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# Motivations for Targeted School Violence: Examining the Influence of Social Rejection and Violent Video Games on Aggression

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**Motivations for Targeted School Violence: Examining the Influence of  
Social Rejection and Violent Video Games on Aggression**

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Honors Thesis

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### **Abstract**

This Thesis Project investigates putative causes for mass-casualty violence in America's schools. Both popular and scientific literatures suggest a variety of factors to explain these events, including violence in media such as movies and video games, gun culture, social constructions of masculinity, as well as social isolation, rejection, and disaffection among youth. Whereas such factors are not present in every incidence of mass violence and have yet to be demonstrated as explicitly causal variables, significant evidence points to social rejection in the form of bullying experiences and consumption of violent media such as first-person-shooter video games as representing key driving forces that promote violence and aggression among the nation's youth. Accordingly, this project reviews previous findings to determine whether and how the factors operate independently and interactively to promote aggression. Subsequently, this project proposes a survey assessment to identify these interrelations among college-age individuals. The proposed study examines the central hypothesis that frequent combination of social rejection (e.g., bullying victimization) experience with interactive violent media use (e.g., shooter video games) can lead to heightened aggression-intent by producing negative cognitions, antisocial attitudes, and moral disengagement to a greater degree than each factor would contribute individually. Implications for future research and application are discussed.

Violence is one of the most enthralling public health challenges facing the United States today. The most recent estimates by the Federal Bureau of Investigation (FBI) place the national number of violent crimes at over 1.2 million for the year 2012 (Federal Bureau of Investigation, 2012). While this figure may seem astounding, it actually represents a decline from the start of the 21<sup>st</sup> century. Indeed, since their peak in the 1980s and 1990s, national homicide rates across the United States have declined significantly (U.S. Bureau of Justice Statistics, 2013). However, recent research by Blair and colleagues (2014) highlights that Americans have seen an unfortunate increase in the number of active shooter events – events where a suspect engages in an attempt to inflict mass-casualties on a general population and continues to pose a threat to general safety, typically with a firearm or other weapons. As members of the Advanced Law Enforcement Rapid Response Training Center at Texas State University, these investigators identified 110 active shooter events occurring across the country from 2000 to 2012, and noted that 29% took place in American schools and institutes of higher education. This increase in active shooter events has also been coupled with escalating casualty and fatality figures, representing a troubling shift from an earlier United States Secret Service and United States Department of Education investigation that identified 37 similar incidents taking place in American schools between 1974 and June 2000 (Vossekuil et al., 2002). These attacks, and the resulting mass casualties, have been some of the most tragic experiences for the American people over the past few decades and have continued to cause great concern amongst the public, popular news media, and political figures.

The proposed research seeks to address a potential gap in the literature concerning mass-casualty events in the nations schools. Through a review of the relevant literature, our study will examine how the two putative causal factors of social rejection (as exemplified by bullying) and interactive media violence (as exemplified by violent video games) may operate synergistically, as well as independently, to influence the aggressive attitudes and behaviors of individuals who may be at-risk for committing mass shootings. We will then suggest an assessment that may be used to survey a relevant population (e.g., college-students) and determine how specific combinations of experiences may relate to aggression within the community at large, and more specifically among vulnerable young men. The goal of this research is to add to existing literature about the causes of active shooter events in schools by looking into the complex set of interrelated factors that may jointly influence them. We believe that the present study will provide researchers and university officials with an additional assessment tool to identify individuals who may be at heightened risk for expressing aggression, thereby allowing appropriate preventative measures to be administered to those at the highest level of risk.

Previous mass-casualty events focused research attention on teenagers as a potentially at-risk population. This occurred because many mass-casualty events took place in high schools and shooters were current students 95% of the time (Vossekuil et al., 2002). While this concern was well justified, recent events necessitate an expansion of scientific inquiry into older populations, specifically college students. Three of America's most extreme mass-casualty events featuring an active shooter have occurred over the past decade, all involve perpetrators who were college-age. These events have included the nation's highest-casualty incident (in Aurora, Colorado) as well as the

nation's two deadliest incidents (in Blackburg, Virginia and Newtown, Connecticut). As college-age individuals may continue to commit these atrocities, college students represent an appropriate population for further research on aggression and violence.

Just as they did during the 1990's (Vossekuil et. al., 2002; National Research Council and Institute of Medicine, 2003), mass-casualty events occurring in the nations schools demand attention not only from the press, but also the scientific community, security analysts, law enforcement officials, politicians and other policy makers. Recent increases in the prevalence of mass-casualty events (Blair, Martaindale & Nichols, 2014) have prompted a variety of these figures and groups to address what causes these events occur and how to prevent them. For example, examiners of mass-casualty events have included President Obama's Administration (Moriarty, 2013), gun lobbies (LaPierre & Hutchinson, 2012), social scientists (Anderson & Dill, 2000; Anderson et al., 2003; Ferguson, 2008), and the entertainment industry (Goldfarb, 2013) among others. However, one commonality with these investigations is that suggested causal factors often reflect the nature of the given stakeholder. The video game industry, for instance, has argued that violent games do not have an impact on real world violence and instead can have a positive impact on the lives of gamers (Entertainment Software Association, 2014). In contrast, the gun industry frequently suggests that violent games are a corrupting force on the public, and that firearms are needed for self-defense (LaPierre & Hutchinson, 2012). Popular and scientific literatures have also intensely debated which of a variety of influences may be most likely acting on young adults who perpetrate mass-casualty events. These candidate causes can be summarized as mental illness (Walkup & Rubin, 2013), access to guns (Sapien, 2013), social experiences (Aronson, Wilson &

Akert, 2013), violent masculinity (Katz, Jhally & Earp, 2013), and popular media (Anderson et al., 2003). Of these factors, research has found particularly compelling evidence that aggressive tendencies in humans can be driven by negative social interactions (Bushman & Baumeister; 1998; Renda, Vassallo & Edwards, 2011) and persistent exposure to violent media (Anderson et al., 2003; Willoughby, Adachi & Good, 2012). This wealth of established literature both informs and inspires the proposed research focus that specific instances of some suggested factors (i.e., bullying and violent video game exposure, respectively) represent critical points of inquiry for potential synergistic effects on aggression.

### **Social Connections and the Impacts of Rejection**

Abundant scientific literature establishes that social relationships are critical for human functioning and survival (Aronson et al., 2013). This understanding of the importance of human interaction has also led to a range of literature that addresses the consequences of even the threat of losing and the absence of social relationships (i.e., social rejection and social isolation; see Baumeister & Leary, 1995, for reviews). The effects of social rejection and isolation are so pervasive that now-historic experiments easily demonstrate that individuals will commonly alter their behavior in order to avoid such consequences. For instance, one classic experiment found that individuals would regularly alter their answers to an unambiguous line-length judgment task so that their answers better fit with the rest of a group (Asch, 1956). Another seminal experiment found that many individuals are willing to administer electric shocks to another human being in obedience to an authority figure, even when those shocks are believed to cause



severe physical harm (Milgram, 1963). Social relationships are so important to human functioning that even small, independent instances of rejection or isolation can have adverse consequences for humans. For example, one form of isolation that has been repeatedly addressed within the literature is ostracism. Multiple studies have utilized a computer program known as “Cyberball” to investigate the effects of cyberostracism (i.e., ostracism perpetrated within a computer program) and social rejection on college students (Williams, Cheung & Choi, 2000; Plaiser & Konijn, 2013). Participants in these studies engage in a virtual-world simulation of playing three-person catch with two other “participants”, who in actuality are characters rendered by the computer program. This methodology allows researchers to manipulate levels of ostracism by controlling how often the computer characters pass the ball back to the player. Utilizing this Cyberball paradigm, researchers have found that ostracized participants report increases in negative moods (e.g., sadness, tension) and decreases in feelings of group cohesion, even when interacting only within the virtual world (Williams et al., 2000).

For children and young adults, negative social interactions have frequently materialized in the form of peer aggression and bullying, which can be characterized as intentionally harmful physical, verbal, and related behaviors that are committed repeatedly against an individual and involve a real or perceived power imbalance (Olweus, 2011; Hellström, Beckman & Hagquist, 2013). As noted by a United States federal government interagency effort to coordinate and provide information about bullying and related topics, approximately 20% of students in grades 9-12 report being victims of bullying, and 30% report bullying others (StopBullying.gov, 2014). These instances also continue as some young people go off to college, with nearly 1 in 4 college

students reporting that they occasionally see instances of bullying behavior (Chapell et al., 2004). The prevalence of bullying among high school students as well as college students necessitates that further research be directed towards understanding how these experiences influence the psychological development and well-being of young adults.

### **Impacts of Bullying on Aggression and Psychological Difficulties**

A relationship between bullying and later aggression has been demonstrated through empirical study across various populations (Brank, Hoetger, & Hazen, 2012; Hawker & Boulton, 2000; Olweus, 2013; Smith & Brain, 2000). Not only has research shown that bullying influences aggression among teenagers, but evidence also shows that the effects of bullying continue to persist into later adulthood (Olweus, 2013). One longitudinal study, for instance, investigated whether bullying perpetration at ages 13-14 is predictive of future antisocial behavior, criminal violence, and contact with the criminal justice system (Renda et al., 2011). Researchers in this study expanded on previous assertions by Olweus as well as Sourander and colleagues that bullying may be indicative of a wider anti-social behavioral style (as cited in Renda et al., 2011). Furthermore, this study concluded that being a bully as an early teenager had the strongest significant association with anti-social behavior at ages 19-20, but specifically among young men and not young women. Perpetrators were also found to have a two-fold increased likelihood of having contact with police at ages 19 and 20, even when controlling for other factors. Another longitudinal study similarly reflected these findings in a population of Swedish male youths across ages 8, 16 and 24 (Olweus, 2011). For children identified as bullies at age 8, the odds of a later conviction for a violent crime

were six to eight times larger than non-bully children. In summary, these studies provide strong evidence that a particular pattern of anti-social thought exists within bullies.

Researchers have also noted that children who are victims of bullying might engage in aggressive behaviors in response or retaliation towards bullies (Craig, 1997). These conclusions have been replicated in a study that examined bullying amongst male prison inmates (Palmer & Thakordas, 2005). This investigation found a significant relationship between aggression and different types of bullying experiences (i.e., victimization, perpetration, or both). Inmates who had experienced both being a bully as well as being a victim within the prison showed much higher levels of hostility, similar to those who were identified only as victims. These findings suggest that specific types of aggression (i.e., hostility) may be generated from the resentment of being victimized.

The extant scientific literature also suggests that experiencing bullying (i.e., peer aggression and rejection) may also be a risk factor for negative psychosocial developments such as depression, anxiety, loneliness and social difficulties (for reviews, see Brank et al., 2012; Hawker & Boulton, 2000; Olweus, 2013). One study that looked at school children identified a significant increase in depression and anxiety among victims of bullying (Craig, 1997). Similarly, another investigation proposed the existence of a vicious, interactive cycle between peer-abuse (i.e., bullying), social isolation and psychological difficulties (Hazler & Denham, 2002). In a conceptual review, the researchers examined how social isolation can perpetuate aggressive interactions (e.g., bullying) through a variety of mechanisms. For instance, victims of multiple abuses were found to have “less positive peer interactions [and] a lower sense of attachment to school” (Hazler & Denham, 2002, p. 404) among other relational disconnects. Social

isolation was also found to contribute to victimization by fostering a culture of acceptance of violence among inactive bystanders. This passivity further isolates the victim and removes the component of social support, which might otherwise mitigate against the effects of abuse.

The above conclusions about the effects of bullying on school children have also been extended with longitudinal research involving high school students. One such study (Klomek et al., 2011) investigated how bullying experiences contribute to negative psychological outcomes over a four-year period. The researchers compared the outcomes of individuals who had experienced bullying (i.e., as victims, perpetrators, or both) to those of youth who had been identified in a suicide screening to be at-risk for psychological difficulties (e.g., depression, suicide attempts, suicide ideation, etc.) . While bullying experiences were not found to be independently predictive of such issues in later life, a combination of at-risk status and experiences as a victim was significantly related to higher levels of psychological problems in high school (Klomek et al., 2011).

It is important to note that having experiences of bullying, whether as a victim or perpetrator, do not explicitly imply that an individual will develop social difficulties, lash out aggressively, or end up committing suicide (Brank et al., 2012; Olweus, 2013). Instead, as noted by a United States federal program to address bullying (StopBullying.gov, 2014), such acts of aggression constitute a complex phenomenon wherein individuals may frequently shift roles between bullies and victims. Further, research has also found that many children develop no psychological difficulties later in life after having experiences with bullying (Klomek et al., 2011). Thus, the key implication of established literature is that bullying experiences potentially contribute to

the complex psychological process that can produce negative outcomes. Accordingly, the proposed study utilizes a theoretical construct known as the Negative Cognitive Triad proposed by Beck (see Beck & Alford, 2009) to represent this specific perspective. The cognitive triad is composed of an individual's perceptions of themselves, their perceptions of the world and their perceptions of the future. Cases in which these perceptions are negative at both personal and global levels, and stably so, constitute a particular mindset of depression and hopelessness (Beck & Alford, 2009). In conjunction with the complex relationships among bullying, aggression and mental health, we reasoned that such a mindset may facilitate rare but dangerous outbursts of retaliatory violence. As demonstrated in a study with prison inmates (Palmer & Thakordas, 2005), specific segments of the population may internalize victimization in a way that facilitates development of hostility and resentment, lashing out in a violent manner when presuming there is nowhere else to turn. Related to mass-casualty events in schools, research by the U.S Secret Service and the U.S. Department of Education found strong relationships among bullying, psychological difficulties and aggressive thoughts within case studies of perpetrators (Vossekuil et al., 2002). Among the investigated mass-casualty events, 71% of suspects were noted as having a history of being bullied or persecuted, 61% of suspects were noted as having a documented history of feeling extremely depressed or desperate, and 73% of suspects were said to have had a grievance of some kind. It is therefore critical to address how psychological factors may interact with certain negative social experiences to produce a tendency for aggression and extreme violence, even if only in a very miniscule population of individuals. In addition, scientific inquiry must

examine these relationships as part of a larger system of influence that includes widespread, violent media.

### **Violent Media**

Another well-investigated area within the domain of aggression research is the impact of violent media. Movies, television and other forms of entertainment play a significant role in both American and global culture. Thus, researchers have been examining their influences on aggression for the past few decades. A strong scientific consensus of empirical research suggests that violent media has a causal impact on aggressive attitudes and behaviors (Anderson et al., 2010). In multiple comprehensive reviews, leading researchers on the topics of violent media and aggression describe the psychological mechanisms that are influenced by both singular and repeated exposure to aggressive media (see Anderson & Bushman, 2001; Anderson et al., 2003; Anderson et al., 2010). These researchers have testified before congressional committees about the short-term and long-term effects of media violence (as cited in Anderson & Bushman, 2001) and their work has consistently served as an arbiter for debate concerning the influence of violent media on children and young adults (Ferguson, 2008). With the exponential growth of interactive computer games over the last few decades, recent attention has shifted towards how video games may have an impact on aggression development among youth.

### **Violent Video Games and Aggression**

Similar findings that have been established for movies and television (Anderson et al, 2003; Friedrich-Cofer & Huston, 1986; Friedlander, Connolly, Pepler & Craig, 2013, Phillips, 1983) have also been established for violent video games (Anderson & Dill, 2000), a highly interactive and popular form of contemporary entertainment. According to the main American association of computer and video game publishers, approximately 59% of Americans play video games, having spent an estimated \$21.53 billion on games, hardware and accessories in the year 2013 (ESA, 2014). All video games that are sold commercially within the United States are rated by an independent body for age-appropriateness of content. While only 12% of games reviewed in 2013 were rated such “Mature”, or appropriate for ages seventeen and up, “Mature” games accounted for four out of the five best-selling games for 2013 (ESA, 2014). With the average age of gamers being thirty-one and the average number of years that gamers spend playing being fourteen (ESA, 2014), many college-age individuals participate in gaming and are likely exposed to a large amount of violent content.

One well-supported conceptual paradigm used in aggression research involving violent video games is the General Affective Aggression Model (GAAM; Anderson & Bushman, 2002; Anderson & Dill, 2000). The GAAM incorporates a variety of psychological and physiological processes, and violent video games have been demonstrably shown to influence these processes, in both experimental and correlational studies (for reviews, see Anderson & Bushman, 2002; Anderson et al., 2010). After the 1999 school shooting tragedy at Columbine High School in Colorado, published research explored how exposure to violent video games would increase aggression in both short-

term and long-term contexts in line with the GAAM (Anderson & Dill, 2000). This research detailed how an individual may commit acts of aggression due to a combination of variables concerning their personality and the situation. In the short term, for example, the assessment of any situation as a threat is influenced by the person's internal state, such as their level of physiological arousal, emotions, and their thoughts about what they perceive. The combination of aggressive feelings (e.g., anger) with aggressive cognitions (e.g., betrayal) as well as a heightened physiological state (e.g., excitement, nervousness) would thus influence an individual's tendency to react aggressively towards an environment he or she presumes or sees as threatening (Anderson & Bushman, 2002). This possibility provides a basis for the examination of aggression development, utilizing a multi-faceted approach to understand how repeatedly playing violent video games contributes to increases in stable aggression through various channels of learning.

According to existing case studies (Vossekuil, et al. 2002; Massengill et al., 2007; NRCIM, 2003), the vast majority of mass-casualty events in schools are not impulsive outbursts, but rather, they are pre-planned attacks. The existence of planning and forethought leads the current examination to focus on the factors postulated by the GAAM as contributors to long-term aggressive personality development rather than those related to short-term situational reactions (see Anderson & Bushman, 2002; Anderson & Dill, 2000).

Theory and evidence suggest that as individuals play violent video games for extended periods of time, they develop aggressive thoughts and attitudes through the persistent learning and conditioning of violent responses to different situations (Anderson & Bushman, 2002; Anderson & Dill, 2000). For example, because players of first-person



shooter games are often required to maintain a steady vigilance for enemies in their environment and react immediately to threats, they may transfer those reactions to the real world through a perceptual bias for aggression (Anderson & Dill, 2000). This potential has been demonstrated in experimental work that tested for increases in aggressive cognition using implicit association tests, self-reports, and hypothetical scenarios (Anderson & Bushman, 2001). According to the GAAM, many video games also reinforce behaviors and thoughts that would be seen as antisocial in the real world. This reinforcement is accomplished within the games by rewarding players for violent actions with benefits to gameplay or story progression (e.g., character enhancements, more powerful weapons, etc.). Playing violent video games also produces stronger cognitive schemas (i.e., ways of perceiving the world) that help dictate how a person reacts to different situations, thereby making aggressive behavioral scripts (i.e., automatic responses) more readily accessible for an individual, and increasingly promoting violence as an acceptable means to solve a variety of problems (Anderson & Bushman, 2002; Anderson & Dill, 2000). Some researchers have reinforced these ideas with longitudinal work amongst high school students. For instance, one study examined both the socialization (i.e., individuals that play violent video games become more aggressive) and selection (i.e., aggressive people play more violent games) hypotheses within a large cohort studied across four years of high school (Willoughby, Adachi & Good, 2012). From these data, the researchers concluded that violent gaming predicted aggressive thoughts and attitudes even after controlling for other variables (e.g., depression, academic marks, peer deviance, etc.). The researchers, however, failed to identify any

significant support for the selection hypothesis, suggesting that violent gaming does in fact have a meaningful impact on aggression over the long term.

Finally, violent video games not only influence changes in aggressive personality through different forms of learning, but also through mechanisms such as desensitization and moral disengagement (Greitemeyer & McLatchie, 2011; Hartmann & Vorderer, 2010; Bandura, Barbaranelli, Caprara & Pastorelli, 1996). For instance, in order for an individual to carry out acts of violent aggression, he or she must overcome certain psychological barriers to violence (e.g., guilt). Research suggests that as violence is repeatedly presented in media, individuals develop more tolerance for aggression (Anderson & Bushman, 2002). This process exemplifies desensitization—a form of adjustment to violent material (or experience) that reduces the adverse impact of engaging in antisocial behavior inherent to many violent games. For example, research by Anderson and colleagues (2003) has noted that physiological arousal to violent scenes often decreases after repeated exposure. These desensitization conclusions have also been expanded to include significant differences in physiological arousal between male and female college students when playing a violent video game. In their experimental work with college students, Arriaga et al. (2006) found that only female participants displayed significant increases in heart rate and skin conductance when playing a violent video game as compared to a non-violent game. Because men are noted to be the primary players of violent games in the real world, the gender difference suggests that continued violent video game play is associated with a decline in physiological arousal sensitivity.

Desensitization operates as a form of moral disengagement, a concept discussed by Bandura and colleagues (1996) that consists of a deactivation of cognitive self-

sanctions that serve as an internal barrier to a person committing antisocial or immoral conduct. In violent video games, where objectives often include causing injury or death to an opponent (either human or computer), moral disengagement would allow players to participate without feeling a sense of discomfort or guilt for violating moral codes.

Evidence has argued that moral disengagement can occur amongst players of violent video games in a variety of ways. Some researchers have found that individuals “deny humanness” or attribute less human characteristics to others after playing a violent game (Greitemeyer & McLatchie, 2011). Other researchers have discussed the mixed support for this mechanism, finding similar levels of emotional discomfort (e.g., guilt and negative affect) amongst game players who faced human opponents as well as gamers who faced non-human opponents (Hartmann & Vorderer, 2010). Finally, an investigation by Gabbiadini, Andrighetto and Volpato (2012) examined how the recency and frequency of playing a violent game that permits antisocial conduct (e.g., Grand Theft Auto) may impact willingness to justify immoral actions among high school students. The researchers found support for recency of exposure being associated with an increase in moral disengagement (Bandura et al, 1996), highlighting a potential relationship that should be further explored through experimental work.

Holding a more permissive attitude towards violence as a means to solve problems has been associated with increases in the likelihood of aggression (Anderson & Bushman, 2002; Anderson & Dill, 2000; Anderson et al., 2010). This may interplay with negative social experiences and produce antisocial attitudes toward a world that is seen as unjust and unfair. For example, this outcome was alluded to in research by Hartmann and Vorderer (2010) where players of violent games reported lower levels of guilt and

negative affect when the games featured violent actions that were justified by a benevolent narrative (e.g., save the world from aliens). In combination with an established negative view of self, world and future (or negative cognitive triad), this acceptance of violence may also contribute to a volatile mindset that presents a higher risk for acting out in a violent manner. While these interconnected factors may not turn every hardcore video gamer, let alone everyone else, into school shooters, these influences should be investigated in relation to rates of other kinds of violence within our culture and society.

Strong empirical research has demonstrated connections between exposure to violent video games and an increase in aggression across a variety of methodologies (Anderson et al., 2010; Anderson et al., 2003; Arriaga et al., 2006; Willoughby, Adachi & Good, 2011), yet these findings certainly have their detractors. Many videogame industry figures with a vested interest in the sales of these products have come out squarely against the conclusions made by leading aggression researchers, and rather point to reviews and studies that contest any significant connections between video games and aggression (Ferguson, 2008) or between video gaming and adolescent conduct problems (Parkes, Sweeting, Wight & Henderson, 2013). While these arguments add an important part to the discourse concerning violent video games, the preponderance of evidence suggests that violent video games do have a psychological and physiological impact on consumers (Anderson et al. 2010), even if that impact only sometimes leads to a greater potentiality for violence. Consistent with the literature on bullying and social rejection (Craig, 1997; Olweus, 2013; Palmer & Thakordas, 2005; Renda et al., 2011), it may be that many young adults are able to experience instances of violence (e.g., violent video

games) without developing psychological difficulties or antisocial attitudes. Because violent video games are played by millions of Americans and yet only a very selective segment of the population actually commits acts of extreme violence such as mass-casualty events, the proposed research seeks to examine the specific combinations of experience that contribute to likelihood of aggression in that small population.

Established theoretical models and empirical studies linking violent video games to increased risk of aggression warrant further examination in order to determine how this influence relates to other known facilitators of aggression development such as bullying experiences.

### **Connections between Violent Video Games and Social Rejection**

As previously demonstrated, violent video games and bullying have the potential to act as influences on similar psychological processes related to aggression. Research must thus focus on points of overlap between these factors in order to understand whether their independent influences are amplified when both are present. To expand on this relationship, research has also recently examined how social rejection may directly impact consumption of violent media. One such experimental study with adolescents (i.e., ages 12-16) and young adults (i.e., ages 18-27) utilized the “Cyberball Paradigm” (Williams, Cheung & Choi, 2000) to test the prediction that instances of social rejection would directly increase tolerance attitudes towards antisocial media content (i.e., violent, aggressive videos) (Plaiser & Konijn, 2013). Adolescents who had been rejected in the study showed significantly higher levels of rejection-based anger, which directly increased tolerance towards violent media, and significant differences were also found

concerning gender, with males showing higher tolerance and preference for antisocial content. Even though peer rejection had no significant impact on tolerance amongst young adults (i.e., college age individuals) within the study, these findings still support a pathway between social rejection and consumption of violent media amongst a group that has shown to be at high risk for committing school shootings (Vossekuil et al., 2002; NRCIM, 2003) – impressionable teenage boys.

Notably, while not all perpetrators of mass-casualty events in schools have been found to (a) play violent video games and/or (b) experience bullying victimization (Vossekuil et al., 2002; NRCIM, 2003, Massengill et al., 2007), the impacts that these factors have on psychological states (e.g., hopelessness), moral disengagement, and long-term development of aggressive cognitive structures suggests that their combination may act as an amplifying risk factor for extreme violence. Therefore, the proposed study seeks to examine these relations in a general college population in order to assess the potential that similar trends in aggression-intent exist in concordance with theoretical models.

### **Masculinity, Violent Video Games, Bullying and Aggression**

One final variable that needs to be addressed is gender influences on mass-casualty events because gender may moderate (i.e., increase or decrease) the strength of the relations under study. Law enforcement investigations have identified that males commit an astonishing 97% of mass-casualty events (Schweit, 2013). This is a particularly troubling of human aggression because it implies that aggression-related social processes and outcomes may have a significant gendered component. Academic work by masculinity scholars has examined the notion of “violent masculinity” (Katz,

Ericsson, Talreja, Jhally & Earp, 1999; Kimmel & Mahler, 2003) as a social construction crafted from peer interactions, popular media, and traditional cultural messages about what it means to “be a man.” One prominent theoretical model concerning violent masculinity is the “Tough Guise” perspective (Katz et al., 1999; Katz et al., 2013) which highlights violence as a “men’s issue” and examines how American society teaches boys and young men that in order to gain respect and status, they must exhibit a sense of invulnerability and impose their will upon others.. The Tough Guise construct is composed of a conventionalized image or front used by men to define their own masculinity through toughness, strength, and emotional stoicism. Furthermore, individuals who do not meet these criteria risk having their masculinity called into question, becoming socially ostracized and cast as “weak” and “feminine” (Katz et al., 2013). The concepts and implications of the Tough Guise front necessitate that the predictions from this specific perspective be directly tested in the field of youth violence. Doing so may highlight new trends and underlying social patterns that can be powerful, indirect or implicit factors influencing young people’s development of anti-social attitudes and beliefs.

In the proposed study, gender is expected to play an important role in the thoughts, attitudes and experiences of college students. Considering the work posited by masculinity scholars, any dismissal of such specific cultural components would fail to fully address how mechanisms underlying aggression may interplay. For example, research has shown that specific masculine sub-cultures (e.g., college fraternities) may facilitate both development of aggression-related influences as well as key associations (e.g., increased levels of moral disengagement linked to bullying and hazing scenarios) in

members as compared to non-member males (McCreary, 2013). Other gender implications exist regarding video games as well. As previously noted, work by Arriaga and colleagues (2006) identified differences in physiological arousal measures among men and women after playing a violent video game. Their research showed that even though both genders reported similar levels of enjoyment after playing, biometric assessments of skin conductivity and heart rate during game play were significantly higher for women following a transition from a non-violent to a violent game, but did not differ for men in the study. This result suggests a potential desensitization to violent content among men, as women have been noted to play violent video games less often than men (Arriaga et al., 2006; Hartmann & Vorderer, 2010). Consistent with this gender difference, men also are the target audience for many commercial efforts of the video game industry, with gaming media sites and news organizations focusing their own marketing directives specifically towards young men (IGN Entertainment, 2014).

Due to the specialized relationships identified among men, masculinity, violent media and aggression within social settings (i.e., bullying, hazing, moral disengagement, etc.), the proposed study will also seek to address gender influences by examining intersections between gender and the previously identified variables of social rejection (i.e., bullying) and violent video games. In light of the above-mentioned work concerning violent masculinity, these relationships are critical to examine, especially considering the extremely high preponderance of young male offenders committing mass-casualty events.



## Predictions

In line with the established literature reviewed above, we predict that our proposed assessment will find higher levels of aggressive attitudes in college students who most often play violent video games, as well as those who have experienced severe and/or frequent bullying victimization, or both of these influences. Strong empirical evidence has already shown that bullying and violent video games each has an independent relationship with aggression among college students. However, the combination of these variables may produce a significantly stronger influence as the two factors work in concert to influence underlying psychological mechanisms. We therefore predict an interaction between violent video game playing and bullying experiences.

Finally, based on research about “violent masculinity” (Katz et al., 2013), the high prevalence of males committing mass-casualty events, as well as the strength of gender differences in violent video game play and bullying experiences, we also predict that the patterns of aggression-intent will be significantly higher among male participants.

Accordingly, our primary predictions for the proposed study are as follows:

P1: Participants who report both experiences with bullying as well as frequent violent video game play will report significantly higher levels of aggression, hopelessness and moral disengagement than participants who report either experience independently.

P2: All predicted relationships will be significantly stronger for men than for women.

## Methods

### Participants

Participants in the proposed study will be undergraduate students (both male and female) enrolled within a college or university who are between the ages of 18 and 25. In order to achieve reliable measurement using the proposed scales and assessments (below), the study will include approximately 200 to 250 participants. This estimate is in line with recommendations of online research site's sample-size estimators (e.g., [statisticalsolutions.net](http://statisticalsolutions.net)), or calculating sample size using the most consistent effect sizes from surveys in recent meta-analyses (e.g., Anderson et al., 2010) and the power and response distributions recommended by research methodologists (e.g., Winer, Brown, & Michels, 1991).

### Measures

*Aggressive Thoughts, Feelings and Attitudes.* To measure aggressive thoughts and attitudes, the Buss-Perry Aggression Questionnaire (Buss & Perry, 1992) will be used. This five-point Likert assessment is composed of four subscales: Physical Aggression (9 items; e.g., "Given enough provocation, I may hit another person"), Verbal Aggression (5 items; e.g., "When people annoy me, I may tell them what I think of them"), Anger (7 items; e.g., "I sometimes feel like a powder keg ready to explode") and Hostility (8 items; e.g., "At times I feel I have gotten a raw deal out of life"), and has demonstrated strong validity and reliability in previous research with college students. As in the original work, test-retest correlations for the scales are: Physical Aggression, .80; Verbal Aggression, .76; Anger, .72; and Hostility, .72 (total score = .80). Alpha coefficients describing the

internal consistency were also high: Physical Aggression, .85; Verbal Aggression, .72; Anger, .83; and Hostility, .77 (total score = .89).

*Bullying/Victimization Experience.* To assess bullying perpetration and victimization experiences, the proposed study will utilize the framework of the Revised Olweus Bully/Victim Questionnaire suggested in the original work by Olweus (as cited in Hartung, Little, Allen & Page, 2011). The assessment will ask participants to rate the frequency with which they have either a) been bullied or b) bullied another person across three different time periods (i.e., during college, during high school and prior to high school) and using a 4-point frequency scale (i.e., “never”, “only once or twice”, “occasionally” and “very frequently”).

*Moral Disengagement.* To assess moral disengagement, the proposed study will utilize the Moral Disengagement Scale (Bandura et al., 1996). This scale contains 32 items with which participants rate their agreement using a 5-point Likert scale (e.g., “Some people deserve to be treated like animals”). The reliability alpha coefficient of the Moral Disengagement Scale is .82 (Bandura et al., 1996). The proposed assessment uses a version of the original scale revised by McCreary (2013) for use with college student populations.

*Negative View of Self/Others (i.e., the world).* To assess the low self-evaluations at the personal (domain-specific) and global levels, and disconnection from others

implicated in these two components of the Negative Cognitive Triad, the proposed assessment will utilize (respectively) the State Self Esteem Scale (SSES; Heatherton & Polivy, 1991), the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), and the UCLA Loneliness Scale Version 3 (Russell, 1996). The self-esteem scales have demonstrated high internal consistency in samples of college students (SSES → internal consistency alpha = .92, see Heatherton & Polivy, 1991; RSES → internal consistency alpha = .88 to .90 across six samples; see Robins, Hendin & Trzesniewski, 2001). The UCLA Loneliness Scale Version 3 is comprised of 20 items assessing how often an individual feels disconnected or, conversely, close to others (e.g., “How often do you feel shy?”, “How often do you feel that there are people who really understand you?”), and participants responded using a 4-point frequency scale (i.e., “never”; “rarely”; “sometimes”; “always”). The UCLA Loneliness Scale Version 3 also has shown high internal consistency across samples of college students, nurses, teachers and the elderly with alpha coefficients ranging between .89 to .94 in the original work (Russell, 1996), and the scale shows high construct validity through its strong correlations with other measures of loneliness (e.g.,  $r = .65$  with NYU Loneliness Scale and  $r = .72$  with the Differential Loneliness Scale, see Russell, 1996).

*Negative View of the Future.* In order to examine this final construct of the Negative Cognitive Triad, the proposed assessment will utilize The Hopelessness Scale (Beck, Weissman, Lester & Trexler, 1974; Brodsky & Smitherman, 1983). The Hopelessness Scale consists of 20 true-false items (e.g., “I might as well give up because I can’t make things better for myself”), and has high levels of internal consistency (alpha coefficient =

.93), construct validity (.74) and concurrent validity (.62) as cited in the original work (Beck et al., 1974).

*Social Desirability Response Bias.* In order to control for response biases due to participant's attempting to appear socially desirable, the proposed studies will utilize questions from the Marlowe-Crowne Social Desirability Scale (internal consistency  $\alpha = .88$ ; Crowne & Marlowe, 1960). The proposed assessment uses a version of the original scale revised by Strahan and Gerbasi (1972) for use with college student populations (e.g., "I would never think of letting someone else be punished for my wrongdoings." "I have never been irked or annoyed when people expressed ideas very different from my own.").

*Violent Video Game Exposure.* To examine individual exposure to violent video games, the proposed study will utilize a custom measurement adapted from the studies conducted by Anderson and Dill (2000). Participants will be asked to rate how many hours per week they played video games (a) over the last four months, (b) as an average during a college semester, (c) during the 11<sup>th</sup> and 12<sup>th</sup> grades, (d) during the 9<sup>th</sup> and 10<sup>th</sup> grades, and (e) during the 7<sup>th</sup> and 8<sup>th</sup> grades. Participants will also be asked to list up to five of their favorite video games and to answer three questions pertaining to each game, i.e., "How often do you play this video game?" (7-point Likert scale: "Rarely" to "Frequently") "How violent is the content in this video game?" (7-point Likert scale: "No Violent Content" to "Extremely Violent Content") and "How much do you enjoy playing this game?" (7-point Likert scale: "Not At All" to "Extremely").

**Procedure**

The proposed study will be comprised entirely of an anonymous online survey. Participants will be provided with a secure web link to the questionnaire material, which they may answer at their convenience. The questionnaire will include a short demographic section that will include background information about the participants (age, college year, gender and ethnicity) that is not personal enough to identify them but will allow for data analysis that examines gender relationships. Following the demographic section, the questionnaire will include the above-mentioned assessment measures.

**Analyses**

The proposed study will examine predicted relationships using analyses appropriate for cross-sectional survey research. First, basic correlational analyses will be utilized in order to identify the strength and direction of baseline relationships between suggested factors (e.g., violent video game exposure and moral disengagement).

Secondly, multiple regression analyses will be used to control for demographic influences and other alternative explanations for predicted relationships. For instance, a positive, significant relationship between frequency of bully victimization and hostility (i.e., aggression) needs to be examined with other factors (e.g., age, arousal sensitivity, etc.) that may potentially serve as alternative explanations. For example, if controlling for age has no effect on the presence of a significant relationship between frequency of bully victimization and hostility, then age alone cannot be said to explain the relationship.

Conversely, if the significant relationship disappears with the removal of age as a present variable, then age would be a primary factor that accounts for the relationship.

Multiple regression analyses will also be utilized to test the independent and interactive contributions of violent media (e.g., violent video games) and social rejection (e.g., bullying) on aggression. This would confirm or reject our main proposed prediction that these factors operate synergistically to enhance aggression when present together.

## **Discussion**

### **Limitations**

The limitations of the proposed study are mostly related to its methodology. As an online survey, data collection would be subject to errors inherent to self-report. For instance, given the nature of the questionnaire's content, it is possible that some students will not want to accurately disclose the degree to which they may have aggressive attitudes, previously have been victimized or have previously been perpetrators of bullying behavior. To address this, our study utilizes a measurement of social desirability response bias (as noted in Methods section) with the goal of reducing the effects of participants who may be at higher risk to report self-deceptive or impression-managing responses. In addition, the anonymity of online responses should help to curtail the potential withholding of information.

### **General Implications and Conclusions**

Scientific literature has identified a complex variety of personal and situational factors that contribute to aggression. As previously noted, these factors often act in a

mutually facilitative method to influence aggressive tendencies and attitudes within young adults. For example, the desensitization and moral disengagement reinforced through repetitive exposure to violent video games can facilitate the feelings of retaliation-based aggression seen in victims of bullying. Accordingly, the proposed research would explore these factors to identify the existence of any independent and potentially synergistic effects that the factors may have on aggression. This would provide a basis for further research into these relationships as well as future clinical applications.

By examining the relationships of bullying and violent video games as both independent and moderator constructs, researchers and clinicians may utilize a more multi-faceted approach to understanding the dynamics of aggression within the wider social context. The proposed study is focused on the investigation of a large population of relevant subjects (i.e., college students) who have been demonstrated by previous research to have experience with both video games and social rejection (e.g., bullying). The goal of this research is not to identify a potential active shooter within a college population. Such a discovery would be statistically highly unlikely due to the very low frequency of such individuals compared to the number of individuals with bullying experiences and/or those who play violent video games. Research has also noted that there have been many active shooters within schools that have not utilized violent media or had identified experiences with bullying (Vossekuil et al., 2002). Considering this, any use of the proposed work to identify a specific active shooter among a population would be unsupported. Rather, the proposed study will look at measures of general aggression and their relationships with examined experiences. This would allow future research to



investigate any identified synergistic relationships as potential risk factors for heightened aggression among college students.

Considering clinical application, evidence of compounding relationships may be used to identify individuals within certain populations (e.g., colleges) who may benefit from clinical intervention resources. For example, if a college or university were to administer a similar survey to incoming students in order to identify their experiences with suggested factors (i.e., bullying and violent video games), then they may direct mental health services and other supportive measures to those individuals at the highest level of risk. This may reduce instances of criminal conduct, aggressive interactions, and general violence in ways similar to how surveys involving alcohol consumption are used to identify and thus mitigate problem-drinking behaviors among incoming students.

As active shooter events continue to pose a threat to public safety and necessitate attention from a wide variety of groups, research must continue to investigate the underlying components that may influence and drive such events. Based on established literature, the proposed study may take steps towards that end by investigating two putative causal factors and the dynamics of their influences on aggression. By accomplishing this goal, the scientific community may be able to further work towards addressing the public safety crises that are active shooter events.

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