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Violent Video Games to Induce Mortality
Salience

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Playing with Death: The Potential for Violent Video Games to Induce Mortality Salience

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Abstract

Mortality salience, the realization of the inevitability of death, creates intense psychological terror within humans. Terror Management Theory posits that particular behavioral patterns, such as establishing and defending a worldview, reduce this terror (Greenberg et al., 1990). Behaviors due to mortality salience are strikingly similar to behaviors seen with violent video games. Violent video games may induce mortality salience in video game players, thus some of the outcomes of violent video games may be in part due to mortality salience. This paper will provide an explanation of mortality salience and Terror Management Theory, investigate behavioral patterns surrounding mortality salience and violent video games, propose a study exploring if violent video games can induce mortality salience, and discuss implications of mortality salience within violent video games.

Death surrounds us, from what we hear in the news to the leaves falling from the trees in autumn; but how do thoughts about death affect us? People can become aware of their own mortality by thinking about death, a phenomenon called mortality salience. Cognitive abilities such as self-awareness and abstract thought allow humans to experience mortality salience. Mortality salience, when coupled with instinctual self-preservation common to all animals, can create intense psychological anxiety and terror (Burke, Martens, & Faucher, 2010). Ernest Becker accurately describes this fear: “The idea of death, the fear of it, haunts the human animal like nothing else; it is a mainspring of human activity – activity designed largely to avoid the fatality of death, to overcome it by denying in some way that it is the final destiny for man” (Becker, 1973, p. ix.). This and the many other writings of Ernest Becker inspired Terror Management Theory, a psychological theory that attempts to predict and explain human reactions to the intense terror caused by mortality salience (Burke et al., 2010). According to Terror Management Theory, proximal and distal defenses manage and keep the anxiety caused by mortality salience largely unconscious. These defenses include a buffering mechanism consisting of a cultural worldview and self-esteem (Hayes, Schimel, Arndt, & Faucher, 2010).

Mortality salience is established in many ways, ranging from media exposure as in the case of 9/11 (Landau et al., 2004) to subliminal messaging (Arndt, Greenberg, Pyszczynski, & Solomon, 1997). Many violent video games, including the top two selling games of 2013, “Grand Theft Auto V” and “Call of Duty: Ghosts”, have notable instances of violence, especially killing and murder (ESA, 2014). Interestingly, many of the same effects of mortality salience, such as increased intergroup bias and increased aggression, are also seen in participants after playing a violent video game (Greitemeyer, 2013). Violent video games may induce mortality salience in video game players, thus some of the outcomes of violent video games may be in part due to human responses to mortality salience.

Mortality Salience

Mortality salience occurs when one is aware of the inevitability of death (Greenberg et al., 1990). While everyone understands that eventually they will die, people do not think about death on a daily basis, thus most people are not under mortality salience. Because of this, researchers have harnessed several methods to induce mortality salience within participants.

Standard death essay. The most common and perhaps simplest way to experimentally establish mortality salience is through the standard death essay (Burke et al., 2010). This method has participants write about what will happen to them when they physically die and what emotions arise in them when they think about their own death (e.g. Rosenblatt & Greenberg, 1989). These questions act as death primes, meaning the questions create mortality salience. The standard death essay explicitly invokes thoughts about death leading to mortality salience. However, there exist other non-explicit ways to establish mortality salience.

Subliminal death priming. Apart from having people think about the consequences of death, mortality salience can be unconsciously induced through subliminal death priming. The defining study by Arndt et al. (1997) sets the standard for subliminal death priming. In this study, participants view non-death related target words on a screen in an attempt to determine a relationship between these words. Between the presentations of the two words, the word “death” or the word “field” is displayed for 42.8 milliseconds. This interval is too brief for participants to consciously report seeing the words “death” or “field”. The word “field” acted as a control, as it matches “death” in number of letters and word frequency, while the word “death” acted as the mortality salience prime. Another study with subliminal death priming using words related to the 9/11 terrorist attacks in America. Following a similar design as the Arndt et al. (1997), Landau et al. (2004) used “911” and “WTC” (World Trade Center) as death primes, and “573” as a control. “573” was chosen because it is the area code for Columbia, Missouri, the location of

the experiment, as well as having the same number of characters as “911” and “WTC”.

Subliminal death primes unconsciously establish mortality salience within participants, meaning that a person does not have to consciously think about death to experience mortality salience. In relation to violent video games, most players are not consciously thinking about the inevitability of their mortality. Even so, these players still may be influenced by mortality salience.

Other. Subliminal death priming is one of the few unconventional ways that mortality salience is induced experimentally. Other unconventional ways include reading a short story in which the character dies, viewing a slideshow with a war narrative, reading an essay about cancer, being interviewed in front of a funeral home or cemetery, and watching a car crash or Holocaust video (Burke et al., 2010). Tomohiro and Ken-ichi (2003) used a video to induce mortality salience in their participants. This video showed clips from the Holocaust in Poland in World War II, where many people were shot, burned, and buried. After watching the video, participants answered the open-ended question, “Please imagine that you are in the same situation as you have seen in the film. Write down your thoughts or how you would behave in that situation” (Tomohiro & Ken-ichi, 2003, p. 112).

Experiments in which participants watch a video including death or view subliminal death primes establish mortality salience as well as the standard death essay. The lack of significant difference between standard and less typical mortality salience manipulations show that vastly different death primes are equally capable in producing mortality salience (Burke et al., 2010). This provides evidence that more realistic death primes, such as watching a death related film, have the ability to induce mortality salience in participants to the same extent as more contrived lab death primes, such as the standard death essay. While violent video games have not been used to induce mortality salience in participants, the ability for death primes, such

as death related films, to establish mortality salience seems to suggest that violent video games also have this potential.

Terror Management Theory

The presence of mortality salience is tested through the mortality salience hypothesis, which states, “if a psychological structure functions to buffer awareness of death, inducing people to think of their death should increase their need for this psychological structure” (Hayes et al., 2010, p. 701). In other words, the presence of mortality salience is measured by participant reactions following a mortality salience inducing task. Terror Management Theory hypothesizes that once participants are under mortality salience, they attempt to manage the terror created by mortality salience through proximal and then distal defense mechanisms.

Proximal defense mechanisms. Proximal defenses are invoked as the initial line of defense against conscious death-related cognitions. These defenses are threat-focused cognitive maneuvers that push death related thoughts out of consciousness and include tactics such as seeking distractions or reducing the threat. For example, if a person drives by a scene of a gruesome car accident, he or she may turn up the radio to distract from the accident. Another example is when faced with the inevitability of death, people may remind themselves that they do not smoke, they exercise often, or that they have ancestors that lived to an old age. If these cognitions do not apply, many will use other cognitive strategies such as denying the extent to which those characteristics predict mortality, or promising themselves to do better in the future to increase their life expectancy. The goal of proximal defenses is to diffuse the immediate threat of mortality through pushing it out of conscious awareness through distraction or by convincing oneself that the threat is not an immediate problem (Pyszczynski, Greenberg, & Solomon, 1999).

Distal defense mechanisms. Terror Management Theory also hypothesizes that people use distal defenses in order to reduce the terror caused by mortality salience. Distal defenses enact after proximal defenses push death related cognitions out of consciousness. Distal defenses are used on subconscious death related thoughts and reduce the fear of death through an indirect manner by providing a sense that one is a valuable contributor to a meaningful, eternal universe. Because proximal defenses, such as pushing thoughts of death into the subconscious, happen before distal defenses, many Terror Management Theory studies employ a time delay before looking for the presence of distal defenses (Pyszczynski et al., 1999).

Cultural Anxiety Buffer. Distal defenses are comprised of a cultural anxiety buffer consisting of cultural worldview and self-esteem. A cultural worldview is a person's individual set of conceptions that provide order, meaning, and permanence to subjective reality. This worldview also includes a set of standards through which value is attained, and the ability to gain immortality by conforming to this set. Self-esteem is a related concept that refers to the belief that one is living up to the principles and values established by one's cultural worldview (Greenberg, Pyszczynski, Solomon, Simon & Breus, 1994). To increase self-esteem, people ascribe themselves into the ranks of those whom are highly moral and good (McGregor et al., 1998). This reaction stems from the belief of cultural immortality; a belief that says that adherence to our religion or culture provides immortality. Those who live at high standards of value within their religion gain immortality in the afterlife. Those who follow cultural standards provide permanent contributions to society through good citizenship. For example, some people have the cultural worldview that charity is good. To increase self-esteem, these people may attempt to gain cultural immortality by creating scholarship funds. These people may also attempt to gain spiritual immortality by proving they are worthy of heaven through charitable acts. In both of these cases, these people are attempting to reduce the terror caused by mortality

salience through the distal defense of a cultural worldview, believing that charity is good, and self-esteem, believing that they are good because they are charitable.

To buffer mortality salience, people defend their cultural worldviews, and attempt to gain immortality by defending cultural standards. This buffer typically causes harsh judgments and severe punishments for those who undermine the safety of personal reality by violating personal beliefs and values, as well as aggression towards those who threaten or are not a part of our culture (Rosenblatt et al., 1989). The cultural anxiety buffer, which includes a cultural worldview and self-esteem, is used as a distal defense mechanism against mortality salience. This buffer creates patterns of behavior including increased punitiveness, increased aggression, and intergroup bias.

Increased punitiveness. The cultural anxiety buffer that comprises distal defenses against mortality salience leads people to verify and defend personal beliefs and worldviews. For most people, one of these personal beliefs is that the world is a just place, where bad things happen to bad people, and good things happen to good people. This belief provides reassurance that if one acts morally, bad things, like death, will not happen. It also creates a need for justice when bad people do bad things. The tendency to seek justice against moral transgressors occurs in everyday life. For example, participants under mortality salience preferred television programs with themes of law and justice more than participants not under mortality salience did (Taylor, 2012).

Punishment is a way to enact justice on wrongdoers; therefore, multiple studies have used intensity of punishment to measure distal defense mechanisms against mortality salience (Rosenblatt et al., 1989). By harshly judging and punishing those who transgress important worldviews and values, people can gain structure in a chaotic world full of death and uncertainty. For example, a study by Rosenblatt et al. (1989) looked at the effects of death priming on 15

male and seven female municipal court judges from a large southwestern city. Each judge read a scenario about a prostitute and was asked to set bail for her release. Unprimed judges set bail at a mean of \$50, while primed judges set bail at a mean of \$455. The difference in the bail means show that primed judges judged the prostitute more harshly than unprimed judges. Maxfield et al. (2007) conducted a similar study using undergraduate students, and found that young adults responded to mortality salience with harsher judgments, following the same pattern as the municipal judges. Terror Management Theory can explain increased punitive decisions by the judges as well the undergraduate students. The actions of the prostitute threaten the validity of the cultural value that prostitution is wrong. When someone violates a cultural value, it implies either that the transgressor is evil or that the value is not universally valid. Rather than consider that possibility that the cultural value is not universally valid, people view the transgressor as evil, and evil actions deserve punishment (Rosenblatt, et al., 1989).

Increased aggression. According to Terror Management Theory, distal defense mechanisms cause increased aggression within people under mortality salience. A study by McGregor et al. (1998) found that mortality salience increased aggression towards a target who was threatening the participant's worldview. Participants were death primed by writing about their mortality, and then asked to allocate hot sauce for a target who had written an essay disparaging the participants' political views. The target would then have to consume all of this hot sauce. Participants under mortality salience allocated significantly more hot sauce than participants for whom mortality was not salient. In fact, participants who were in the mortality salience condition administered a large enough amount of hot sauce that it would have caused a considerable amount of pain, both orally and gastronomically, to the intended target. These researchers found that participants in the mortality salience condition acted more aggressively to others that challenged or disagreed with the participant's worldview than participants who did

not have mortality salience. This pattern of behavior is due to distal defense mechanisms that enact when a person is under mortality salience. Within this study, the writer of the essay disparaging the participants' political views challenged the cultural worldview of the participants. Because cultural worldviews are fragile constructions, the participants acted aggressively towards the dissenter in an attempt to stop the dissenter from dismantling the participants' worldview. In addition, aggression may also be a form of punishment. The essay writer was not acting in accordance to the participants' cultural worldview thus, that person was wrong and deserved punishment.

Increased intergroup bias. In addition to increased aggression, distal mechanisms also increased intergroup bias. Fundamentally, cultural worldviews are fragile symbolic constructions. Therefore, people respond favorably to supporters of their worldviews, as these supporters strengthen the effectiveness of the anxiety buffer, while dissenters challenge this resolve (Harmon-Jones et al., 1996). Thus, people favor in-group members, people whom are more similar, over out-group members. Harmon-Jones et al. (1996) tested the effect of mortality salience on intergroup bias. In this study, all participants were asked to examine five pairs of paintings and choose which member of the pair they preferred. Participants were then divided into two groups. Half of the participants in both groups learned that the groups were randomly assigned, while the other half learned that the groups were divided by a preference for the paintings. After some participants engaged in a standard death essay mortality salience task, all participants evaluated members of both groups on negative and positive traits. The results showed increased intergroup bias, as participants who were under mortality salience and told that the grouping was based on painting preference rated the in-group more positively than participants in the other conditions. In addition, these participants also rated their group as more similar to themselves. Participants told that the grouping was random did not rate the in-group

and out-group differently. Mortality salience increased intergroup bias among participants who thought that their group mates shared a similar worldview. Even a worldview as simple as painting preference created intergroup bias when participants were under mortality salience.

Violent Video Games

Interestingly, many of the same effects of mortality salience, such as increased intergroup bias and increased aggression, are seen in participants after playing a violent video game (Greitemeyer, 2013). A potential explanation of this similarity is that violent video games induce mortality salience. This explanation allows for some of the corollaries of violent video game play, such as intergroup bias and aggression, to be partially explained by Terror Management Theory. The video game industry has exploded in recent years, with 59% of Americans playing video games in 2013 (ESA, 2014). While only 12% of the games rated by ESRB (Entertainment Software Rating Board) in 2013 have a rating of M (Mature), of the top ten selling video games in 2013, half are rated M (ESA, 2014). These games have the potential to induce mortality salience in the same way that watching a Holocaust video and writing about how you would feel in that situation does (Tomohiro & Ken-ichi, 2003). Research on video games has demonstrated that players become psychologically and emotionally attached to their video games characters (Lewis, Weber, & Bowman, 2008). In addition, many video games are in first person, so video game players do not have to transpose themselves into the shoes of a character, but are able to literally see through the character's eyes. Because there is no published research explicitly linking violent video games and mortality salience, an analysis of similarities between reactions to violent video games and to mortality salience may help to determine if mortality salience is at play.

Violent content or competition. One question that arises when studying aggression in violent video games is whether increased aggression is due to violence or the competitive nature

of the game. Anderson and Carnagey (2009) explored this question through experiments that looked at violent sport video games to determine if increased aggression was due to the violent content or the competitive nature of the games. To begin, researchers looked at different video games and determined if these games had similar levels of competitiveness. These video games were sports games (i.e. baseball, basketball). One game was a traditional sports game, where players play the game following all real life rules and regulations. The other game was the same sport, but with added violence and rule breaking. For example, in the non-violent baseball game, players could steal a base when the ball was out of the pitcher's hand, following the rules of Major League Baseball. However, in the violent game, players could punch the baseman in order to steal the base. These video games were found to have the same levels of competitiveness while differing in the absence or presence of violence. In general, this study found that competitiveness in the video games was not the cause for increased aggression. All video games were found to contain the same level of competitiveness, thus if competitiveness caused increased aggression, levels of aggression would be similar in all scenarios. However, this idea was not supported, as the video games containing violence increased aggressive behavior, aggressive cognition, aggressive affect, as well as attitudes towards violence in sports.

Increased intergroup bias. The phenomenon of increased intergroup bias results from violent video games as well as from mortality salience. A study by Greitemeyer (2013) found that violent video games increased aggression towards out-group members more than in-group members. Greitemeyer looked at ethnocentrism (the preference for in-groups over out-groups) and violent video game play. Participants were asked how much they played violent video games and then completed a scale measuring ethnocentrism as well as trait aggression. The results showed a correlation between violent video game play and ethnocentrism (the more violent video games played, the more ethnocentric), but did not find a relationship between

violent video game play and trait aggression. This relation remained significant when controlling for trait aggression. While these findings do not provide causal evidence that violent video games increase intergroup bias, they do show that more time spent playing violent video games correlates with longer-term intergroup bias.

A second part of the Greitemeyer study provides causal evidence that violent video games increase aggressive behavior towards out-group members more than in-group members. Participants in this study played a neutral video game or the violent video game “Call of Duty 2”, a first person shooter game in which players are soldiers in action during World War II. Players in “Call of Duty 2” complete missions that include acting as a sniper, a tank driver, shooting enemies with machine guns, and throwing grenades. After playing “Call of Duty 2” or a non-violent game pinball game named “Flipper”, participants competed in a reaction time test that consisted of pushing a button after hearing an auditory cue, the winner of which punishes the loser with a noise blast. However, unbeknownst to the participant, no competitor existed and the outcome of the reaction test was random. Participants were told that their “competitor” was born in Austria or born in Siberia. As most participants were Austrian, competitors born in Austria were members of the in-group, whereas competitors born in Siberia were members of an out-group. This study found that participants were more aggressive, as measured by the intensity and duration of the punishing noise blasts, after playing the violent video game and even more aggressive when the target was an out-group rather than an in-group member. These findings demonstrate that violent video games increase intergroup bias in players.

Increased intergroup bias due to violent video games may be caused by the distal defense mechanisms against mortality salience. The game used in the Greitemeyer (2013) study was Call of Duty 2, a game that displays a copious amount of violence and death. The player’s character can be killed in a myriad of ways, including gunfire, landmines, grenades, and hand-to-

hand combat. The player also experiences others' deaths by killing enemies. The sheer amount of death within Call of Duty 2 may act as a death prime for players. Seeing the death of others, as well as experiencing the death of the players' characters, may prime the players to think about their own personal death, which would create mortality salience. Once mortality salience is established, players would push death related thoughts out of consciousness using proximal defense mechanisms such as distraction. Continuing to play the game may act as such a distraction to reduce the threat posed by death related thoughts. After the proximal defense mechanisms described by Terror Management Theory push the death related thoughts out of awareness, distal defense mechanisms would engage causing players to attempt to reduce the terror mortality salience creates by defending and validating their worldview and increasing their self-esteem by establishing themselves as good and moral compared to those who are in the out-group. In a similar fashion to the participants within the inter-group bias study by Harmon-Jones et al. (1996) which used painting preference to create artificial in- and out-groups, players of the violent video game may be responding to mortality salience with distal defenses, causing the players to see out-group as threatening and deserving of higher aggression.

Increased punitiveness. In the Greitemeyer (2013) study with a noise blast as punishment for losing, participants who played the violent video games overall were more aggressive than players who had not played the violent video game, even when the target was an in-group member. Within this study, the noise blast was considered a punishment for the loser. As seen in other Terror Management Theory research, mortality salience increases punitive judgments (Rosenblatt et al., 1989). This pattern was also see in the Greitemeyer study as participants who played the violent video game assigned more intense noise blasts to the loser than participants who played the neutral game had. Additionally, Greitemeyer found increased intergroup bias. Participants may act more aggressive to out-group members as a punishment

because the out-group members' existence challenges the video game player's worldview. The patterns of aggression and intergroup bias within the Greitemeyer study may be distal defense mechanisms to mortality salience.

Increased aggression. Anderson and Carnagey (2009) found that video games that included violence increased indicators of aggression. Participants played a violent or non-violent game sport game and then verbally identified words. Participants who had played the violent video game identified aggressive words faster than those who had played the nonviolent video game did. For example, those who had played the violent video games identified "assault", faster than "behold", whereas those who had played the non-violent game, the opposite was true. Anderson and Carnagey also looked at how violence in these video games affected aggressive affect and attitudes toward violence in sports. They found that exposure to the violent video games increased the player's aggressive affect and influenced attitudes about violence. Participants who had played the violent sport game reacted more positively to violence in sports than participants who had played the non-violent version. Finally and most importantly, Anderson and Carnagey looked to see if aggressive behavior, as measured by intensity of a noise blast, increased after playing the sports games with violent content. The results showed that aggressive behavior was increased after playing the violent version of the game. This conclusion has been supported by many other studies (for review see Elson & Ferguson, 2014).

Terror Management Theory could explain this finding by proposing that the violent content in video games can induce mortality salience in players, which would cause increased aggression. However, the video games used in the Anderson and Carnagey research did not include death. These findings lend themselves to two plausible explanations. One is that mortality salience is not working in this example; rather another theory such as social learning (Bandura, 1978) may be at play. Players may be viewing the violent behavior within the video

game, and modeling that behavior through increased aggression. A second explanation is that mortality salience is established through the witnessing of substantial bodily harm, even if the target is not killed. While this idea has been explored through less realistic methods, such as subliminally death priming the word “pain” (Arndt et al., 1997), it has not been fully explored within Terror Management Theory and would be an interesting avenue for further research if research shows that violent video games establish mortality salience.

Proposed Research

Violent video games have the potential to establish mortality salience within game players. Research has demonstrated that similar death primes, such as watching a video about the Holocaust, can establish mortality salience within viewers (Tomohiro & Ken-ichi, 2003). It stands to reason that violent video games also have this potential. In addition, there exist striking similarities between the effects of mortality salience on participants and the effects of violent video games on players. If violent video games induce mortality salience in players, some of the outcomes of violent video games may be due in part to distal defense mechanisms. Proximal and distal defense mechanisms are both used in succession when humans experience with mortality salience (Hayes et al., 2010). If some results of violent video games, such as increased aggression, are distal defense mechanisms, then proximal defense mechanisms will also be present. To find evidence that violent video games establish mortality salience in players, the proposed study will look for the presence of proximal defense mechanisms. If proximal defense mechanisms are found, then distal defense mechanisms will also be present and may explain some of the results of violent video game play.

Study proposal. I propose an exploratory study that will attempt to see under what conditions mortality salience is established by violent video games through measuring the accessibility of death related thoughts, which is an indicator of the presence of proximal defense

mechanisms (Greenberg et al., 1994). This study will consist of a 2 x 2 x 2 experimental design with independent variables being violent video game play, the use of a reflection task, and the introduction of a delay (see appendix A for a diagram of experimental conditions). This study is designed to establish the presence of proximal defense mechanisms within violent video games, which would link violent video games to mortality salience and provide evidence that the results of violent video game play are distal defense mechanisms.

Dependent measure: Death thought accessibility. Proximal defense mechanisms against mortality salience suppress death related cognitions, ironically causing these thoughts to become hyper-accessible (Hayes et al., 2010). Due to the hyper-accessibility of death related thoughts when proximal defense mechanisms are engaged, researchers have measured the presence of proximal defense mechanisms through the Death Thought Accessibility experimental model (Greenberg et al., 1994). Within this model, participants are asked to fill in missing letters to complete a word. For example, participants would be shown *coff_ _*, and asked to add missing letters in order to make a word. Participants under mortality salience are more likely to fill these letters to create death related words, objects, or imagery (Arndt et al., 1997). For example, when looking at the word *coff_ _*, a participant under mortality salience may put “coffin”, while a participant not under mortality salience may put “coffee”. Other possible death-related words were buried, killed, skull, grave, dead, and stiff (Arndt et al., 1997). Participants engaging in proximal defense mechanisms due to mortality salience will demonstrate heightened death thought accessibility. Thus, if participants who played the violent video game have heightened death thought accessibility, they are under mortality salience.

Independent variable 1: Violent video game vs. non-violent video game. The first independent variable within this study is violent or a non-violent video game play. The violent video game that will be used is “Call of Duty 2”, which was used in the Greitemeyer (2013)

study on aggression and intergroup bias. As discussed earlier, this game contains copious amounts of violence and increases aggression and intergroup bias in players. The non-violent game is a trickier subject. Pilot testing will need to be completed to attempt to find a non-violent game as close to “Call of Duty 2” as possible without including violence. One potential candidate for the non-violent game is “Gone Home”, a first person game where the player travels around a small community attempting to solve a mystery. There is no violence within this game, and it may provide a similar realism and level of player control as “Call of Duty 2”. Within this study, half of the participants will play the violent video game, while the other half will play the non-violent game.

Predictions. As discussed earlier, there appear to be distal defense mechanisms enacting within players of violent video games, indicating that players are under mortality salience. Because of this, proximal defense mechanisms will also be present. Thus, I predict that participants within the violent video game will experience heightened death thought accessibility in comparison to participants in the non-violent game condition.

Independent variable 2: Reflection task vs. no reflection task. The second independent variable is the presence of a reflection task. After playing the game, participants will be asked, “Please imagine that you are in the same situation as you have seen in the game. Write down your thoughts or how you would behave in that situation” (adapted from Tomohiro & Ken-ichi, 2003). This variable is included because some studies using similar death primes as video games, such as the Holocaust video used in Tomohiro and Ken-ichi (2003), ask participants to imagine that they are in the same situation as in the film and write down thoughts on how they would behave in that situation. After playing either the violent or the non-violent game, half of the participants will engage in a reflection task, while the other half will not.

Predictions. The reflection task used in Tomohiro and Ken-ichi (2003) may serve a similar purpose as the standard death essay to promote death related cognitions. This research did not explore if participants reacted similarly to the video death prime if they had been asked to actively think about the situation or not. However, other studies have found that less obvious death cognitions such as being interviewed in front of a cemetery are just as potent death primes as explicit thoughts about death (Burke et al., 2010). Because of this, I expect no differences between participants who are and are not asked to actively think about death. Additionally, participants within the non-violent video game condition should not be affected by the reflection task, as they are not under mortality salience.

Independent variable 3: Delay vs. no delay. Proximal defenses are very powerful and will successfully suppress death related thoughts in the short term. Wegner's (1994) research on thought suppression suggests that active thought suppression leads to the likelihood that the thought will return once the suppression ceases. Death related thoughts will be suppressed into the subconscious via proximal defenses, but proximal defenses ultimately make the thoughts hyper-accessible, or easily reachable, once the active suppression ceases. A time delay acts as a buffer that reduces the active suppression of thoughts about death, allowing subconscious death thoughts to become easily accessible. As shown in previous research, many studies use a time delay before testing for the presence and effects of mortality salience (Hayes et al., 2010).

Predictions. Proximal defense mechanisms will be activated in participants asked to reflect on the violent video game. Because proximal defense mechanisms are activated, a time delay is needed for the active suppression of the death related thoughts to cease, and the subconscious death related thoughts to become highly accessible. Thus, in the violent video game with reflection condition, the effect of mortality salience will be greater in the delay

condition than in the no delay condition; in the no delay condition, death related thoughts would be actively suppressed, while in the delay condition these thoughts will be hyper-accessible.

On the other hand, in the violent video game condition where participants are not asked to think about death thoughts explicitly, the video game itself may act as a delay as the active suppression of death related thoughts would be difficult under the cognitive load of playing the game. Previous research suggests that a time delay is only beneficial if it is short; if the delay is too long, thoughts may become not as accessible as the participant is not under mortality salience (Hayes et al., 2010). If game play within the violent video game without reflection acts as a delay, then adding another time delay would reduce the accessibility of death related thoughts. Thus, I predict that the condition without a delay will have a stronger effect than the condition with the delay within the no reflection condition. Participants who played the non-violent game should not have any differences between delay and no delay conditions, as they are not under mortality salience.

Participants. In an ideal world, participants used in this study would be representative of many different demographics. However, since this is preliminary research, it would be unnecessarily time consuming and costly to gather such a participant pool. Thus, participants would be gathered from an undergraduate testing pool at an American university. However, the limitations of this sample pool must be kept in consideration. Burke et al. (2010) found that mortality salience effects were significantly stronger for college participants than non-college participants. This difference was not accounted for by age and gender, thus there might be something special about college as a time when mortality salience is particularly potent. While this may be a limitation further down the road, it does not serve as a large deterrent as we first must establish that violent video games can induce mortality salience within one demographic before these findings are extended to other demographics; also, many of the real life players of

video games are college aged (EPA, 2014).

Implications

Violent video games may induce mortality salience in video game players, thus some of the outcomes of violent video games may be due in part to mortality salience. The proposed study is a first step in exploring if violent video games establish mortality salience. The results of this study can have two main results: violent video games create mortality salience or not. If violent video games create mortality salience, then participants within the violent game condition will have heightened death thought accessibility compared to participants within the non-violent game condition. If there are no differences between participants within both conditions, this suggests that violent video games do not create mortality salience within game players. Both results have interesting implications for mortality salience research. As explained earlier, research suggests that violent video games induce mortality salience. If violent video games do not create mortality salience, research could be conducted to determine why violent video games do not induce mortality salience, while violent videos do. More interestingly are the implications if violent video games create mortality salience. This finding would have impacts on the research field, as well as societal implications.

Further research. Discovering that violent video games can establish mortality salience will allow for advancement within mortality salience research. Video games are rapidly developing; with virtual reality on the horizon, video games allow for new ways of inducing mortality salience and introduce new variables for exploration. For example, researchers could explore how character identification, or how much the player identifies or relates to a character, influences mortality salience. A study by Fischer, Kastenmüller, and Greitemeyer (2010) found that when characters were customized to resemble the player, players acted more aggressively after playing an aggressive video game. Perhaps if characters in a video game resemble the

players, players see themselves as the characters. This phenomenon likely occurs within role-playing games, where a player role-plays as a character, essentially becoming the character. In many of these games, character customization is an essential part of creating the role-playing experience. For example, the role-playing game “Skyrim” features character customization that allows the player to adjust and manipulate the face, head, and body of the character to pinpoint precision. Role-playing games tend to lead to character attachment, or “internalization and psychological merging of the player’s and character’s mind” (Lewis et al., 2008, p. 515).

Especially with the increasing capabilities of video graphics within the gaming industry, video games can create more realistic death scenes where the character will stumble or fall, the character’s vision will become blurry, the breath haggard, and the heart slowly stop (e.g. Gears of War, Battlefield 3). With players fully attached to their characters, the death of a character realistically portrayed by a video game could create new situations in which to test mortality salience. For example, we can explore if substantial bodily harm has the ability to create mortality salience as much as death itself. Violent video games allow researchers to control what sort of situation a participant will be exposed to within the video games. This would allow for greater precision and focus when looking at different types of death, like from disease or violence, to see if there are differences in responses to mortality salience.

Intervention. One implication of violent video games inducing mortality salience is that interventions that have been found effective in reducing the negative effects of mortality salience could be used within violent video games. For example, Harmon-Jones et al. (1997) found that increased self-esteem reduced the impacts of mortality salience. These researchers manipulated participants’ self-esteem by providing positive feedback on a bogus personality test and inducing mortality salience. Participants then evaluated essays that either supported or threatened an aspect of their worldview. Researchers found that participants with increased self-esteem

responded less defensively to the threatening essay than participants without increased self-esteem. This research suggests that increased self-esteem decreases the impacts of mortality salience. This finding could be applied to video game development by putting self-esteem boosting feedback into a violent video game to counteract the effects of mortality salience. However, these sorts of interventions need to be thoroughly explored as violent video games cause increases in arousal and other effects (Elson & Ferguson, 2014). It may be detrimental to increase the self-esteem if other factors are at play. More research is needed to see what types of mortality salience interventions would be applicable for violent video games.

Violent video games may also have the ability to reduce some of the negative effects of mortality salience such as increased intergroup bias. A study by Adachi, Hodson, Willoughby, and Zanette (2014) found that playing a violent video game cooperatively with a member of an out-group for only 12 minutes resulted in large reductions in out-group prejudice. These findings show the potential for violent video games to act as interventions to reduce prejudice. Perhaps, playing a violent video game cooperatively will negate some of the distal defense mechanisms against mortality salience.

Societal implications. Most media exposure of violent video games today is focused on the negative impacts violent video games have on the impressionable youth. Many people would agree that older audiences have a more developed sense of morality and would not follow the examples set in violent law breaking games such as Grand Theft Auto. However, research has shown that mortality salience can affect people of all ages (Rosenblatt et al., 1989). If violent video games establish mortality salience, then older violent video game players may also be affected by these games negatively, rather than just children. Age differences may also exist as children who are younger may be more influenced by the social modeling of violent games, such as modeling violent behavior, whereas older populations may be influenced more strongly by the

mortality salience effects of the games and have increased inter-group bias and aggression towards a perceived out-group. These are important implications as research moves forward to discovering the connection between Terror Management Theory and violent video games. Those who play violent video games may be affected by death within video games in more ways than previously assumed.

Conclusion

In conclusion, the effects of violent video games may be explained in part by distal defense mechanisms against mortality salience. Because of the similarities between previous ways mortality salience has been established and violent video games, it is reasonable that violent video games could establish mortality salience within players. Through reviewing literature on violent video games and mortality salience, interesting connections between the effects of violent video games and mortality salience were found, providing preliminary evidence that violent video games induce distal defense mechanisms. These connections lead to the proposition of a study that would attempt to provide evidence of violent video game players using proximal defense mechanisms against mortality salience. Because proximal defense mechanisms are used in succession with distal defense mechanisms, the presence of proximal mechanisms would indicate that distal mechanisms are also at play. This research is worthy of pursuit because of its implications on the research field, as well as society.

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Appendix A

Diagram of Experimental Conditions

