla-Walker, L. M., Holmgren, H. G., Davis, E. J., Collier, K. M., Memmott-Elison, M. K., & Hawkins, A. J. (2018). A meta-analysis of prosocial media on prosocial behavior, aggression, and empathic concern: A multidimensional approach. *Developmental Psychology*, 54(2), 331. <u>http://dx.doi.org/10.1037/dev0000412</u>
- Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01
- Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology/Psychologie Canadienne*, 49(1), 14.
- Deci, E. L., & Ryan, R. M. (2013). *Intrinsic motivation and self-determination in human behavior*. Springer Science & Business Media.
- Denham, J., & Spokes, M. (2019). Thinking outside the 'murder box': virtual violence and prosocial action in video games. *The British Journal of Criminology*, 59(3), 737-755. <u>https://doi.org/10.1093/bjc/azy067</u>
- Dorantes-Argandar, G. (2021). Playing violent videogames is unrelated to antisocial behavior in Mexican children. *Entertainment Computing*, *39*, 100439. <u>https://doi.org/10.1016/j.entcom.2021.100439</u>
- Dubljević, V., Cacace, S., & Desmarais, S. L. (2022). Surveying ethics: a measurement model of preference for precepts implied in moral theories (PPIMT). *Review of Philosophy and Psychology*, 13(1), 197-214. <u>https://doi.org/10.1007/s13164-021-00530-z</u>
- 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. <u>https://doi.org/10.1089/cyber.2014.0599</u>

Entertainment Software Association (2022, January 18). U.S. Consumer Video Game Spending Totaled \$60.4 Billion in 2021. <u>https://www.theesa.com/news/u-s-consumer-video-game-spending-totaled-60-4-billion-in-2021/#:~:text=WASHINGTON%2C%20D.C.%20%E2%80%93%20January%2018%2C, ESA)%20and%20The%20NPD%20Group</u>

- Ferguson, C. J. (2007). Evidence for publication bias in video game violence effects literature: A meta-analytic review. *Aggression and Violent behavior*, *12*(4), 470-482.
- Ferguson, C. J. (2007). The good, the bad and the ugly: A meta-analytic review of positive and negative effects of violent video games. *Psychiatric quarterly*, 78, 309-316. <u>https://doi.org/10.1007/s11126-007-9056-9</u>
- Ferguson, C. J. (2008). The school shooting/violent video game link: Causal relationship or moral panic? *Journal of Investigative Psychology and Offender Profiling*, 5(1-2), 25-37. <u>https://doi.org/10.1002/jip.76</u>
- Ferguson, C. J. (2010). Blazing angels or resident evil? Can violent video games be a force for good? *Review of General Psychology*, 14(2), 68-81. <u>https://doi.org/10.1037/a0018941</u>
- Ferguson, C. J. (2018). The problem of false positives and false negatives in violent video game experiments. *International journal of law and psychiatry*, 56, 35-43. <u>https://doi.org/10.1016/j.ijlp.2017.11.001</u>
- Ferguson, C. J., Coulson, M., & Barnett, J. (2011). A meta-analysis of pathological gaming prevalence and comorbidity with mental health, academic and social problems. *Journal* of Psychiatric Research, 45(12), 1573-1578. <u>https://doi.org/10.1016/j.jpsychires.2011.09.005</u>
- Ferguson, C. J., & Olson, C. K. (2013). Friends, fun, frustration, and fantasy: Child motivations for video game play. *Motivation and Emotion*, 37, 154-164. <u>https://doi.org/10.1007/s11031-012-9284-7</u>
- Ferguson, T. J., Stegge, H., & Damhuis, I. (1991). Children's understanding of guilt and shame. *Child development*, 62(4), 827-839. <u>https://doi.org/10.1111/j.1467-8624.1991.tb01572.x</u>
- Fraser, A. M., Padilla-Walker, L. M., Coyne, S. M., Nelson, L. J., & Stockdale, L. A. (2012). Associations between violent video gaming, empathic concern, and prosocial behavior toward strangers, friends, and family members. *Journal of youth and adolescence*, 41(5), 636-649. <u>https://doi.org/10.1007/s10964-012-9742-2</u>
- Friedland, J., Emich, K., & Cole, B. M. (2020). Uncovering the moral heuristics of altruism: A philosophical scale. *PloS one*, 15(3), e0229124. https://doi.org/10.1371/journal.pone.0229124
- Gentile, D. A., Anderson, C. A., Yukawa, S., Ihori, N., Saleem, M., Ming, L. K., ... & Sakamoto, A. (2009). The effects of prosocial video games on prosocial behaviors: International evidence from correlational, longitudinal, and experimental studies. *Personality and Social Psychology Bulletin*, 35(6), 752-763. <u>https://doi.org/10.1177/0146167209333045</u>
- Gibbs, J.C., Basinger, K.S., & Fuller, D. (1992). *Moral maturity: Measuring the development of sociomoral reflection*. Hillsdale, NJ: Erlbaum.
- Gollwitzer, M., & Melzer, A. (2012). Macbeth and the joystick: Evidence for moral cleansing after playing a violent video game. *Journal of Experimental Social Psychology*, 48, 1356–1360. <u>https://doi.org/10.1016/j.jesp.2012.07.001</u>
- Gray, K., & Schein, C. (2012). Two minds vs. two philosophies: Mind perception defines morality and dissolves the debate between deontology and utilitarianism. *Review of Philosophy and Psychology*, 3(3), 405-423. <u>https://doi.org/10.1007/s13164-012-0112-5</u>
- Greene, J. D. (2007). Why are VMPFC patients more utilitarian? A dual-process theory of moral judgment explains. *Trends in cognitive sciences*, *11*(8), 322-323.
- Greene, J. D. (2014). Beyond point-and-shoot morality: Why cognitive (neuro) science matters for ethics. *Ethics*, *124*(4), 695-726. <u>https://doi.org/10.1086/675875</u>
- Greitemeyer, T., & Cox, C. (2013). There's no "I" in team: Effects of cooperative video games on cooperative behavior. *European Journal of Social Psychology*, 43(3), 224-228. <u>https://doi.org/10.1002/ejsp.1940</u>
- Greitemeyer, T., & Mügge, D. O. (2014). Video games do affect social outcomes: A metaanalytic review of the effects of violent and prosocial video game play. *Personality and social psychology bulletin*, 40(5), 578-589. <u>https://doi.org/10.1177/0146167213520459</u>
- Greitemeyer, T., & Osswald, S. (2010). Effects of prosocial video games on prosocial behavior. *Journal of Personality and Social Psychology*, 98(2), 211-221. <u>https://doi.org/10.1037/a0016997</u>
- Greitemeyer, T., & Osswald, S. (2011). Playing prosocial video games increases the accessibility of prosocial thoughts. *The Journal of Social Psychology*, *151*(2), 121-128. https://doi.org/10.1080/00224540903365588
- Griffiths, M. (1999). Violent video games and aggression: A review of the literature. *Aggression and violent behavior*, 4(2), 203-212. <u>https://doi.org/10.1016/S1359-1789(97)00055-4</u>
- Grizzard, M., Tamborini, R., Lewis, R. J., Wang, L., & Prabhu, S. (2014). Being bad in a video game can make us morally sensitive. *Cyberpsychology, Behavior, and Social Networking*, 17(8), 499-504. <u>https://doi.org/10.1089/cyber.2013.0658</u>
- Grizzard, M., Tamborini, R., Sherry, J. L., & Weber, R. (2017). Repeated play reduces video games' ability to elicit guilt: Evidence from a longitudinal experiment. *Media Psychology*, 20(2), 267-290. <u>https://doi.org/10.1080/15213269.2016.1142382</u>
- Haidt, J., & Joseph, C. (2007). The moral mind: How five sets of innate intuitions guide the development of many culture-specific virtues, and perhaps even modules. *The innate mind*, *3*, 367-391.
- Harder, D. W. (1995). Shame and guilt assessment, and relationships of shame- and guiltproneness to psychopathology. In J. P. Tangney & K. W. Fischer (Eds.), *Self-conscious emotions: The psychology of shame, guilt, embarrassment, and pride* (pp. 368–392).

Guilford Press.

- Harrington, B., & O'Connell, M. (2016). Video games as virtual teachers: Prosocial video game use by children and adolescents from different socioeconomic groups is associated with increased empathy and prosocial behaviour. *Computers in Human Behavior*, 63, 650-658. https://doi.org/10.1016/j.chb.2016.05.062
- Hartmann, T. (2011). Is virtual violence a morally problematic behavior? *Virtual Worlds and Criminality*, 31-44. <u>https://doi.org/10.1007/978-3-642-20823-2_3</u>
- Hartmann, T., Krakowiak, K. M., & Tsay-Vogel, M. (2014). How violent video games communicate violence: A literature review and content analysis of moral disengagement factors. *Communication Monographs*, 81(3), 310-332. <u>https://doi.org/10.1080/03637751.2014.922206</u>
- Hartmann, T., Toz, E., & Brandon, M. (2010). Just a game? Unjustified virtual violence produces guilt in empathetic players. *Media Psychology*, *13*(4), 339-363. <u>https://doi.org/10.1080/15213269.2010.524912</u>
- Hartmann, T., & Vorderer, P. (2010). It's okay to shoot a character: Moral disengagement in violent video games. *Journal of Communication*, 60(1), 94-119. <u>https://doi.org/10.1111/j.1460-2466.2009.01459.x</u>
- Hodge, S. E., Taylor, J., & McAlaney, J. (2020). Is It Still Double Edged? Not for University Students' Development of Moral Reasoning and Video Game Play. *Frontiers in psychology*, 11, 1313. <u>https://doi.org/10.3389/fpsyg.2020.01313</u>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6(1), 1-55. <u>https://doi.org/10.1080/10705519909540118</u>
- Jordan, J., Leliveld, M. C., & Tenbrunsel, A. E. (2015). The moral self-image scale: Measuring and understanding the malleability of the moral self. *Frontiers in psychology*, *6*, 157136. https://doi.org/10.3389/fpsyg.2015.01878
- Jordan, J., Mullen, E., & Murnighan, J. K. (2011). Striving for the moral self: The effects of recalling past moral actions on future moral behavior. *Personality and Social Psychology Bulletin*, *37*, 701-713. <u>https://doi.org/10.1177/0146167211400208</u>
- Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Chicago, IL: Scientific Software International.
- Kahane, G. (2015). Sidetracked by trolleys: Why sacrificial moral dilemmas tell us little (or nothing) about utilitarian judgment. *Social neuroscience*, *10*(5), 551-560. https://doi.org/10.1080/17470919.2015.1023400
- Kahane, G., Everett, J. A., Earp, B. D., Farias, M., & Savulescu, J. (2015). 'Utilitarian' judgments in sacrificial moral dilemmas do not reflect impartial concern for the greater

good. Cognition, 134, 193-209. https://doi.org/10.1016/j.cognition.2014.10.005

- Kant, I. (1873). Foundations of the Metaphysics of Morals. *The Moral Life: An Introductory Reader in Ethics and Literature*, 2, 297-316.
- Keller, J. (2022, June 2). Keller @ Large: Are video games to blame for gun violence? *CBS Boston*. <u>https://www.cbsnews.com/boston/news/keller-large-are-video-games-to-blame-for-gun-violence/</u>
- Kneer, J., Jacobs, R., & Ferguson, C. (2018). You could have just asked: The perception of motivations to play violent video games. *Simulation and Gaming*, 6(2). <u>doi.org/10.11114/smc.v6i2.3389</u>
- Kohlberg, L. (1984). The psychology of moral development (Vol. II). San Francisco, CA: Harper & Row Publishers.
- Krcmar, M., & Cingel, D. P. (2016). Moral foundations theory and moral reasoning in video game play: Using real-life morality in a game context. *Journal of Broadcasting & Electronic Media*, 60(1), 87-103. <u>https://doi.org/10.1080/08838151.2015.1127246</u>
- Kugler, K., & Jones, W. H. (1992). On conceptualizing and assessing guilt. *Journal of Personality and Social Psychology*, 62(2), 318–327. <u>https://doi.org/10.1037/0022-3514.62.2.318</u>
- Li, H., & Zhang, Q. (2023). Effects of Prosocial Video Games on Prosocial Thoughts and Prosocial Behaviors. *Social Science Computer Review*, *41*(3), 1063– 1080. https://doi.org/10.1177/08944393211069599
- Lin, S. F. (2011). Effect of opponent type on moral emotions and responses to video game play. *Cyberpsychology, Behavior, and Social Networking, 14*(11), 695-698. <u>https://doi.org/10.1089/cyber.2010.0523</u>
- Lovett, B. J., Jordan, A. H., & Wiltermuth, S. S. (2012). Individual differences in the moralization of everyday life. *Ethics & Behavior*, 22(4), 248-257. https://doi.org/10.1080/10508422.2012.659132
- Markey, P. M., & Ferguson, C. J. (2017a). Teaching Us to Fear: The Violent Video Game Moral Panic and The Politics of Game Research. *American Journal of Play*, *10*(1), 99-115.
- Markey, P. M., & Ferguson, C. J. (2017b). Internet gaming addiction: Disorder or moral panic? *American Journal of Psychiatry*, *174*(3), 195-196. <u>https://doi.org/10.1176/appi.ajp.2016.16121341</u>
- Marsh, H. W., Hau, K. T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesistesting approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling*, 11(3), 320-341. <u>https://doi.org/10.1207/s15328007sem1103_2</u>

- McCormick, M. (2001). Is it wrong to play violent video games?. *Ethics and Information Technology*, *3*(4), 277-287.
- McNaughton, D., & Rawling, P. (1998). On defending deontology. *Ratio*, 11(1), 37-54. https://doi.org/10.1111/1467-9329.00050
- McNaughton, D., & Rawling, P. (2006). Deontology. In D. Copp (Eds.), *The Oxford Handbook* of Ethical Theory (pp. 424-458). Oxford University Press, Inc. DOI <u>https://doi.org/10.1093/oxfordhb/9780195325911.003.0016</u>
- Merritt, A. C., Effron, D. A., & Monin, B. (2010). Moral self-licensing: When being good frees us to be bad. *Social and personality psychology compass*, 4(5), 344-357. <u>https://doi.org/10.1111/j.1751-9004.2010.00263.x</u>
- Mulaik, S. (2007). There is a place for approximate fit in structural equation modelling. *Personality and Individual Differences*, 42(5), 883-891. https://doi.org/10.1016/j.paid.2006.10.024
- Nabi, R. L., & Wirth, W. (2008). Exploring the role of emotion in media effects: An introduction to the special issue. *Media psychology*, 11(1), 1-6. <u>https://doi.org/10.1080/15213260701852940</u>
- Olah, M. (2023). Does violence beget morality? Violent video games and outcomes on moral judgment, affect, psychological needs, and prosocial behavior [Unpublished manuscript]. Department of Communication, Michigan State University, East Lansing, United States.
- Przybylski, A. K., Ryan, R. M., & Rigby, C. S. (2009). The motivating role of violence in video games. *Personality and Social Psychology Bulletin*, 35(2), 243-259. <u>https://doi.org/10.1177/0146167208327216</u>
- Przybylski, A. K., Weinstein, N., & Murayama, K. (2017). Internet gaming disorder: Investigating the clinical relevance of a new phenomenon. *American Journal of Psychiatry*, 174(3), 230-236.
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48, 1-36. <u>https://doi.org/10.18637/jss.v048.i02</u>
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*,63, 397–427.
- Ryan, R. M., & Deci, E. L. (2002). Overview of self-determination theory: An organismic dialectical perspective. *Handbook of Self-Determination Research*, *2*, 3-33.
- Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary educational psychology*, *61*, 101860. <u>https://doi.org/10.1016/j.cedpsych.2020.101860</u>
- Ryan, M., Formosa, P., Howarth, S., & Staines, D. (2020). Measuring morality in videogames

research. *Ethics and Information Technology*, 22, 55-68. <u>https://doi.org/10.1007/s10676-019-09515-0</u>

- Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion*, *30*(4), 344-360. https://doi.org/10.1007/s11031-006-9051-8
- Sabini, J., & Silver, M. (1997). In defense of shame: Shame in the context of guilt and embarrassment. *Journal for the Theory of Social Behaviour*, 27(1), 1-15. https://doi.org/10.1111/1468-5914.00023
- Sherry, J. L. (2001). The effects of violent video games on aggression: A meta-analysis. *Human Communication Research*, 27(3), 409-431. <u>https://doi.org/10.1111/j.1468-</u> 2958.2001.tb00787.x
- Sherry, J. (2007). Violent video games and aggression: Why can't we find links? In R. Preiss, B. Gayle, N. Burrell, M. Allen, & J. Bryant (Eds.), *Mass media effects research: Advances Through Meta-Analysis* (pp. 231–248). Mahwah, NJ: L. Erlbaum.
- Shoshani, A., & Krauskopf, M. (2021). The Fortnite social paradox: The effects of violentcooperative multi-player video games on children's basic psychological needs and prosocial behavior. *Computers in Human Behavior*, 116, 106641. https://doi.org/10.1016/j.chb.2020.106641
- Smith, R. H., Webster, J. M., Parrott, W. G., & Eyre, H. L. (2002). The role of public exposure in moral and nonmoral shame and guilt. *Journal of personality and social psychology*, 83(1), 138. <u>https://doi.org/10.1037/0022-3514.83.1.138</u>
- Smith, S. L., Wilson, B. I., Kunkel, D., Linz, D., Potter, W. J., Colvin, C. M., & Donnerstein, E. (1998). Violence in television programming overall: University of California, Santa Barbara study. National television violence study (Vol. 3, pp. 5-220). Newbury Park, CA: Sage.
- Staines, D. (2010). Videogames and moral pedagogy: A Neo-Kohlbergian approach. In *Ethics* and game design: Teaching values through play (pp. 35-51). IGI Global.
- Tamborini, R., Bowman, N. D., Prabhu, S., Hahn, L., Klebig, B., Grall, C., & Novotny, E. (2018). The effect of moral intuitions on decisions in video game play: The impact of chronic and temporary intuition accessibility. *New Media & Society*, 20(2), 564-580. <u>https://doi.org/10.1177/1461444816664356</u>
- Tamborini, R., Weber, R., Bowman, N. D., Eden, A., & Skalski, P. (2013). "Violence is a manysplintered thing": The importance of realism, justification, and graphicness in understanding perceptions of and preferences for violent films and video games. *Projections*, 7(1), 100-118.
- Tangney, J. P. (1991). Moral affect: The good, the bad, and the ugly. *Journal of Personality and Social Psychology*, *61*(4), 598–607. <u>https://doi.org/10.1037/0022-3514.61.4.598</u>

- Tangney, J. P. (1994). The mixed legacy of the superego: Adaptive and maladaptive aspects of shame and guilt. In J. M. Masling & R. F. Bornstein (Eds.), *Empirical perspectives on object relations theory* (pp. 1–28). American Psychological Association. <u>https://doi.org/10.1037/11100-001</u>
- Tangney, J. P., Miller, R. S., Flicker, L., & Barlow, D. H. (1996). Are shame, guilt, and embarrassment distinct emotions? *Journal of Personality and Social Psychology*, 70(6), 1256–1269. <u>https://doi.org/10.1037/0022-3514.70.6.1256</u>
- Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007). Moral emotions and moral behavior. *Annu. Rev. Psychol.*, *58*, 345-372. doi: <u>10.1146/annurev.psych.56.091103.070145</u>
- Tangney, J. P., Wagner, P., & Gramzow, R. (1992). Proneness to shame, proneness to guilt, and psychopathology. *Journal of Abnormal Psychology*, 101(3), 469– 478. <u>https://doi.org/10.1037/0021-843X.101.3.469</u>
- Tear, M. J., & Nielsen, M. (2013). Failure to demonstrate that playing violent video games diminishes prosocial behavior. *PloS one*, 8(7), e68382. <u>https://doi.org/10.1371/journal.pone.0068382</u>
- Tear, M. J., & Nielsen, M. (2014). Video games and prosocial behavior: A study of the effects of non-violent, violent and ultra-violent gameplay. *Computers in Human Behavior*, 41, 8-13. <u>https://doi.org/10.1016/j.chb.2014.09.002</u>
- Teroni, F., & Bruun, O. (2011). Shame, guilt and morality. *Journal of Moral Philosophy*, 8(2), 223-245. <u>https://doi.org/10.1163/174552411X563574</u>
- Tilghman-Osborne, C., Cole, D. A., & Felton, J. W. (2010). Definition and measurement of guilt: Implications for clinical research and practice. *Clinical psychology review*, 30(5), 536-546. <u>https://doi.org/10.1016/j.cpr.2010.03.007</u>
- Twitch (2021). Press Center Facts and Figures. https://www.twitch.tv/p/press-center/
- Uhlmann, E., & Swanson, J. (2004). Exposure to violent video games increases automatic aggressiveness. *Journal of Adolescence*, 27(1), 41-52. https://doi.org/10.1016/j.adolescence.2003.10.004
- Valdesolo, P., & DeSteno, D. (2006). Manipulations of emotional context shape moral judgment. *Psychological Science-Cambridge*, *17*(6), 476.
- Van den Broeck, A., Ferris, D. L., Chang, C. H., & Rosen, C. C. (2016). A review of selfdetermination theory's basic psychological needs at work. *Journal of Management*, 42(5), 1195-1229. <u>https://doi.org/10.1177/0149206316632058</u>
- Velez, J. A., & Ewoldsen, D. R. (2013). Helping behaviors during video game play. Journal of Media Psychology, 25(4), 190-200. <u>https://doi.org/10.1027/1864-1105/a000102</u>
- Velez, J. A., Ewoldsen, D. R., Hanus, M. D., Song, H., & Villarreal, J. A. (2018). Social

comparisons and need fulfillment: Interpreting video game enjoyment in the context of leaderboards. *Communication Research Reports*, *35*(5), 424-433. https://doi.org/10.1080/08824096.2018.1525352

- Ward, M. R. (2011). Video games and crime. *Contemporary economic policy*, 29(2), 261-273. https://doi.org/10.1111/j.1465-7287.2010.00216.x
- Weaver, A. J., & Lewis, N. (2012). Mirrored morality: An exploration of moral choice in video games. *Cyberpsychology, Behavior, and Social Networking*, 15(11), 610-614. <u>https://doi.org/10.1089/cyber.2012.0235</u>
- Williams, C., & Bybee, J. (1994). What do children feel guilty about? Developmental and gender differences. *Developmental Psychology*, 30(5), 617–623. <u>https://doi.org/10.1037/0012-1649.30.5.617</u>
- Yen, M. T. H. (2022). The effect of video games on moral decision making: Empathy as a moderator. *Jurnal Psikologi Malaysia*, *35*(3).

APPENDIX A – MATERIALS Experimental Cover Story

Nonviolent

MSU students and faculty within the College of Communication Arts and Sciences are developing a new game that borrows elements (e.g., programming, environments, items, mechanics, etc.) from a game named *Minecraft*. These developers are looking to test these elements within *Minecraft* before implementing them into their new game. This is an initial step in testing the gameplay to see if everything is functioning as intended. They want you to play the game to see how it works.

In these initial steps, they are testing the performance of different game characters. The character you are playing today is a villager who feeds other villagers and livestock. You will be given instructions on how to play the game. Following this, you will practice controlling your character for a few minutes. Then, you will be asked to play your character in the game for 10-15 minutes.

Violent

MSU students and faculty within the College of Communication Arts and Sciences are developing a new game that borrows elements (e.g., programming, environments, items, mechanics, etc.) from a game named *Minecraft*. These developers are looking to test these elements within *Minecraft* before implementing them into their new game. This is an initial step in testing the gameplay to see if everything is functioning as intended. They want you to play the game to see how it works.

In these initial steps, they are testing the performance of different game characters. The character you are playing today is a villager who kills other villagers and livestock. You will be given instructions on how to play the game. Following this, you will practice controlling your character for a few minutes. Then, you will be asked to play your character in the game for 10-15 minutes.

Tutorial Instructions

Nonviolent Condition

To help you get familiar with the game, you will be given 5 minutes to learn the basic controls. Please see the list of controls further down on this document.

In this tutorial, please give carrots to the villagers (See Picture 1 below) and enter the pen with the livestock (cows and sheep) to feed them (See Picture 2 below).

Your character starts with a carrot in their hand. To give carrots to the villagers, walk up to a villager and press "Q" to throw a carrot on the ground. A villager should take notice that you have dropped the carrot and will pick it up if they are close enough. Make sure you get close enough before dropping the carrot. After you have fed 1 villager, repeat this action 2 more times. We want you to feed 3 villagers in all.

After giving carrots to the villagers, approach the sheep and cows so that you can feed them. Unlike the villagers, the sheep and cows eat wheat. To feed sheep/cows, you must select the wheat item on your hot bar at the bottom of the screen by using the mouse wheel and scroll down. Once you see the carrot has changed to wheat in the character's hand, enter the pen by having your character approach the gate (i.e., portion of the fence between the torches; see second screenshot below) and right click on the gate to open the pen. To open the gate, your character needs to be looking at the fence gate. Once inside, close the gate so the animals do not escape. Then, with the wheat in hand, walk up to an animal to feed it. You must be facing the animal to feed it. Once you are facing the animal, feed the animal by using right click on the mouse. You will know it was fed when you see your character closer and directly in front of the animal and hit right click again. After you have fed 1 animal, repeat this action 3 more times. We want you to feed 4 animals in all.

Once you have completed these tasks, raise your hand and the experimenter will come to reset the game so the study can begin.

Basic Controls

Move Mouse to look around

W-Move Forward

S – Move Backward

- A Move Left
- D Move Right

Q – Drop item that is being held

Left Ctrl – Run/Sprint (while moving)

Mouse Wheel (Up/Down) - Cycle through items on hot bar

Right Click – Interact with item/Open door/open gate/Feed animal

Figure 7.

Photograph of Food and Villagers (Nonviolent Condition)



Figure 8.



Photograph of How to Access Animal Pen (Nonviolent Condition)

Tutorial Instructions

Violent Condition

To help you get familiar with the game, you will be given 5 minutes to learn the basic controls. Please see the list of controls further down on this document.

In this tutorial, please attack and kill the villagers (See Picture 1 below) enter the pen with the livestock (cows and sheep) to kill them (See Picture 2 below).

Your character starts with a sword in their hand. To attack the villagers, walk up to a villager and press "left click" to swing your sword at a villager. You will know a villager is hit when they glow red and start to run away. Make sure you get close enough to the villager to hit them. You must hit a villager multiple times to kill them. After you have killed 1 villager, repeat this action 2 more times. We want you to kill 3 villagers in all.

After killing the villagers, approach the sheep and cows so that you can kill them. Unlike the villagers, you must kill the sheep and cows using your axe. To kill sheep/cows, you must select the axe on your hot bar at the bottom of the screen by using the mouse wheel and scroll down. Once you see the sword has changed to an axe in your character's hand, enter the pen by having your character approach the gate (i.e., portion of the fence between the torches; see second screenshot below) and right click on the gate to open the pen. To open the gate, your character needs to be looking at the fence gate. Once inside, close the gate so the animals do not escape. Then, with the axe in hand, walk up to an animal to kill it. You must be facing the animal to kill it. Once you are facing the animal, hit the animal by using left click on the mouse. You must hit the animal several times before it dies. You will know it was killed when the animal falls over and disappears. If you do not see this, move your character closer and directly in front of the animal and hit left click again. After you have killed 1 animal, repeat this action 3 more times. We want you to kill 4 animals in all.

Once you have completed these tasks, raise your hand and the experimenter will come to reset the game so the study can begin.

Basic Controls

Move Mouse to look around.

- W Move Forward
- S-Move Backward
- A Move Left
- D Move Right
- Q Drop item that is being held
- Left Ctrl Run/Sprint (while moving)

Mouse Wheel (Up/Down) - Cycle through items on hot bar

Left Click – Stab with Sword/Chop with Axe

Right Click – Interact (Open door/open fence gate)

Figure 9.

Photograph of Weapons and Villagers (Violent Condition)



Figure 10.





Preference for Precepts Implied in Moral Theories (PPIMT)

Dubljević et al. (2022)

Please indicate how much you disagree or agree with the following on a scale of 1 (*Strongly Disagree*) to 7 (*Strongly Agree*).

When thinking about what is moral or immoral in a situation, it is important to me whether the involved persons...

Virtue

- 1. have good or bad intentions.
- 2. have good or bad aims.
- 3. have good or bad motives.
- 4. have good or bad interests.

Deontology

- 1. respect or do not respect certain rules.
- 2. respect or do not respect certain obligations.
- 3. respect or do not respect certain norms.
- 4. respect or do not respect certain duties.

Consequentialism

- 1. cause happiness or suffering.
- 2. make somebody end up worse or better off.
- 3. cause pleasure or pain.

Basic Psychological Needs Scale (Deci & Ryan, 2000)

Please read each of the following items carefully, thinking about how it relates to your life, and

then indicate how true it is for you on a scale of 1 (Not at all true) to 7 (Very true).

- 1. I feel like I am free to decide for myself how to live my life. A
- 2. I really like the people I interact with. R
- 3. Often, I do not feel very competent. C (Reverse Scored)
- 4. I feel pressured in my life. (A) (Reverse Scored)
- 5. People I know tell me I am good at what I do. (C)
- 6. I get along with people I come into contact with. (R)
- 7. I pretty much keep to myself and don't have a lot of social contacts. (R) (Reversed Scored)
- 8. I generally feel free to express my ideas and opinions. (A)
- 9. I consider the people I regularly interact with to be my friends. (R)
- 10. I have been able to learn interesting new skills recently. (C)
- 11. In my daily life, I frequently have to do what I am told. (A) (Reverse Scored)
- 12. People in my life care about me. (R)
- 13. Most days I feel a sense of accomplishment from what I do. (C)
- 14. People I interact with on a daily basis tend to take my feelings into consideration. (A)
- 15. In my life I do not get much of a chance to show how capable I am. (C) (Reversed Scored)
- 16. There are not many people that I am close to. (R) (Reversed Scored)
- 17. I feel like I can pretty much be myself in my daily situations. (A)
- 18. The people I interact with regularly do not seem to like me much. (R) (Reversed Scored)
- 19. I often do not feel very capable. (C) (Reversed Scored)
- 20. There is not much opportunity for me to decide for myself how to do things in my daily life. (A) (Reversed Scored)
- 21. People are generally pretty friendly towards me. (R)
- A = Autonomy, C = Competence, R = Relatedness

Moralization of Everyday Life Scale (Lovett et al., 2012)

Please indicate how much you consider the behavior to be morally wrong on a scale from 0 (Not wrong at all; A perfectly OK action) to 6 (very wrong; An extremely immoral action)

Deception

Keeping extra money accidentally dispensed from an ATM. Lying about a test score when reporting performance to a teacher. Feigning an injury to collect on insurance. Lying about one's age to receive an age-based discount. Sneaking into a movie theater to see a movie without paying.

Harm to Members of one's Social Community

Parking in a "handicapped" parking spot when not handicapped. Smoking a cigarette in a non-smoking section of a restaurant. Using someone else's toothbrush without his or her permission. Failing to keep a commitment to help on a project for work. Having sex with someone while one's partner is out of town.

Laziness

Feeling too tired to do laundry, so lying around in dirty clothes. Choosing to wake up late, despite having a busy day ahead. Packing for a trip at the last minute.

Purchasing a car without doing research on price or quality. Taking an elevator rather than walking up a single flight of stairs.

Failure to Take Opportunities to do Good

Ignoring a driver whose car is stuck in the snow. Throwing away clothes rather than donating them to charity. Ignoring a woman struggling to carry bags of groceries. Failing to offer one's seat on a bus to an elderly, disabled individual. Tripping on a rock but leaving it on the sidewalk where one tripped.

Body Violations

A 40-year-old man having consensual sex with an 18-year-old woman. An 18-year-old woman breaking an abstinence vow to have premarital sex. Getting a large tattoo covering the face and neck. Drinking 10 beers at a party and vomiting several times. Smoking marijuana at a party out of curiosity.

Disgusting Behaviors

A 13-year-old girl kissing her 14-year-old brother passionately on the mouth. Defecating, not washing one's hands, and then preparing dinner for oneself. Wearing a pair of pants for three weeks without washing them. Choosing to flatulate while out to dinner with friends. Failing to shower for four days due to a lack of time.

Moral Self-Image Scale (Jordan et al., 2015)

Participants are asked to respond to the following statements as it applied to them on a scale from 1 to 9 using the following below, where X is replaced with nine different words.

Table 2.

Moral Self-Image Scale

1				5				9
Much				Exactly				Much
less X				as X as				more X
than the	2	3	4	the	6	7	8	than the
person I				person I				person I
want to				want to				want to
be				be				be

- 1. Compared to the **caring** person I want to be, I am:
- 2. Compared to the **compassionate** person I want to be, I am:
- 3. Compared to the **fair** person I want to be, I am:
- 4. Compared to the **friendly** person I want to be, I am:
- 5. Compared to the **generous** person I want to be, I am:
- 6. Compared to the **hardworking** person I want to be, I am:
- 7. Compared to the **helpful** person I want to be, I am:
- 8. Compared to the **honest** person I want to be, I am:
- 9. Compared to the **kind** person I want to be, I am:

Donation Task

For participating in this study, you will be entered in a raffle with other participants for a chance to win \$50. If you wish to be entered into the raffle, please fill out the information below. *Note: your information will not be tied to your responses in this experiment as all answers are kept anonymous.*

Name:

Email:

Screen 2

The college of Communication Arts and Sciences here at MSU is partnered with X (Name of Charity), a local charity here in East Lansing that assists those without housing. Should you win the raffle, you can choose to donate any amount of your winnings which will be donated to X (Name of charity). Please indicate the amount below (From \$0 - \$50) that you would like to donate should you win the raffle. *Note: Your chance of winning the raffle is not affected by any amount you indicate*.

\$_____

APPENDIX B – CONTROLLING GAME ELEMENTS

The purpose of this section is to detail which options and/or console commands were

entered into *Minecraft* to control for potential confounds across all conditions and participants.

World Creation

Game Mode = Creative Difficulty = Peaceful Allow Cheats = On

Game Rules

Spawn Phantoms = OFF Spawn Mobs = OFF Spawn Pillager Patrols = OFF Spawn Wandering Traders = OFF Spawn Wardens = OFF

Options

In-Game options – Music – Turned off (0%)

Keybinds

"Jump" – Rebound to backquote (`) instead of "Space" Open/Close Inventory – Rebound to "=" instead of "E" Attack/Destroy – Rebound to "*" instead of "Left Mouse" (Nonviolent condition only)

Console Commands

By pressing "T" while in-game to open the console and then typing:

/time set day

• Changes the time of day to a value of 1000 (daylight)

/gamerule doDaylightCycle False

• Turns off the day/night cycle that occurs in 20-minute intervals within the game. That is, the game remains at a value of time set to 1000 (daylight) for the entirety of the experiment.

/gamerule doWeatherCycle false

• Disables weather cycles that occur randomly within the environment (e.g., rain and thunderstorms).

/gamerule doMobLoot false

• This command turned off the option for mobs (villagers/livestock) to drop loot/items when they are killed.

 $/ summon \; X$

• This command was used to summon (i.e., spawn) both villagers and livestock by replacing "X" in the statement with the corresponding target. For example, "/summon sheep" would spawn 1 sheep at the player's location.

Note: Many of these console commands can also be applied during world creation under the "Game Rules" option.

APPENDIX C - DISCUSSION OF REVISED MODELS FOR AUTONOMY, COMPETENCE, AND RELATEDNESS

An examination of the individual pathways began by inspecting the link between condition and guilt, which was the same for all revised models. Inspection shows the link remained significant after accounting for behavioral activity, whether participants played *Minecraft* in the past, and whether participants play video games regularly ($\beta = .27$, SE = .15, p < .001, CI = .30 - .87). Notably, this was true even though guilt was significantly affected by whether participants played *Minecraft* regularly ($\beta = .17$, SE = .18, p = .004, CI = .87 - .16) and whether participants regularly play video games ($\beta = .19$, SE = .13, p < = .001, CI = .67 - .17). Pathways after the initial link between condition and guilt are discussed individually for each model, with particular attention paid to the influence of deontological thinking on the separate dimensions of SDT, and each dimension's influence on donation behavior. Due to their locations in the model, the paths from guilt to deontological thinking and from deontological thinking to moral judgments would not be expected to vary from the original model. Once again, these paths and paths beyond that point should be interpreted with reservation due to the low CFI and TLI for these models.

For the model investigating autonomy, the pathway from deontology to autonomy was significant ($\beta = .25$, SE = .06, p < .001, CI = .08 - .30). Moreover, the relationship between the covariate of whether participants regularly played video games and autonomy was significant ($\beta = .14$, SE = .12, p = .033, CI = .49 - .02). Next, the pathway from guilt to donation behavior remained significant after entering autonomy and controlling for covariates in the regression equation, $\beta = .15$, SE = 1.18, p = .021, CI = .41 - 5.05. Finally, when covariates and autonomy were entered into the regression equation, behavioral activity did significantly predict donation behavior, $\beta = ..19$, SE = .003, p = .006, CI = ..01 - .002.

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Figure 11.

Results for the Autonomy Model



* *p* <. 05

For the model investigating competence, the pathway from deontology to competence remained nonsignificant after controlling for covariates, $\beta = .09$, SE = .08, p = .17, CI = -.05 -.26. The pathway from guilt to donation behavior remained significant after entering competence and covariates into the regression equation, $\beta = .16$, SE = 1.19, p = .021, CI = .41 - 5.09. Similar to autonomy, the covariate of behavioral activity significantly predicted donation behavior, $\beta = -$.18, SE = .003, p = .006, CI = -.002 - -.008.

Figure 12.

Results for the Competence Model



* *p* <. 05

For the model investigating relatedness, the pathway from deontology to relatedness remained significant after controlling for covariates, $\beta = .21$, SE = .05, p = .002, CI = .06 - .26. The pathway from guilt to donation behavior remained significant after entering relatedness and covariates into the regression equation, $\beta = .15$, SE = 1.18, p = .024, CI = .36 - 4.98. Similar to the models for autonomy and competence, behavioral activity predicted donation behavior after relatedness and covariates were entered into the regression equation, $\beta = .18$, SE = .003, p = .008, CI = .01 - .002.

Figure 13.

Results for the Relatedness Model



* p <.05

APPENDIX D -DISCUSSION OF REVISED MODEL FOR MORAL SELF-IMAGE

Although the overall model had poor fit, some of the individual pathways appeared robust (see Figure 7). Specifically, the relationship from condition to guilt remained significant, regardless of whether participants have played *Minecraft* in the past or regularly played video games. As suggested in tests of the hypothesized model, condition had no effect on psychological need satisfaction or prosocial behavior, and while guilt had no effect on deontological moral thinking, the path from guilt to donation was significant, $\beta = .16$, SE = 1.18, p = .013, CI = .61 - 5.25. After these initial links, attention focused on paths to and through moral self-image. Notably here, both deontology ($\beta = .14$, SE = .08, p = .044, CI = ..31 - ..005) and basic psychological need satisfaction ($\beta = .19$, SE = .11, p = .007, CI = .08 - .52) were found to be significant predictors of moral self-image. Moreover, there was a marginally significant relationship from moral self-image to donation behavior, $\beta = ..13$, SE = .97, p = .051, CI = .3.80 - .008. Finally, though not visible in the model, the covariate of behavioral activity significantly predicted donation behavior, $\beta = ..17$, SE = .003, p = .01, CI = ..01 - ..002. Once again, the poor model fit made interpretation of paths in the model suspect.

Figure 14.





* *p* < .05

Examination of individual paths in the revised model replacing moral judgment with moral self-image revealed that moral self-image was related to deontology, basic psychological needs, and donation behavior. Notably, while the fit indicators for model 7 were poor, evidence of these same patterns were observed in models 3 and 4 (the revised moral self-image models with competence and autonomy in place of the composite SDT measure), which had marginally adequate to close fit. Thus, while interpretive caution should still be taken, there may be reason to consider these patterns further.

First, there was a negative relationship from deontological moral thinking to moral selfimage. It may be that participants who endorsed higher deontological moral thinking were harsher in self-reflecting on their own moral image. In other words, if a participant was low on deontological moral thinking they may see themselves as someone who is morally upstanding and rate themselves higher on the moral self-image scale, but because deontology may prime moral thinking for those that scored lower on the moral self-image scale this is why they rated themselves as lower. If this were true, it adds more credence to McNaughton and Rawling's (1998, 2006) supposition that deontological moral thinking is agent relative as it may possibly induce self-reflection.

Second, basic psychological need satisfaction positively predicted moral self-image. This relationship makes sense because SDT posits that satisfaction and fulfillment of basic psychological needs contributes to overall psychological well-being (Deci & Ryan, 2008). That is, if one feels an overall improvement in quality of life, it stands to reason that one's own moral self-image would increase. It is understandable that one may conclude that the reason that one experiences increased psychological well-being is because they see themselves as caring, compassionate, and virtuous therefore they self-report as such, almost as if satisfaction of basic psychological needs and moral self-image would feed into one another in a cyclical pattern. This idea, however, is merely speculation.

Finally, it was found that moral self-image was negatively related to donation behavior. Although this relationship was marginally significant, the relationship is surprising. This relationship may suggest that when one views themselves as virtuous, there may not be a need or desire to perform prosocial behaviors.

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