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Emotional Intelligence and its Link to Aggressive Cognition and Aggressive Affect Generated by Violent Video Game Use of Male Undergraduates
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I would also like to dedicate this dissertation to my loving family and dear friends. God gave me the strength to complete graduate school but more importantly, he put all of you in my life. Thank you!
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Abstract

This study investigated the relationship between violent video game use and aggressive affect and cognitions. Emotional Intelligence (EI) as a possible protective factor against the Aggressive Affect (AA) and Aggressive Cognitions (AC) that occur after violent video game use was also explored. Participants included 172 male undergraduate students, ages 18-22, from a Midwestern Catholic university. Positive correlations were found between baseline total Emotional Intelligence and post-game aggressive affect within the overall sample, violent video game group (VVG), and non-violent video game (NVVG) group. Notably, for the VVG group, the Use of Emotions (UOE) and Regulation of Emotion (ROE) EI subscales were negatively related to AA. For violent video game playing, the components of EI that regulate aggressive emotions and facilitate constructive activities both negatively correlated with aggressive affect; although the limitations of correlational design call for future research to better understand the role of EI in regards to AA. The results also showed that for the NVVG group, both the ROE and the Self Emotions Appraisal (SEA) EI subscales were negatively related to AA. Results were different for aggressive cognitions. The UOE EI subscale was found to be negatively related to AC in the NVVG group and positively related to AC in the VVG group. This study contributes to the literature on violent video game use and emotional intelligence.
Emotional Intelligence and its Link to Aggressive Cognition and Aggressive Affect
Generated by Violent Video Game Use of Male Undergraduates

In 1999, two American high school seniors injured 21 students and murdered 12 students. The shootings occurred on school grounds, sustained national headlines, and were perpetrated by male teenagers. These perpetrators were especially known for playing violent video games. The use of violent video games has been associated with increased aggressive behavior, aggressive thoughts, and aggression-related feelings (Anderson & Bushman, 2001). Despite the research indicating that violent video game use is positively correlated with aggressive affect and aggressive cognition but not necessarily aggressive actions, the use of violent video games continues to prevail amongst adolescents and young adults, including college students.

In 2015, the Entertainment Software Association reported that approximately 56 percent of all gamers were male and 44 percent were female (Entertainment Software Association, 2015). In 2009, U.S. retail sales for computer and video games reached 10.5 billion dollars (Siwek, 2010), and as of 2014, 75% of the top-selling video games contain violent content (Entertainment Software Association, 2015). In a survey conducted in 2006, more than half of American adults reported playing video games, and twenty-one percent reported playing video games every day. Moreover, seventy-six percent of college students reported playing video games (Lenhart, Jones, & Macgill, 2008). Such widespread use of violent content makes understanding its effects as well as identifying possible protective factors a research priority.
A violent video game is defined as a video game that involves behavior directed towards another individual that is carried out with the immediate intent to cause harm (Bushman & Anderson, 2001). The first video game to be classified as violent was released in 1976. This game was titled *Death Race 2000*. It was based on the 1975 movie of the same name and involved running over pedestrians. This game was soon taken off the market because of public concern (Kent, 2001). *Death Race 2000* has not been the only game to gain notoriety.

The video games, *Mortal Kombat, Grand Theft Auto*, and *Call of Duty: Black Ops*, have also been featured on various news segments and criticized for their overtly sexual and/or violent content. This negative publicity has done little to change violent video game distribution. In 2011, the Supreme Court ruled that regulating the sale of violent video games to minors was unconstitutional (Ferguson, 2013). This was done because of the inconsistency of findings as well as the methodological flaws that permeated many of the studies linking violent video game use to aggression related affect, cognitions, and physiological responses.

Whereas the research on violent video game use is limited, significant findings have been made. However, with respect to beneficial outcomes for playing violent video games, there is a dearth of research findings that provide any evidence. However, violent video game use has been linked to anger and aggression including hostile expectations and desensitization to violence (e.g., Anderson & Bushman, 2001; Bartholow & Anderson, 2002; Bartholow, Bushman & Sestir, 2006). Researchers have found positive correlations between increased violent video game use and increased aggressive cognitions and affect. Links between violent video game use and unhealthy physiological responses have also been found. The theoretical
foundation for many of these studies has been the General Aggression Model (GAM) (Anderson & Bushman, 2001).

**The General Aggression Model (GAM)**

According to the GAM, aggression is largely based on the activation and application of aggressive schemas (Anderson & Bushman, 2001). When individuals are presented with violent external stimuli, the cognitive schemas that are activated will influence an individual’s internal state. This leads to heightened physical arousal, a potential increase in aggressive affect, and a potential increase in aggressive cognitions (Anderson and Bushman, 2001). Individuals who experience such a shift, in the three domains that compose an internal state, are prone to appraising even neutral situations in an aggressive fashion. Aggressive appraisal then leads to impulsive or aggressive actions within social situations. The resulting negative social encounter serves to reinforce the individual’s aggressive appraisal and leads to future neutral situations being incorrectly appraised (Bushman and Anderson, 2002).

An aspect of the GAM can be observed within a video game study conducted by Carnagey, Anderson, and Bushman (2006). Participants who had played a violent video game compared to those who had played a non-violent video game experienced less physiological arousal as measured by heart rate and galvanized skin responses when viewing real-life violent recordings. The researchers concluded that internal states that are shifted from violent video game play indicate less aversion to violence and therefore desensitization. Whereas this example was limited to internal physiological responses, the GAM has been used as the model for various video game studies that explore affective, cognitive, and behavioral shifts.
Violent Video Games and Aggressive Affect

In a series of experiments by Carnagey and Anderson (2005), the links between violent video games and either aggressive cognitions or affect were further explored. In their first experiment, 43 undergraduate males and 32 undergraduate females were asked to complete the State Hostility Scale (SHS; Anderson, 1995) after being assigned to play a racing game under one of three conditions. In the first condition (violence rewarded), points were awarded for killing pedestrians. In the second condition (violence punished), points were removed for killing pedestrians. In the third condition (non-violent), killing within the game was prevented. The SHS was used as a measure of aggressive affect. Those that played the violent video game experienced an increase in aggressive affect regardless of whether or not violence was rewarded or punished (Carnagey and Anderson, 2005).

Violent Video Games and Aggressive Cognitions

In their second experiment, 29 undergraduate males and 37 undergraduate females engaged in the same experiment but the SHS was replaced with the Word Completion Task (WTC; Anderson, 1999). The WCT was used as a measure of aggressive thinking. Analysis of the results indicated that individuals in the violence rewarded condition experienced an increased likelihood of aggressive thinking (Carnagey and Anderson, 2005).

Violent Video Games and Physiological Responses

As previously discussed, the findings of Carnagey, Anderson, and Bushman (2006) were interpreted as desensitization to real life violence by male and female college students who played violent video games (Carmageddon, Duke Nukem, Future Cop and Mortal Kombat), compared to the group of students who played the non-violent video game (Glider Pro, 3D Pinball, 3D Munch Man, and Tetra Madness). Real life violence was operationally defined as watching a 10-minute video recording of real-life violence (courtroom outburst,
shootings, police confrontations, and prison fights). Desensitization was defined as lower heart rates and galvanic skin responses within the group who played the violent versus non-violent video games.

In summary, the aforementioned studies demonstrated a correlation between violent video game use and increased aggressive affect, cognitions, and physiological responses. It is important to note that there is a marked difference between priming and actually committing aggressive actions. The aforementioned studies also had limited sample sizes but the fact that significant findings have been discovered in such small samples could be indicative of a larger phenomenon that is worth exploring. The results described in the studies may be attributed to the formation of an aggressive cognitive schema. This phenomenon can be explained via the General Aggression Model (GAM).

Whereas the GAM explains how exposure to violent video games is related to aggressive affect, cognitions, and responses, it does not take into account those individuals who play violent video games but refrain from aggressive actions or do not experience negative shifts, but form positive cognitions instead (Bosche, 2010). For example, in a study that was conducted by Bosche (2010) on 29 male college students, ages 20-28, whether participants had played a violent (Doom) or non-violent (Blobby Volleyball) video game first, both groups reacted more rapidly to positive versus neutral or negative pseudowords and words. According to Bosche, if the video game playing was followed by reacting to positive stimuli more rapidly than to negative or neutral stimuli, then the participants were primed toward positive concepts.

One possible explanation why some individuals who play violent video games do not respond aggressively in their thoughts and emotions is the existence of protective internal factors, and emotional intelligence will be given consideration as a possible protective factor in this study.
**Emotional Intelligence**

Psychological research has identified various protective factors that ameliorate negative stressors and help individuals live healthier lives. One of these protective factors is emotional intelligence. Emotional Intelligence (EI) is the ability to process emotional information accurately and efficiently (Salovey & Mayer, 1990). It involves three basic mental processes that branch out into additional subcomponents.

The first component of EI is the ability to accurately identify and express one’s emotions and the emotions of others. This component involves skills such as empathy, verbal, and non-verbal expression of emotions (Quebbeman & Rozell, 2002). The second component of EI is the emotional regulation of oneself and others. This second component involves skills such as interpersonal effectiveness and relationship building. The third component of EI is the ability to utilize emotions to facilitate thoughts. This third component involves skills such as flexible planning, creative thinking, attention shifting, and motivation (Quebbman & Rozell, 2002). Overall, EI can be understood as a set of mental skills used to process, manage, and utilize emotional material (Mayer & Salovey, 1997).

Low EI has also been associated with problematic behaviors experienced by college students. In a study conducted by Brackett, Mayer, and Warner (2004), 330 college students were given a College Student Life Space Scale, the Big Five personality measure, and the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer and Salovey, 2002). Results indicated that low EI in males was positively correlated with increased drug use, deviant behavior, and negative relationships (Bracket, Mayer, & Warner, 2004).

Furthermore, high EI has been associated with positive outcomes. EI has been demonstrated to be a protective factor, as a moderating variable in college age alcohol use.
College students with high EI are better able to judge peer alcohol use. Thus, they are less likely than those with low EI to be influenced by perceptions of peer alcohol use when determining their own alcohol consumption (Ghee & Johnson, 2008). Individuals with higher EI may be better able to separate external situations from their internal judgments.

Importantly, research indicates that an increase in EI may lead to a decrease in anger (Yilmaz, 2009). In a study conducted by Yilmaz (2009), 32 students were administered the Consistent Anger Subscale of the State Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999) and then split into an experimental and a control group. The experimental group then participated in 12 training sessions designed to improve EI. The students were then administered the same measure as a post-test measure. Analysis of the results indicated that when compared to the control group, individuals that attended the sessions experienced a significant decrease in trait anger. These gains were assessed three months later in a follow-up study. Analysis of the scores indicted that the students had maintained their gains (Yilmaz, 2009).

**Emotional Intelligence and Cognitive Appraisal**

According to the General Aggression Model (GAM), aggression after violent video game use would occur as a result of inappropriate appraisals and problematic aggressive cognitions (Bushman & Anderson, 2001). Research suggests that Emotional Intelligence (EI) influences the cognitive appraisal of situations.

EI has been demonstrated to have a moderating effect on the cognitive appraisal of events. In a study conducted by Mikolajczak & Luminet (2008), thirty-two students were given the Trait Emotional Intelligence Questionnaire (TEIQue-SF; Petrides & Furnham, 2001) and a self-efficacy measure to evaluate how they perceived their mathematical skills
(mathematical self-concept). Participants were then randomly informed that they would have to complete either a graded (stressful condition) or non-graded (neutral) mathematical task. No mathematical task was administered. Instead, participants were given a measure to determine if they had perceived the possibility of engaging in the mathematical task challenging or threatening. Analysis of the data indicated that individuals with high trait EI were likely to appraise the potential task as a positive challenge rather than a threat Mikolajczak & Luminet (2008). This study was limited by its correlational design and small sample size.

Most relevant to the current study, EI has been demonstrated to have a moderating effect on video game use. In a study conducted by Parker, Taylor, Eastabrook, Schell, and Wood (2008), 249 males and 418 females, ages 13-18, were administered the Emotional Quotient Inventory (EQ-i:YV; Bar-On & Parker, 2000), the South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA; Winters, Stinchfield, & Fulkerson, 1993), and two measures to determine if an individual is addicted to playing video games, the Internet Addiction Questionnaire (IADQ; Young, 1998) and the Problem Video Game Playing Scale (PVGS; Salguero & Moran, 2002). Analyses of the data indicated that higher levels of EI, specifically in the area of interpersonal abilities, were associated with a lesser likelihood of video game addiction (Parker, Taylor, Eastabrook, Schell, & Wood, 2008). The study demonstrated small to medium negative correlations between EI and video game addiction. Whereas correlational in nature, this is the only known study that explores the link between EI and video game use, and the findings suggests that EI and video game use are advantageously associated with each other.
Research has demonstrated links between higher EI and reduced anger (Yilmaz, 2009), higher EI and lower chances of video game addiction (Parker et al., 2008), and higher EI and the positive cognitive appraisal of potentially stressful situations (Mikolajczak & Luminet, 2008). These findings suggest that EI may also be related to the cognitive appraisal of aggressive situations. Because violent video games present aggressive situations, research may explore how EI is related to the aggressive cognitions and aggressive affect that are generated by violent video games. Exploring this connection will add to the very limited research associated with the relationship between EI and video game use.

In summary, research on violent video game use shows support mainly for negative outcomes in terms of affect and cognitions but not necessarily aggressive actions. Whereas most of the research has focused on attempting to find evidence that violent video game use increases aggressive cognitions and affect, additional research is necessary to explore what other factors are related to and influence these links. Further exploration of possible protective factors may offer explanations why most individuals play violent video games, but are not primed toward negative consequences, such as anger or hostility. As higher EI has been linked to less anger and improved cognitive appraisals, this current study explored the relationships between baseline EI and the possible aggressive affect and cognitions generated by the violent video game use of male undergraduates. In addition, this study also provided an opportunity to examine whether the different EI subscales maintained similar relationships. Comparisons were also made between the violent video game playing and non-violent video game playing in terms of aggressive affect and cognitions.
Method

Participants

Participants were 172 male undergraduate students, ages 18 to 22, from a Midwestern Catholic university. This population was chosen because it best represented the demographics of people who typically play violent video games. Surveys conducted in 2008 revealed that 60% of gamers were male and that 76% of all gamers were college students (Lenhart, Jones, & Macgill, 2008). When compared to males, women were also less likely to play violent video games (Hartmann & Klimmt, 2006). Studying undergraduate males, ages 18-22, was likely to provide a snapshot of gamers across the country. All participants were recruited through a psychology department’s participant pool at a Midwestern university via a research announcement and flyer (See Appendix A).

Measures

Wong and Law Emotional Intelligence Scale (WLEIS)

Emotional Intelligence was measured using the Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002) (See Appendix B). The WLEIS is a 16-item measure that assesses four branches of EI. These branches are Self-Emotions Appraisal (SEA), Others-Emotions Appraisal (OEA), Use of Emotions (UOE), and Regulation of Emotions (ROE).

WLEIS items are answered on 7-point Likert scales anchored at strongly disagree (1), disagree (2), somewhat disagree (3), neither agree nor disagree (4), somewhat agree (5), agree (6), and strongly agree (7). An overall Emotional Intelligence (EI) score can be obtained by taking the sum or average of all 16 items. Subscale/branch scores can also be obtained by taking the sum or average of the items related to that subscale/branch. According
to Wong and Law (2002) the WLEIS has good internal consistency with Cronbach alpha coefficients of WLEIS total ($\alpha = .91$); SEA subscale ($\alpha = .89$); OEA subscale ($\alpha = .89$); UOE subscale ($\alpha = .80$); ROE subscale ($\alpha = .89$).

**State Hostility Scale (SHS)**

Aggressive affect was measured using the State Hostility Scale (SHS; Anderson, 1995) (See Appendix C). The SHS is a 35-item measure with items such as “I am furious” and “I feel aggravated” that assesses aggressive affect. Each item is answered on a 1-5 Likert-type scale anchored at strongly disagree (1), disagree (2), neither agree nor disagree (3), agree (4), strongly agree (5). The SHS also contains positively worded phrases such as “I feel tender” and “I feel polite”. These items must be reversed scored before a total score is generated. An overall SHS score can then be obtained by taking the sum or average of all the items (SHS, Anderson, 1995). According to Anderson, Carnagey, and Eubanks (2003), the SHS has good internal consistency with a Cronbach alpha coefficient of .96.

**Word Completion Task (WCT)**

Aggressive cognition was measured using the Word Completion Task (WCT; Anderson, 1999) (See Appendix D). The WCT involves 98 word fragments. Participants completing this task are asked to make complete words out of the fragments in order to determine if they have been aggressively primed. For example, an individual that is aggressively primed is likely to write the word “hit” rather than “hat” when the fragment “h_t” is provided. Fifty of the word fragments can yield words that are clearly aggression-related and scoring can be done in a variety of ways (WCT; Anderson, 1999). One method of scoring is to divide the number of aggressive words generated by the total amount of words generated.
to calculate an accessibility of aggressive thoughts (WCT/AAT) score. This score can then be translated into a percent (Pieschl & Fegers, 2015).

According to Anderson (C.A. Anderson, personal communication, August 26, 2013), no national norms in terms of the reliability for the WCT exist. The Cronbach alpha coefficient has varied across studies. According to Weinstein, Hodgins, and Ostvik-White (2011), the WCT had good internal consistency with a Cronbach alpha coefficient of .80. The WCT is one of the most used measures in video game studies involving the GAM and has been considered valid by many of the researchers using the measure (Carnagey & Anderson, 2005).

The Cronbach alpha coefficients for the scales and subscales of the measures used in the current study are: SHS ($\alpha = .96$); WCT ($\alpha = .51$); WLEIS ($\alpha = .85$); SEA ($\alpha = .77$); OEA ($\alpha = .74$); UOE ($\alpha = .75$); ROE ($\alpha = .83$) indicating fair reliability for the WCT and good internal consistency and reliability for the other measures.

**Procedure**

Approval of the research was obtained from the Xavier University Institutional Review Board (IRB) (See Appendix E). Participants were recruited via the Psychology Department’s participant pool and a campus flyer (See Appendix A).

Participants signed the IRB approved consent form (See Appendix F) and were randomly handed either an odd or even number packet that contained the study measures. Researchers counted in advance how many participants had signed up, for the day, and had an equal number of odd and even packets for the participants to select from. First, participants completed the Wong and Law Emotional Intelligence Scale (WLEIS) and then proceeded to be assigned to the video game condition. Participants with an odd number packet played Tetris
while participants with an even number packet played Mortal Kombat; both groups played for twenty minutes. Games were played on FC-Twin game consoles and utilized 7-inch screens and game cartridges. All participants then completed the State Hostility Scale (SHS) and the Word Completion Task (WCT). Participants were then given the written debriefing handout that included expected findings and the principal investigator’s contact information (See Appendix G).

**Results**

**Descriptive Statistics**

The study was conducted with 172 participants in an attempt to have the violent video game group (*Mortal Kombat*) and the nonviolent video game group (*Tetris*) each contain at least 85 randomly assigned participants. Based on Cohen’s (1992) power table, in order to have a power of 0.80 to detect a medium effect size with an alpha of 0.05, two groups of 85 participants are needed to run a Pearson product-moment correlation, and two groups of 64 are needed to run an Independent samples t-test. Six participants were removed from the data set because of missing data. This resulted in 166 participants used for analysis with 78 participants in the violent video game group (*Mortal Kombat*) and 88 participants in the nonviolent video game group (*Tetris*). Descriptive statistics for the video game condition including frequency and percent are listed in Table 1.

**Preliminary Analysis**

Preliminary analyses included running frequencies for all variables in order to check for errors, reliability, outliers, assess normality, and transform variables when recommended. Outliers were determined by the inspection of SPSS boxplots. As per Pallant (2005), points that extended 1.5 box-lengths from the edge of the box were considered outliers and points
that extended more than 3 box-lengths from the edge of the box were considered extreme outliers. Appropriate items were reverse scored and missing data was also appropriately generated.

A total of 12 values were missing from the data set that was used for the analyses. These values were assigned, via mean substitution, prior to the analyses. Means were calculated from available data and used to replace the missing values. This method was used because of its conservative nature (it did not change the mean distribution as a whole) and because the small amount of missing values were unlikely to significantly reduce the variance of the variables (Tabachnick & Fidell, 2001). Participant number, missing values, averages, and assigned values are listed in Table 2.

**WLEIS Total Scores.** Preliminary analyses were conducted on the Wong and Law Emotional Intelligence Scale (WLEIS) responses. Prior to preliminary analysis, WLEIS items were reverse scored to produce accurate scores that were consistent with the WLEIS scoring method (WLEIS, Wong & Law, 2002). Also, exploration for outliers was performed. A total of six outliers were found amongst the Total WLEIS scores. Because these scores were consistent with the total possible score of the WLEIS and were not the result of typographical or measurement errors, the scores were retained. The influence of the outliers was reduced via a Reflect and Square Root transformation.

Next, reliability was examined. According to Wong and Law (2002) the WLEIS has good internal consistency with a Cronbach alpha coefficient of .91. Bao, Xue & Kong (2015) reported a Cronbach alpha coefficient of .86. In the current study, the Cronbach alpha was .85. Also, total WLEIS scores were assessed for normality, including skewness and kurtosis. Total WLEIS scores had a mean of 91.95 and a new trimmed mean of 92.44. Total WLEIS scores were also negatively skewed (-.86) indicating a clustering of scoring at the high end. Kurtosis
values for the total WLEIS scores were positively skewed (.94) indicating a peaked distribution with long thin tails. Whereas skewness and kurtosis do not make a substantive difference in analysis when dealing with large samples, relatively small samples benefit from transforming variables to look more normal in terms of distribution (Tabachnick & Fidell, 2001). The results of the Kolmogorov-Smirnov statistic ($p < .001$) also suggested a violation of the assumption of normality. Therefore, the total WLEIS scores were transformed using a Reflect and Square Root transformation. The means, standard deviations, skewness, kurtosis, and Kolmogorov-Smirnov statistic of the transformed WLEIS scores are listed in Table 3.

**WLEIS Subscales.** Preliminary analyses were also conducted for each of the four WLEIS branches/subscales. These branches are Self-Emotions Appraisal (SEA), Others-Emotions Appraisal (OEA), Use of Emotions (UOE), and Regulation of Emotions (ROE).

Amongst the SEA scores, exploration of outliers revealed a total of three outliers. Because these scores were consistent with the possible scores on the SEA and were not the result of typographical or measurement errors, the scores were retained and winsorized. Original SEA outlier scores and winsorized scores are listed in Table 3. Next, reliability was examined. According to Law, Wong, and Song (2004), the SEA scale has good internal consistency with a Cronbach alpha of .89. Bao, Xue & Kong (2015) reported a Cronbach alpha of .75. The current study has a Cronbach alpha of .77. Also, SEA scores were assessed for normality, including skewness and kurtosis. SEA scores had a mean of 24.15 and a new trimmed mean of 24.23. The SEA was also negatively skewed (-.32) indicating a clustering of scores on the high end. Kurtosis values for the SEA were also negatively skewed (-.06) indicating a reasonably flat distribution with too many cases in the extreme. Whereas distribution was not normal, all scores were consistent with possible scores on the SEA. Because transformations or winsorizing did not yield a normal distribution ($K-S = .091$, $p$
= .002), correlations involving the untransformed and unwinsorized SEA scores were conducted using a Spearman’s rank order correlation.

Amongst the OEA scores, exploration of outliers revealed a total of five outliers. Because these scores were consistent with the possible scores on the OEA and were not the result of typographical or measurement errors, the scores were retained and winsorized. Original OEA outlier scores and winsorized scores are listed in Table 4. Next, reliability was examined. According to Law, Wong, and Song (2004), the OEA scale has good internal consistency with a Cronbach alpha of .89. Bao, Xue & Kong (2015) reported a Cronbach alpha of .85. The current study has a Cronbach alpha of .74. Also, OEA scores were assessed for normality, including skewness and kurtosis. OEA scores had a mean of 22.07 and a new trimmed mean of 22.28. The OEA was also negatively skewed (-.96) indicating a clustering of scores on the high end. Kurtosis values for the OEA were positively skewed (1.6) indicating a peaked distribution with long thin tails. Whereas distribution was not normal, all scores were consistent with possible scores on the SEA. Because transformations or winsorizing did not yield a normal distribution (K-S = .130, p < .001), correlations involving the untransformed and unwinsorized OEA score were conducted using a Spearman’s rank order correlation.

Amongst the UOE scores, exploration of outliers revealed one outlier. Because this score was consistent with the possible scores on the UOE, and it was not the result of typographical or measurement errors, the score was retained and winsorized. The original UOE outlier score and winsorized score is listed in Table 4. Next, reliability was examined. According to Law, Wong, and Song (2004), the UOE scale has good internal consistency with a Cronbach alpha of .80. Bao, Xue & Kong (2015) reported a Cronbach alpha of .73. The current study has a Cronbach alpha of .75. Also, UOE scores were assessed for normality, including skewness and kurtosis. UOE scores had a mean of 23.47 and a new trimmed mean
of 23.64. The UOE was also negatively skewed (-.70) indicating a clustering of scores on the high end. Kurtosis values for the UOE were positively skewed (.65) indicating a peaked distribution with long thin tails. Whereas distribution was not normal, all scores were consistent with possible scores on the UOE. Because transformations or winsorizing did not yield a normal distribution ($K-S = .106, p < .001$), correlations involving the untransformed and unwinsorized UOE scores were conducted using a Spearman’s rank order correlation. 

Amongst the ROE scores, exploration of outliers revealed 15 outliers. Because these scores were consistent with the possible scores on the ROE and were not the result of typographical or measurement errors, the scores were retained and winsorized. The original ROE outlier scores and winsorized scores are listed in Table 4. Next, reliability was examined. According to Law, Wong, and Song (2004), the ROE scale has good internal consistency with a Cronbach alpha of .89. Bao, Xue & Kong (2015) reported a Cronbach alpha of .83. The current study has a Cronbach alpha of .86. Also, ROE scores were assessed for normality, including skewness and kurtosis. ROE scores had a mean of 22.26 and a new trimmed mean of 22.53. The ROE was also negatively skewed (-1.00) indicating a clustering of scores on the high end. Kurtosis values for the ROE were positively skewed (1.21) indicating a peaked distribution with long thin tails. Whereas distribution was not normal, all scores were consistent with possible scores on the ROE. Because transformations or winsorizing did not yield a normal distribution ($K-S = .167, p < .001$), correlations involving the untransformed and unwinsorized ROE scores were conducted using a Spearman’s rank order correlation.

**SHS.** Preliminary analyses were conducted on the State Hostility Scale (SHS, Anderson, 1995). Appropriate items were also reverse scored and overall scores were generated by taking the sum of the items (SHS, Anderson, 1995). No outliers were identified among the SHS scores. Next, reliability was examined. According to Anderson, Carnagey,
and Eubanks (2003), the SHS has good internal consistency with a Cronbach alpha coefficient of .96. Arriaga, Esteves, Carneiro, and Monteiro (2006) reported a Cronbach alpha coefficient of .87. The current study has a Cronbach alpha was .94. Also, Total SHS scores were assessed for normality, including skewness and kurtosis. Total SHS scores had a mean of 77.23 and a new trimmed mean of 76.60. Total SHS scores were also positively skewed (.40) indicating a clustering of scores at the low end. Kurtosis values for the total SHS were negatively skewed (-.60) indicating a reasonably flat distribution with too many cases in the extreme. Whereas Kurtosis was below zero, all scores were consistent with possible scores on the SHS and no outliers were identified amongst the total SHS scores. The results of the Kolmogorov-Smirnov statistic (p = .098) was also above .05 indicating normality within the distribution (Pallant, 2005). No transformations were necessary on the total SHS scores for the purpose of this study. The means, standard deviations, skewness, kurtosis, and Kolmogorov-Smirnov statistic of the SHS scores are listed in Table 3.

**WCT.** Preliminary analyses were conducted on the Word Completion Task (WCT) responses. Scores were generated by dividing the number of aggressive words generated by the total amount of words generated to calculate an accessibility of aggressive thoughts/aggressive cognition (AC) score. This method is consistent with the method used in Pieschl & Fegers (2015) study. Exploration of outliers revealed a total of seven outliers amongst the AC scores. Because these scores were consistent with possible AC scores, and were not the result of typographical or measurement errors, the scores were retained and winsorized. Original AC outlier scores and winsorized scores are listed in Table 4. Next, reliability was examined. According to Anderson (2013) no national norms in terms of the reliability for the WCT exist. The Cronbach alpha coefficient has varied across studies. According to Weinstein, Hodgins, and Ostvik-White (2011), the WCT had good internal
consistency with a Cronbach alpha coefficient of .80. In the current study, the Cronbach alpha was .51. Also, the winsorized AC scores were assessed for normality, including skewness and kurtosis. Winsorized AC scores had a mean of .19 and a new trimmed mean of .19.

Winsorized AC scores were also positively skewed (.10) indicating a clustering of scores at the low end. Kurtosis values for the winsorized AC scores were also negatively skewed (-.21) indicating a reasonably flat distribution with cases in the extreme. The result of the Kolmogorov-Smirnov Statistic ($K-S = .068, p = .062$) also indicated normality (Pallant 2005). The winzorized AC scores were used to run the subsequent correlations.

**Main Analysis**

A Pearson’s product-moment correlation was performed to examine the relationships between Emotional Intelligence (EI) and Aggressive Affect (AA). For the overall sample, results indicated a significant positive correlation between EI and AA with higher EI being associated with higher AA for the overall sample. In regards to the participants who played the non-violent video game; results indicated a significant, medium strength, positive correlation between EI and AA with higher EI being associated with higher AA for the group who played the non-violent video game (Tetris). For the participants who played the violent video game, the results indicated a significant, medium strength, positive correlation between EI and Aggressive Affect AA with higher EI being associated with higher AA for the group who played the violent game (MK). All of these correlations were in the opposite direction as the hypothesized direction.

A Pearson’s product-moment correlation was performed to examine the relationships between EI and Aggressive Cognition (AC). For the overall sample, EI and AC were not significantly related. With respect to the participants who played the non-violent video game, results indicated a significant, positive correlation between EI and AC with higher EI being
associated with higher AC for the group who played the non-violent video game (*Tetris*). In addition, for the participants who played the violent video game (*Mortal Kombat*), EI and AC were not significantly related.

In order to compare the non-violent and violent video game groups on their AA (SHS mean scores) and AC (WCT mean scores), two Independent-samples t-test were used. The mean SHS scores for the non-violent video game group, *Tetris* (*M* = 72.77, *SD* = 17.63; *t* (164) = -3.30, *p* = .001) were significantly lower, compared to the violent video game group, *Mortal Kombat* (*M* = 82.26, *SD* = 19.41). The magnitude of the difference in the means was moderate (*eta squared* = .0622). There was no significant difference between the mean WCT scores for non-violent video game group, *Tetris* (*M* = .1887, *SD* = .0746) and the violent video game group, *Mortal Kombat* (*M* = .190, *SD* = .080); *t* (164) = .137, *p* = .891.

**Exploratory Analysis**

**Emotional Intelligence and Aggressive Affect.**

Exploratory analyses were conducted to further investigate the results from the main analyses which indicated that baseline EI was positively correlated with Aggressive Affect (AA) after video game playing. From the main analysis, the mean AA score was lower for participants who played the non-violent video game (*Tetris*), compared to those that played the violent video game (*Mortal Kombat*), and positive correlations were found between baseline EI and AA in both groups. In the exploratory analysis, the strengths of the relationships between total EI, the EI subscales, and AA variables were also compared between the two video game groups, using a Fisher’s Z transformation. Correlation coefficients were not found to be statistically different, [*Zobs* = -0.625 (Total), -0.29 (SEA), 0.02 (OEA), 0.83 (UOE), and 0.86 (ROE)], indicating that total EI and EI subscales did not
statistically explain more of the variance in AA between the Mortal Kombat and Tetris
groups. The Zobs scores for total EI and the subscales are listed in Table 6.

**Emotional Intelligence Subscales and Aggressive Affect.**

The Self-Emotions Appraisal (SEA) subscale of the WLEIS was explored in relation
to Aggressive Affect (AA). For the overall sample, there was a significant small strength
(Pallant, 2005) negative correlation between the SEA subscale of the WLEIS and AA, \( r(164) = -.198, p = .005 \) with higher level of SEA associated with lower levels of AA. There was no
significant correlation between the SEA subscale and AA for the Mortal Kombat group \( r(76) = -.153, p = .091 \). There was a significant small strength negative correlation between (SEA)
subscale and AA for the Tetris group \( r(86) = -.198, p = .032 \) with higher level of SEA
associated with lower levels of AA.

Also, the Others Emotional Appraisal (OEA) subscale of the WLEIS was analyzed
with AA. There were no significant correlations found between the OEA subscale of the
WLEIS and AA for the overall sample \( r(164) = -.124, p = .056 \), Tetris group \( r(164) = -.113, p = .147 \), or Mortal Kombat group \( r(76) = -.116, p = .156 \).

In addition, the Use of Emotions (UOE) subscale was analyzed in relation to AA. For
the overall sample, there was a significant small strength negative correlation between the
UOE subscale and AA \( r(164) = -.281, p < .001 \) with higher levels of UOE associated with
lower levels of AA. There was a significant small strength negative correlation between the
UOE subscale and AA for the Tetris group \( r(86) = -.221, p = .019 \) with higher levels of UOE
associated with lower levels of AA. There was a significant medium strength negative
correlation between the UOE subscale and AA for the Mortal Kombat group \( r(76) = -.344, p = .001 \).
Further, the Regulation of Emotion (ROE) subscale was analyzed in relation to AA. For the overall sample, there was a significant small strength negative correlation between the ROE subscale and AA $r(164) = -.189, p = .008$ with higher levels of ROE associated with lower levels of AA. There was no significant correlation found between the ROE and AA for the Tetris group $r(86) = -.106, p = .162$. There was a significant small strength negative correlation between the ROE subscale and AA for the Mortal Kombat group $r(76) = -.239, p = .018$.

**Emotional Intelligence and Aggressive Cognitions.**

Exploratory analyses were conducted to further investigate the results from the main analyses which indicated that baseline EI was positively correlated with participant Aggressive Cognitions (AC) after playing the non-violent video game (Tetris). From the main analysis, there were no significant differences found between the mean AC scores of the Tetris and Mortal Kombat groups. In the exploratory analysis, the strengths of the relationships between total EI, EI subscales, and AC variables were also compared between the two video game groups, using a Fisher’s Z transformation. Correlation coefficients were only statistically different ($Z_{obs} = -2.89$) between the OEA scores of the violent and non-violent video game groups. Other correlation coefficients were not found to be statistically different, and total EI did not statistically explain more of the variance in AA between the Mortal Kombat and Tetris groups. The $Z_{obs}$ scores for total EI and the subscales are listed in Table 6.

**Emotional Intelligence Subscales and Aggressive Cognitions.**

The Self-Emotions Appraisal (SEA) subscale of the WLEIS was explored in relation to Aggressive Cognitions (AC). For the overall sample, there was no significant correlation between the SEA subscale of the WLEIS and AC, as measured by the Word Completion Task (WCT) $r(164) = .018, p = .410$. There was no significant correlation between the SEA subscale
and AC for the Tetris group $r(86) = -.025, p = .407$. There was no significant correlation between the SEA subscale and AC for the Mortal Kombat group $r(76) = .06, p = .301$.

In addition, the Others Emotional Appraisal (OEA) subscale of the WLEIS was analyzed with AC. There was no significant correlation between the OEA subscale and AC for the overall sample $r(164) = -.011, p = .444$. There was a significant small strength negative correlation between the OEA subscale and AC for the Tetris group $r(86) = -.215, p = .022$, with higher levels of OEA associated with lower AC. There was a significant small strength positive correlation between the OEA subscale and AC for the Mortal Kombat group $r(76) = .240, p = .017$, with higher levels of OEA associated with higher AC.

Also, the Use of Emotions (UOE) subscale was analyzed in relation to AC. There was no significant correlation between the UOE subscale and AC for the overall sample $r(164) = -.038, p = .313$, Tetris group $r(86) = -.125, p = .123$, or Mortal Kombat group $r(76) = .055, p = .318$.

Finally, the Regulation of Emotion (ROE) subscale was analyzed in relation to AC. There was no significant correlation between the ROE subscale and AC for the overall sample $r(164) = -.091, p = .121$, Tetris group $r(86) = -.077, p = .237$, or Mortal Kombat group $r(76) = -.104, p = .182$.

**Discussion**

Previous studies have reported an increase in aggressive affect and cognitions after violent video game use compared to non-violent video game use. The present study sought to replicate the previously documented findings associated with violent video game use and aggressive affect and cognitions. The possibility of higher EI serving as a protective factor against aggressive affect and cognitions related to violent video game playing was also explored.
Aggressive Affect and Violent Video Game Use

The current study demonstrated higher aggressive affect after violent versus non-violent video game use. Similar findings were found in the Carnagey and Anderson (2005) study of 43 undergraduate males and 32 undergraduate females who were assigned to play a racing game under either a non-violent, violence-rewarded, or violence-punished condition. The aggressive affect measure used in their study, the State Hostility Scale (SHS; Anderson, 1995), was also used in the current study. The results of the current study may also be better understood in the context of the findings of Ballard and Wiest (1996). They investigated 30 male undergraduate students who either played a non-violent (Corner Pocket), a violent video game (Mortal Kombat), or the same violent video game with increased blood and gore. Afterwards, participants were administered a hostility measure composed of items from the Adjective Checklist, Bell Adjustment Inventory, and Buss-Durke Hostility Inventory, and measures of cardiovascular functioning. Results indicated more hostility and higher blood pressure amongst the violent video game players with the highest hostility scores coming from the video game condition with increased blood and gore.

Emotional Intelligence as a Protective Factor against Aggressive Affect

Although there was evident variation in the relationship between Aggressive Affect after playing a video game and baseline EI according to which EI subscale and video game group (See Table 5), a consistent finding was revealed for the Use of Emotions (UOE) subscale. This component of EI, which measures an individual’s ability to use his or her emotions to facilitate constructive activities and increase personal performance (Wong & Law, 2002), was negatively related to AA in the overall sample and non-violent video game condition. Importantly, UOE was also negatively related to AA for participants who played the violent video game. Whereas the strengths of these relationships were small for the overall
and non-violent video game participants, a medium strength relationship was discovered for the violent video game group. Although these findings are only correlational, such a relationship suggests some potential for higher UOE to be beneficial with respect to violent video game playing and to be further investigated as a potential mediating factor against the aggressive emotions associated with violent video game playing.

The Regulation of Emotion (ROE) subscale, which measures an individual’s ability to regulate his or her emotions and more rapid recovery from psychological stress (Wong & Law, 2002), was also negatively related to Aggressive Affect for the overall sample and violent video game group. Since recent studies have identified ROE as a partial mediator of stress (Bao, Xue, & Kong, 2015), it is possible that it helps regulate the temporary physiological and emotional impact that violent video game use has on its players. The only other subscale that was negatively related to AA was the Self-Emotions Appraisal (SEA) subscale. This subscale measures an individual’s ability to identify and acknowledge his or her own emotions (Wong & Law, 2002), and it was negatively related to AA in the overall sample and non-violent video game condition, but not in the violent video game condition. Whereas the strength of AA and ROE and AA and SEA relationships were small, future studies are needed to better understand how and to what extent these are protective variables.

After playing a violent video game, two subscales of baseline EI were negatively related to Aggressive Affect, even though overall EI was positively related to AA. It appears that the abilities to regulate emotions and use emotions to enable constructive activities both may serve as protective factors against aggressive affect. More research is needed to understand the circumstances when EI and AA are positively related rather than negatively related.
Aggressive Cognitions and Violent Video Game Use

The current study did not demonstrate an overall increase in aggressive cognitions after violent video game use. There was no difference between the levels of aggressive cognitions, as measured by the WCT (WCT; Anderson, 1999), between the violent and non-violent video game groups. It is possible that these results were influenced by the measure used to identify aggressive cognitions. According to Anderson (2013), there are no national reliability norms for the Word Completion Task (WCT). The validity of the WCT has also been criticized (Ferguson, 2013).

Emotional Intelligence as a Protective Factor against Aggressive Cognitions

Overall EI was not found to be related to higher or lower aggressive cognitions for the overall sample or violent video game group. However, there was a small strength positive relationship between EI and aggressive cognitions for the non-violent video game group. Further analysis revealed that the Others Emotional Appraisal (OEA) subscale, which is designed to measures an individual’s ability to perceive, assess, and understand the emotions of others (Wong & Law, 2002), varied in its relation to aggressive cognitions across game conditions. The OEA was negatively related to aggressive cognitions within the nonviolent video game group and positively related within the violent video game group. Such variability, as well as the study not finding an overall increase in aggressive cognitions after violent video game use, considered together with concerns about this measure as it applies to the current sample, makes it difficult to interpret the role of EI with respect to AC after video game playing, whether violent or non-violent.

Limitations

This study was conducted utilizing self-reported measures and a response bias may have impacted the results. The aggressive cognition measure has also been criticized for its
validity (Ferguson, 2013). The WCT had the lowest reliability compared to the other measures in this study. One possible way to test reliability in the future is to use alternate forms rather than looking at the Cronbach alpha coefficient. In addition, the design of this study with respect to EI was correlational, and therefore, unable to make conclusions about causation. Whereas the results of this study may suggest that aspects of EI may serve as possible protective factors against the aggressive affect and cognitions generated by violent video game use, such conclusions are beyond the scope of this study.

Future research may include Aggressive Affect measured at baseline and after game playing in order to determine whether or not AA actually increases or not after video game playing and to investigate whether EI has a buffering effect. Exploring the effects of competition versus solo-play, violence type and ratings, and EI on aggressive affect and cognitions is another possible future research topic. This study was also conducted using solely college students. Exploring the traits of college students and how those traits potentially impact the affective priming that occurs after violent video gameplay is also worthy of exploration. Determining the amount of video game play and the types of games participants have played in the past is also likely to yield valuable information. A review of the validity of the current measures being used for videogame and aggression studies as well as how those measures relate to real-world aggression is another viable future research consideration.

Taking the limitations into account, a major strength of the study is examining a topic that has been deemed important by the Supreme Court (Ferguson, 2013). The effect sizes of this study were small to moderate but were consistent with the average small affect size of $r = .15$ found across the majority of video game studies on violent video games and aggression (Ferguson, 2013). This study also simultaneously contributes to the literature on violent video game use and EI.
Conclusion

A large part of the United States population plays video games (Lenhart, Jones, & Macgill, 2008) and 75% of the top-selling video games currently contain violent content (Entertainment Software Association, 2015). Still, the 2011 Supreme Court ruling determined that regulating the sale of violent video games to minors was unconstitutional (Ferguson, 2013). The research literature shows support for increases in aggressive affect and cognitions after violent video game use, but not evidence that aggressive actions follow. Nonetheless, considering the widespread and growing use of violent content, understanding its effects is clearly a research priority. Exploring and identifying possible protective factors and reasons why the majority of violent video game players refrain from violent actions, even after experiencing an increase in AA or AC, are also research priorities.

Results were consistent with previous studies that showed aggressive outcomes associated with violent video game playing. The relationships between baseline EI and AA differed depending on which subscale was examined; and the findings for AA and AC differed. The AA versus AC findings are indicative of the possibility that video game playing has a different effect on affect than on cognitions. For violent video game playing, the components of EI that regulate aggressive emotions and facilitate constructive activities both show consideration as protective factors against aggressive affect; although the limitations of correlational design call for future research to better understand the role of EI in regards to AA. Future research would also benefit from an exploration of the scales used to measure AA and AC as well as clarification that an increase in such constructs does not necessarily lead to aggressive actions.
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*doi*: 10.1037/0033-2909.112.1.155


Table 1

*Video Game Condition*

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<tr>
<th>Game Condition</th>
<th>Frequency</th>
<th>Percent</th>
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<tbody>
<tr>
<td><em>Tetris</em></td>
<td>88</td>
<td>53</td>
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<tr>
<td><em>Mortal Kombat</em></td>
<td>78</td>
<td>47</td>
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Table 2

*Missing Values*

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<th>Average</th>
<th>New Value</th>
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<tr>
<td>61</td>
<td>WLEIS 09</td>
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<td>6</td>
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<tr>
<td>61</td>
<td>WLEIS 10</td>
<td>5.7</td>
<td>6</td>
</tr>
<tr>
<td>459</td>
<td>WLEIS 11</td>
<td>5.8</td>
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<td>459</td>
<td>WLEIS 12</td>
<td>6.1</td>
<td>6</td>
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<tr>
<td>503</td>
<td>WLEIS 13</td>
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<td>6</td>
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<td>WLEIS 14</td>
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<td>6</td>
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<td>214</td>
<td>WLEIS 15</td>
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<td>5</td>
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<td>WLEIS 16</td>
<td>5.9</td>
<td>6</td>
</tr>
<tr>
<td>524</td>
<td>SHS (CM_2)</td>
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<tr>
<td>210</td>
<td>SHS (CM_4)</td>
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<td>54</td>
<td>SHS (CM_5)</td>
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<tr>
<td>66</td>
<td>SHS (CM_10)</td>
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Table 3

*Transformations, Means, & Standard Deviations*

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<tr>
<th>Transformation</th>
<th>Mean</th>
<th>Standard</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>K-S (sig)</th>
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<tbody>
<tr>
<td>Scale</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Total WLEIS</td>
<td>Reflect &amp;</td>
<td>4.10</td>
<td>1.10</td>
<td>.009</td>
<td>.249</td>
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<td></td>
<td>Square Root</td>
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<tr>
<td>Total SHS</td>
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<td>19.03</td>
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<tr>
<td>WCT/AAT</td>
<td>Winsorized</td>
<td>.188</td>
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<td>-.215</td>
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Table 4

_Winsorized Scores_

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<th>Case Number</th>
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<tbody>
<tr>
<td>245</td>
<td>WCT</td>
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<tr>
<td>460</td>
<td>WCT</td>
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<tr>
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<td>526</td>
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<td>0.03</td>
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<tr>
<td>240</td>
<td>WCT</td>
<td>0.00</td>
<td>0.03</td>
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<tr>
<td>27</td>
<td>WCT</td>
<td>0.00</td>
<td>0.03</td>
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Table 5

Correlations

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<tr>
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<th>Aggressive Affect (SHS)</th>
<th>Aggressive Cognition (WCT)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VVG*</td>
<td>NVVG**</td>
</tr>
<tr>
<td></td>
<td>(r(76), p)</td>
<td>(r(86), p)</td>
</tr>
</tbody>
</table>

| Total WLEIS            | .341, .001              | .251, .001                 |
|                        | -.041, .361             | .217, .021                 |
| SEA Subscale           | -.153, .091             | -.198, .032                |
|                        | .061, .301              | -.025, .407                |
| OEA Subscale           | -.116, .156             | -.113, .147                |
|                        | .240, .017              | -.215, .022                |
| UOE Subscale           | -.344, .001             | -.221, .019                |
|                        | .055, .318              | -.125, .123                |
| ROE Subscale           | -.239, .018             | -.106, .162                |
|                        | -.104, .182             | -.077, .237                |

* Violent Video Game

** Nonviolent Video Game
Table 6

*Group Comparisons (Zobs)*

<table>
<thead>
<tr>
<th></th>
<th>Aggressive Affect (SHS)</th>
<th>Aggressive Cognition (WCT)</th>
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<tbody>
<tr>
<td><strong>Zobs</strong></td>
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</tr>
<tr>
<td>Total WLEIS</td>
<td>-0.62</td>
<td>1.63</td>
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<tr>
<td>SEA Subscale</td>
<td>-0.29</td>
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<tr>
<td>OEA Subscale</td>
<td>0.02</td>
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<td>UOE Subscale</td>
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<tr>
<td>ROE Subscale</td>
<td>0.86</td>
<td>0.17</td>
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</table>
Summary

Title.

Emotional Intelligence and its Link to Aggressive Cognition and Aggressive Affect Generated by Violent Video Game Use of Male Undergraduates

Summary

Violent video game use has been linked to aggressive cognition, aggressive affect, and desensitization to violence (e.g., Anderson, C.A, & Bushman, B.J., 2001; Bartholow, B.D., & Anderson, C.A. 2002, Bartholow, B.D., Bushman, B.J., & Sestir, M.A., 2006). Researchers have found positive correlations between increased violent video game use and increased aggressive cognitions, aggressive affect, and unhealthy physiological responses but not aggressive actions. Despite the research on violent video games, the use of violent video games continues to prevail amongst adolescents and young adults, including college students. Such widespread use of violent content makes understanding its effects as well as identifying the reasons why so many individuals that are exposed to violent content do not engage in violent actions a research priority.

The present study investigated the relationship between violent video game use and aggressive affect and cognitions. Emotional Intelligence as a possible protective factor was also explored. Participants were administered the Wong and Law Emotional Intelligence Scale (WLEIS; Wong & Law, 2002), were randomly assigned to play either a violent or non-violent video game for twenty minutes, and were then administered the State Hostility Scale (SHS; Anderson, 1995) and Word Completion Task (WCT; Anderson, 1999) as measures of aggressive affect and cognitions.

Positive correlations were found between baseline total Emotional Intelligence and post-game aggressive affect within the overall sample, violent video game group (VVG), and
non-violent video game (NVVG) group. Notably, UOE EI subscale was negatively related to AA for both groups, the SEA EI subscale was negatively related to AA only for the NVVG group, and the ROE EI subscale was negatively related to AA only for the VVG group. The results were different for aggressive cognitions. The UOE EI subscale was found to be negatively related to AC in the NVVG group and positively related to AC in the VVG group.

For violent video game playing, the components of EI that regulate aggressive emotions and facilitate constructive activities negatively correlated with aggressive affect; although the limitations of correlational design call for future research to better understand the role of EI in regards to AA. Future research may also include Aggressive Affect measured at baseline and after game playing in order to determine whether or not AA actually increases or not after video game playing and to investigate whether EI has a buffering effect.
Script to be used on the research announcement:

Dear Potential Participants,

A study is being conducted that investigates videogame playing by male college students. If you are a Male Xavier student (between the ages of 18 to 22) and are interested in participating, please sign up below. Include your contact information and the lead researcher will contact you with additional information. The study will take approximately one hour of your time and you will be provided with participation credit in designated Department of Psychology courses. Students should check with their professors to determine which courses accept credit from the Department of Psychology Participation Pool.

In rare circumstances, video game playing has been identified to trigger seizures. These incidents have been isolated and only seem to affect individuals who are photosensitive. It is important to note that only 3% of people with epilepsy are photosensitive and that a seizure triggered by video games use is unlikely (Wheless, 2006) Because of this, individuals who have been diagnosed with epilepsy or who have a history of photosensitive seizures may not take part in this study.
Wanted: Xavier University Male Students

Volunteers Needed for Video Game Research Study on Campus

If you are a male Xavier student between the ages of 18-22, you may be eligible to participate in dissertation research*

Volunteer less than one hour of your time to play a video game and answer a few questionnaires.

You may receive credit for research participation-check with your professor or lab instructor

HOW TO CONTACT US FOR THIS RESEARCH STUDY, SO WE WILL ASSIGN YOU A CAMPUS LOCATION, DATE, AND TIME

1. IF YOUR PROFESSOR ACCEPTS RESEARCH CREDIT—SIGN UP THROUGH THE PSYCHOLOGY DEPARTMENT PARTICIPANT POOL

2. OTHERS CAN TEXT OR EMAIL THE PRINCIPAL INVESTIGATOR AT 347-628-9862 OR SuarezKaL@gmail.com PLEASE INCLUDE YOUR NAME, PHONE NUMBER, AND EMAIL ADDRESS ON ANY TEXTS OR EMAILS.

*In rare circumstances, video game playing has been identified to trigger seizures. These incidents have been isolated and only seem to affect individuals who are photosensitive. It is important to note that only 3% of people with epilepsy are photosensitive and that a seizure triggered by video games use is unlikely. Because of this, individuals who have been diagnosed with epilepsy or who have a history of photosensitive seizures may not take part in this study.
Appendix B

Wong and Law Emotional Intelligence Scale (WLEIS)

Please choose one response for each item.

1. I have a good sense of why I have certain feelings most of the time.

   1  2  3  4  5  6  7
   Strongly Agree
   Strongly Disagree

2. I have a good understanding of my own emotions.

   1  2  3  4  5  6  7
   Strongly Agree
   Strongly Disagree

3. I really understand what I feel.

   1  2  3  4  5  6  7
   Strongly Agree
   Strongly Disagree

4. I always know whether or not I am happy.

   1  2  3  4  5  6  7
   Strongly Agree
   Strongly Disagree

5. I always know my friends’ emotions from their behavior.

   1  2  3  4  5  6  7
   Strongly Agree
   Strongly Disagree

6. I am a good observer of other’s emotions.

   1  2  3  4  5  6  7
   Strongly Agree
   Strongly Disagree

7. I am sensitive to the feelings and emotions of others.
8. I have a good understanding of the emotions of people around me.

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<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
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9. I always set goals for myself and then try my best to achieve them.

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<tr>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
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10. I always tell myself I am a competent person.

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<th>7</th>
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<tbody>
<tr>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
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11. I am a self-motivating person.

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<tbody>
<tr>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
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12. I would always encourage myself to try my best.

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<tbody>
<tr>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
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13. I am able to control my temper so that I can handle difficulties rationally.

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</tr>
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<tbody>
<tr>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
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</tbody>
</table>
14. I am quite capable of controlling my own emotions.

1 Strongly 
Agree
2 3 4 5 6 7 Strongly 
Disagree

15. I can always calm down quickly when I am very angry.

1 Strongly 
Agree
2 3 4 5 6 7 Strongly 
Disagree

16. I have good control of my own emotions.

1 Strongly 
Agree
2 3 4 5 6 7 Strongly 
Disagree
Appendix C

State Hostility Scale

Current Mood

Please indicate the extent to which you agree or disagree with each of the following mood statements. Use the following 5-point rating scale. Write the number corresponding to your rating on the blank line in front of each statement.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Neither Agree</th>
<th>Nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>1</td>
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<tr>
<td>____ I feel furious.</td>
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<tr>
<td>____ I feel willful.</td>
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<td></td>
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<tr>
<td>____ I feel aggravated.</td>
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<tr>
<td>____ I feel tender.*</td>
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<tr>
<td>____ I feel stormy.</td>
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<tr>
<td>____ I feel polite.*</td>
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<tr>
<td>____ I feel discontented.</td>
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<td>____ I feel like banging on a table.</td>
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<tr>
<td>____ I feel irritated.</td>
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<td>____ I feel frustrated.</td>
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<tr>
<td>____ I feel kindly.*</td>
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<tr>
<td>____ I feel unsociable.</td>
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<tr>
<td>____ I feel outraged.</td>
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<tr>
<td>____ I feel agreeable.*</td>
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<tr>
<td>____ I feel angry.</td>
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<td>____ I feel offended.</td>
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<td>____ I feel disgusted.</td>
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<tr>
<td>____ I feel tame.*</td>
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*Item needs to be reverse scored. The asterisks are not present in the scale when presented to research participants.
Appendix D

Word Completion Task

Code#__________

1. b _ h _ _ _
2. i n _ _ r e
3. e x _ e _ _
4. m u _ _ e r
5. p r _ _ e
6. s p e a _
7. f l i _ _ e r
8. e x p l _ _ e
9. w _ _ m
10. k i _ _
11. t _ p _
12. h _ r _
13. a _ t _ r
14. c h o _ e
15. s _ m p _ _
16. a t t _ c _
17. c _ m p _ _ t
18. d e s _ _ _ _
19. s h _ l _
20. s h o _ t
21. r _ p _ _ t
22. s t r _ _ e
23. l _ _ e
24. b _ r n
25. s t _ r _ o
26. p _ _ s o n
27. p _ s t _ r
28. m _ _ g l e
29. b l _ n d
30. s n _ r e
31. b _ e
32. h _ t
33. g _ _ p e
Emotional Intelligence, Aggressive Cognitions, Affect and Video Game Use

34. s m _ c k
35. s m _ _ e
36. k n _ _
37. t _ n e
38. s _ _ b
39. s h _ r _
40. d r _ _ n
41. p _ _ n e
42. a n g _ _
43. f l _ _ t
44. f i _ _ t
45. p _ c k
46. h a _ e
47. a _ t
48. c _ t
49. w _ n
50. a _ e
51. _ r y
52. w a _
53. f _ m _
54. s l _ p
55. b _ _ k
56. r _ p e
57. f o _ e _ t
58. o f f _ _
59. l _ _ o n
60. c r _ _ l
61. c _ e _ t e
62. s t _ r _ y
63. m _ t c _
64. f _ r _ _
65. t _ _ t e
66. n _ _ t _
67. w _ _ d _ w
68. w _ _ k e d
69. v i s _ _ n
70. e n _ a g e
71. s c r _ _ n
72. h _ t r _ d
73. t _ l _ p h _ _
Emotional Intelligence, Aggressive Cognitions, Affect and Video Game Use

74. di s__ s__ ed
75. c__ nt__ l
76. p r o v__ e
77. p__ n b__ ll
78. o u t__ __ e
79. c__ ll
80. r__ d e
81. m__ n__ g e
82. i n s__ __
83. s__ d__
84. b__ __
85. b r__ z e
86. r e v__ t
87. c o o__
88. s__ y
89. d__ r
90. s m__ c k
91. f r__ t
92. _ u n c h
93. s h__ r e
94. a__ u s e
95. c l__ __ r
96. h__ n t
97. w__ t__ r
98. s__ a s h
Appendix E

May 2, 2014

Juan Suarez

5343 Tompkins Ave. Apt. 1

Cincinnati, OH 45227

Dear Mr. Suarez:

The IRB has completed the review of your protocol #13-060, *Emotional Intelligence as a Protective Factor Against Aggressive Cognition and Affect Generated by Violent Video Game use of Male Undergraduates* using expedited review procedures. We appreciate your thorough treatment of the issues raised. Your study is approved in the Expedited category under Federal Regulation 45CFR46. Approval expires May 2, 2015. A progress report, available at http://www.xavier.edu/irb/forms.cfm, is due by that date.

If you wish to modify your study, including any changes to the approved Informed Consent form, it will be necessary to obtain IRB approval prior to implementing the modification. If any adverse events occur, please notify the IRB immediately.

We wish you success with your research!

Sincerely,

Morell E. Mullins, Jr., Ph.D.

Chair, Institutional Review Board

Xavier University

MEM/sb

Enclosure: stamped informed consent
Informed Consent

My name is Juan Suarez and you are being given the opportunity to volunteer to participate in a project conducted through Xavier University. The purpose of the study is to measure the different effects video games have on undergraduate male students between the ages of 18 and 22. This particular population was chosen because they are the age and gender group most likely to play video games. All participants will be given an initial survey that takes approximately 5-10 minutes to complete. They will then be randomly assigned to play one of two video games for 20 minutes. Participants will then complete 2 more measures that take approximately 10 minutes each to complete. The entire process is estimated to take between 45 to 60 minutes.

In rare circumstances, video game playing has been identified to trigger seizures. These incidents have been isolated and only seem to affect individuals who are photosensitive. It is important to note that only 3% of people with epilepsy are photosensitive and that a seizure triggered by video games use is unlikely (Wheless, 2006). Individuals with epilepsy or those who have photosensitive seizures are excluded from this study. I ask you to please inform the researcher if you are unable to participate in this study. Your participation credit will not be penalized. This study poses no more than minimal risk to qualified participants. As of now, there are no known unpredictable risks associated with video game use and participation in this study is likely to benefit the community by exploring the effects associated with a common entertainment medium.

Data for this study will be collected anonymously. Each participant’s set of forms will have a unique number but participant answers or performance will not be linked to them by name. All data will be maintained in secure, locked file cabinets located in the research supervisor’s (Dr. Anna Ghee) office. Informed consent forms and hard copies of data will be kept in separate locked cabinets for security reasons and to ensure participant confidentiality. Documents will be stored and maintained for 5 years before being destroyed. Participants will be given 60 minutes of participation credit in designated Department of Psychology courses.

Refusal to participate in this study will have NO EFFECT ON ANY FUTURE SERVICES you may be entitled to from the University. You are free to leave now if for any reason you do not want to begin the study. You are FREE TO WITHDRAW FROM THE STUDY AT ANY TIME WITHOUT PENALTY.)

If you have any questions at any time during the study, you may contact Juan Suarez at SuarezKal@gmail.com or (347) 628-9862. You can also contact my dissertation chair, Dr. Anna Ghee, at (513) 745-3463 after May 2014 or Ghee@Xavier.edu before and after May 2014. If you have any questions about your rights as a research subject please contact Xavier University's Institutional Review Board at (513) 745-2870.

I have been given information about this research study and its risks and benefits and have had the opportunity to ask questions and to have my questions answered to my satisfaction. I freely give my consent to participate in this research project.

__________________________________________
Signature

__________________________________________
By initialing to the left, I affirm that I have not been diagnosed with epilepsy and do not have any history of photosensitive seizure

THE DATE APPROVAL STAMP ON THIS CONSENT FORM INDICATES THAT THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY XAVIER UNIVERSITY’S INSTITUTIONAL REVIEW BOARD.
Appendix G

Written Debriefing Form

Dear Participants,

This study was designed to explore the relationship between emotional intelligence and violent video game use. Specifically, the principal investigator was attempting to determine if high emotional intelligence is a protective factor against the effects of violent video game use.

Previous research shows that individuals that play violent video games have a temporary increase in aggressive thoughts and feelings. It is hypothesized that having high emotional intelligence prevents these thoughts and feelings from increasing.

Thank you very much for your participation in this study. If you would like a copy of the results, once the study is complete, you may contact the principal investigator, Juan Suarez at SuarezkaL@gmail.com. Thank you again for your participation.