DO DEMOGRAPHIC VARIABLES MAKE A DIFFERENCE IN LEVEL OF VIOLENT GAME PLAY?

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For Patrick, my personal cheerleader, who unwaveringly encouraged and supported me throughout this process.

For Keith, who believed I could do anything I set my mind to, and inspired me to begin this journey. You continue to inspire me.

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Abstract

The current study examined the relationship between violent video game exposure and demographic variables including gender, ethnicity, and socioeconomic status (SES). A 40-item questionnaire was developed in order to measure different aspects of violence in video games. One hundred twenty four students in the sixth, seventh, and eighth grades completed the questionnaire as well as had their parents complete a demographic questionnaire. Factor analysis revealed seven underlying factors of violent exposure on the violent video game questionnaire: Violent Acts, Reinforcement, Audio Violence, Targets, Game Rating, Villain, and Graphics. Results suggested that boys were more likely than girls to be exposed to overall more violent content, violent acts, ability to target certain characters, and audio violence. Weekly gameplay predicted exposure to violent acts, ability to target certain characters, audio violence, and games with a rating of T for Teen and above. Years spent playing video games was a predictor of positive reinforcement for violence. Ethnicity and SES were not significant predictors of exposure to video game violence. The current study provides an option for an objective measure of total violent video game exposure, and suggests that, regardless of SES and ethnicity, children are playing video games that contain violent content.

Do Demographic Variables Make a Difference in Level of Violent Game Play?

Playing video games, especially those with violent content, has been shown to increase aggressive behaviors in children and adolescents (Bartholow & Anderson, 2002; Bensley & Van Eenwyk, 2001; Bushman & Anderson, 2002; Gentile, Walsh, Ellison, Fox, & Cameron, 2004; Ostrov, Gentile, & Crick, 2006). Other studies also relate increased violent video game preference and play to a decrease in the child's repertoire of prosocial behaviors (Anderson, 2003; Anderson & Bushman, 2001; Bartholow, Sestir, & Davis, 2005; Funk, Baldacci, Pasold, & Baumgardner, 2004; Gentile, Walsh et al., 2004; Ostrov et al., 2006). Video games are effective teachers of violence because they allow players to practice a skill in a variety of settings with immediate feedback, gradually increasing the level of difficulty (Buckley & Anderson, 2006; Swing, Gentile, & Anderson, 2009). Video games also provide positive reinforcement of aggressive behaviors through the use of rewards, graphics, and audio (Buckley & Anderson, 2006; Swing et al., 2009). Video games may also prime cognitive scripts through their graphics, in particular, weapons and blood (Barlett, Harris, & Bruey, 2008; Buckley & Anderson, 2006).

Although video games and aggressive behaviors have been linked in childhood, there are mixed results in adolescence (Bensley & Van Eenwyk, 2001; Gentile, Lynch, Linder, & Walsh, 2004), suggesting that the age at which a child starts playing video games may have an effect on aggression. Girls have been shown to differ from boys in terms of what type of games they play, and how often they play (Buchman & Funk, 1996; Desai, Krishnan-Sarin, Cavallo, & Potenza, 2010; Homer, Hayward, Frye, & Plass, 2012; Phan, Jardina, Hoyle, & Chaparro, 2012; Rideout, Foehr, & Roberts, 2010; Roberts,

Foehr, Rideout & Brodie, 1999; Witt, Massman, & Jackson, 2011). Also, the research has begun looking at ethnic and socioeconomic differences in access to video games and time spent playing games. African American and Hispanic children spend more time playing video games than Caucasian youth (Rideout et al., 2010; Roberts et al., 1999; Witt et al., 2011), and have more access to video game consoles (Roberts et al., 1999). Additionally, Roberts and Foehr (2008) found that parental education and household income were negatively related to screen exposure in general. That is to say, the lower the household income and parental education, the more children reported screen exposure. Tandon and colleagues (2012) also found that children from households with lower socioeconomic status (SES), which included highest level of parental education and household income, were more likely to have a video game system in their bedroom than children from higher SES households. This suggests that certain children have more access and exposure to video games overall depending on certain demographic variables, and therefore may be at risk for high levels of exposure to violence in video games. However, there are few studies which look at the level of violence in games played by children of different genders, ethnicities, and SES.

Aggression

As long as video games have been popular as a form of entertainment, researchers have been studying the effects of video games on aggression. The two types of research commonly used are laboratory studies and correlational studies. Laboratory studies typically study aggressive behavior right after a participant has played either a violent or nonviolent video game, leading to inferences about causality. Correlational studies, which typically involve questionnaires, capture the real life relationship between video

game play and aggression, although they cannot determine causality. Correlational studies have also looked at aggressive cognitions and affect, which may be more sensitive to change than aggressive behavior.

Anderson and Dill (2000) conducted both types of studies. In their laboratory study, college students played either a violent or nonviolent game for a total of 45 minutes over three sessions. Participants were assessed in their state hostility and aggressive thinking after game play. Gender and game play were significant; that is, aggressive thoughts were more accessible in men than in women, and those who played the violent game had higher scores on measures of aggressive thinking and behavior than those who played the nonviolent game. In their correlational study, Anderson and Dill (2000) found that violent video game play, as measured through a questionnaire, was significantly related to aggressive delinquent behavior.

Meta-analyses of video game play and aggression research (Anderson & Bushman, 2001; Anderson et al., 2010; Bensley & Van Eenwyk, 2001; Gentile & Stone, 2005) also show causal effects of violent game play on aggression for all age groups except for adolescence; mixed results suggests that this age group needs more study. Bensley and Van Eenwyk (2001) reviewed the existing literature on video games and real-life aggression, separating the results into preschool children and elementary school students, middle and high school students, and college students and young adults. Among the studies of middle and high school students, some observed a relationship between higher levels of video game play and self-reported aggression, more accepting attitudes of aggression, and more visits to the principals' office. Participants in other

studies, however, have reported video game play as being calming, and others still found no relationship between violent game play and aggressive behaviors.

Prosocial Behavior

Deficits in prosocial behaviors have been linked to violent video game play; that is, players who spend a lot of time playing violent games have shown fewer prosocial behaviors than others who do not play violent games (Chambers & Ascione, 1987; Ostrov et al., 2006). Chambers and Ascione (1987) studied children in the third, fourth, seventh, and eighth grades who were assigned to play either a violent or prosocial game alone or with the participation of another child. The hypothesis was that children playing cooperatively or in the prosocial game would show an increase of donating/helping, while those playing the aggressive games would show a decrease in prosocial behavior. After playing the game, the children were left in a room with a dollar in nickels, a tin for donations, and a box of unsharpened pencils that one of the graduate assistants needed sharpened. Prosocial behavior was measured by the number of donations/pencils sharpened. Children who played the violent game demonstrated less prosocial behavior in terms of donating than children who played the prosocial game.

Violent video games may also decrease prosocial behaviors by desensitizing players to violence, making them less likely to recognize cues that others are in distress and therefore making them less likely to help. For example, Bushman and Anderson (2009) found that participants who played a violent game were less likely to intervene in a staged fight taking place outside the lab, and were less likely to hear the fight than participants who played a nonviolent game. Englehardt, Bartholow, Kerr, and Bushman (2011) had participants play a violent or nonviolent game and then view violent pictures

while their brain activity was measured. They found a reduction in the P3 component of the event-related brain potential to violent imagery, suggesting physiological desensitization. This brain response mediated the effect of video game content on subsequent aggressive behavior.

Certain video games may also decrease aggression and increase prosocial behavior. Sestir and Bartholow (2010) found that while playing a violent video game increased aggression, playing a nonviolent game decreased aggressive thoughts and feelings, and even increased prosocial thoughts relative to the violent game. Additionally, another study found that prosocial video games, relative to nonviolent games, reduced hostile expectation bias as well as access to aggressive cognitions (Greitemeyer & Osswald, 2009). Participants who played a prosocial video game, relative to a nonviolent game, were more likely to help after a mishap, more willing to assist in further experiments, and intervened more often in a harassment situation (Greitemeyer & Osswald, 2010).

Video Games as Teachers

Several aspects of video games make them effective teachers. For instance, in many games players may choose their level of difficulty, starting off on a level that is challenging, neither too easy nor too difficult. Skills are introduced in the game and then practiced with immediate feedback. These skills are continually practiced throughout the game, with level of difficulty gradually increased. Therefore, these skills are not only mastered, they are overlearned until they become automatic for the player (Buckley & Anderson, 2006; Swing et al., 2009).

Video games also provide reinforcement for players, both extrinsic and intrinsic. Extrinsic rewards may include points or in-game money for performing a behavior, or less obvious rewards such as pleasing graphics or sound effects. Intrinsic rewards include a sense of satisfaction, accomplishment and competence, and increased self-esteem (Olson, 2010; Swing et al., 2009). Finally, certain aspects of video games may prime cognitive schema or scripts for how to act in certain situations (Anderson et al., 2010). For example, pictures of weapons may prime aggressive thoughts (Buckley & Anderson, 2006), and a research study suggested that participants who played a fighting game with more blood output had increased hostility and physiological arousal over time than participants who played the same violent game with less blood output (Barlett, Anderson & Swing, 2009).

Demographic Variables

In their review of the literature, Gentile and Stone (2005) found that in general, violent video game play is related to aggressive affect, cognitions, and behaviors as well as physiological arousal. They did not separate studies based on the age of participants, and some of the studies involving youth in the sixth through ninth grades did not find significant differences in aggressive behavior between those who played violent versus nonviolent games. However, this appears to be the age group where video game play peaks. Several studies suggest (Rideout et al., 2010; Roberts & Foehr, 2008; Roberts et al., 1999; Wright et al., 2001) that among youth, video game play rises steadily to peak between the ages of 11 and 12 years, after which video game play begins to taper off. This age group appears to be more exposed to video game violence than any other age

group, suggesting that more research should be conducted in this age range regarding effects of video game violence.

Funk, Buchman, Jenks, and Bechtoldt (2002) suggest that there may be *high risk* players – those with certain characteristics that may make them more susceptible to the effects of violent games than players without those characteristics. One of these characteristics is gender; there have been observed gender differences in both preference for violent games and amount of game play (Funk, Buchman, & Germann, 2000; Roberts & Foehr, 2008; Wright et al., 2001). Boys play more than girls, in some cases spending about three times as many minutes per week in engagement with games as girls (Wright et al., 2001). Males tend to prefer more realistic violence in their games (Funk & Buchman, 1996) and were more likely to report playing violent games than females (Phan et al., 2012; Willoughby, Adachi, & Good, 2012). They also found it socially unacceptable for girls to play fighting games, whereas girls did not (Funk & Buchman, 1996). They are more likely to play action and simulation games on video game consoles than girls, and more likely to play action, sports, and adventure games on the computer (Roberts et al., 1999). However, despite these differences in gaming habits and preference for certain kinds of games, a meta-analysis conducted by Anderson et al. (2010) found no sex effects on aggressive cognition, affect, behavior, or prosocial behavior.

Little research has been done to see how other demographic characteristics such as SES and ethnicity are related to violent video game preference and play. However, some studies do show differences in access to video and computer games, amount of overall video game play, and preference for games. Studies of children ages 2 to 18 years

found that Caucasian children were more likely to own a computer and spend more time on the computer than African American children. However, African American children were more likely to own three or more video game systems, have a system in their bedroom, and spend more time playing video games than Caucasian children. Hispanic children also spent more time playing video games than Caucasian children, although not as much as African American children (Roberts & Foehr, 2008; Roberts et al., 1999). However, Rideout et al. (2010) found that Hispanic children played more video games a day than African-American and Caucasian children. Gaming was also found to be more prevalent for Asian children than Caucasian, African-American, and Hispanic youth (Desai et al., 2010).

Parental education and household income may also play a role in access to and time spent playing video games. Carson, Spence, Cutumisu, and Cargill (2010) found that children who lived in neighborhoods of low SES were more likely to be video game users and less likely to be computer users than children living in neighborhoods of high SES. Roberts and colleagues (1999) found that children whose parents completed high school reported slightly higher levels of video game exposure and less computer use than children whose parents who attended some or completed college. A greater proportion of computer players whose parents completed college play educational games, compared to those whose parents finished only high school. Children from low median income zip codes were exposed to more total media and were more likely to have played video games the previous day, while those in higher median income zip codes spent significantly less time playing video games. Children who lived in zip codes with a high median income level were also less likely to live in households with video game systems

and less likely to have a system in their bedroom (Roberts et al., 1999), while children from a lower household SES, consisting of parental education and household income, were more likely to have a video game system in their bedroom (Tandon et al., 2012).

In summary, past research has found a small but significant relationship between violent video game play and aggressive thoughts, feelings, behaviors, and physiological arousal. Violent game play has also been associated with a decrease in prosocial thoughts and behaviors, which may be an indirect pathway to increasing aggression. Meanwhile, playing a nonviolent game with no explicit prosocial content may decrease aggressive cognitions and feelings immediately after play, relative to violent video games. Playing prosocial games relative to nonviolent games also decreases aggressive cognitions and feelings, as well as increases prosocial cognitions and behaviors. Certain aspects of video games may increase aggression, for example level of positive reinforcement of aggressive acts or level of blood within the game. There are differences in access to and use of video games among demographic variables including gender, ethnicity, and SES.

However, although recent studies have suggested that specific aspects of a game can increase aggression (Barlett et al., 2009; Carnagey & Anderson, 2005), most studies examine a violent game and a nonviolent game (Anderson & Dill, 2000; Bushman & Anderson, 2002, 2009), and do not differentiate games of differing levels of violence. The questionnaire that has been utilized frequently to measure previous violent video game exposure (Anderson & Dill, 2000) asks participants to rate their five favorite games in terms of violent content and violent graphics, but again does not differentiate between differing levels of violence in video games. These ratings also rely on the participants'

perceptions regarding how violent the content and graphics are in the games they enjoy playing. Finally, although studies have examined the gender differences of violent video games, only a few studies have recently looked for differences in access and play among ethnicities or with participants of differing SES. Their findings focus on general video game habits, such as access to consoles or computers and time spent playing video games; they have not looked into whether children of different ethnicities or SES are exposed to more or less violent content in the games they choose to play.

The present study has built on the previous research by introducing a questionnaire designed to examine different aspects of violence in video games, in particular positive reinforcement of violent actions, use of weapons in game, and realism in graphics and audio. The video gaming habits of children were examined in relation to demographic variables to determine whether there are differences, not only in general video game habits such as access to game systems and time spent playing games, but also whether children are exposed to differing levels of violence in the games they choose to play in relation to gender, ethnicity, and SES.

Literature Review

Video games have been a popular form entertainment, for both children and adults, since the Nintendo game system came out in 1985. A majority (88%) of American children ages 8 to 18 play video games at least occasionally (Gentile, 2009). Since video games have become a popular form of entertainment, a national debate has been carried on about the harmful effects of video games on our youth. Past research has focused on the effects of violent video games, both short-term and long-term, on aggression. The bulk of research seems to have found a significant, positive relationship between playing violent video games and aggression. Differential effects have been found based on the design of the studies looking at this relationship. Laboratory studies have found a causal relationship, wherein exposure to violent video games has demonstrated short-term and long-term increases in aggressive cognitions, affect, and behaviors (Anderson & Dill, 2000; Carnagey & Anderson, 2005; Chumbley & Griffiths, 2006). Correlational studies have also demonstrated significant positive relationships between playing violent video games and aggressive behaviors, as well as hostile attribution bias (Anderson & Dill, 2000). Longitudinal studies (Gentile, Walsh et al., 2004) and meta-analyses (Anderson, 2004; Anderson & Bushman, 2001; Bensley & Eenwyk, 2001; Gentile & Stone, 2005) further provide support for the connection between violent game playing and aggression.

One way that video games affect cognitions, affect, and arousal is through learning processes. Social Learning Theory postulates that one way children may learn social behaviors is through observation and imitation. Children are more likely to imitate behaviors when the person modeling those behaviors is rewarded rather than punished;

this is called vicarious learning (Bandura, 1965; Carnagey & Anderson, 2005; Masia & Chase, 1997). Games also use rehearsal and practice of specific behavioral skills that include immediate feedback after the behavior is exhibited (Buckley & Anderson, 2006; Swing et al., 2009). Specifically, players can choose from a number of levels of difficulty so that they are provided with challenge and not frustration; skills are typically introduced in isolation and then practiced in a variety of situations with immediate feedback in order for that skill to be automatized (Buckley & Anderson, 2006; Swing et al., 2009). Players also tend to play over long periods of time and frequently throughout the week, providing them with both massed and distributed practice of skills taught in the game.

Video games provide intrinsic and extrinsic rewards for using violent actions in the game; usually, in order to make your character stronger, make money or experience, gain better weapons, and progress in the game, you must use violence to defeat your enemies. More subtle rewards in the game may also include impressive graphics and sound effects when a skill is successfully performed. Game users also typically feel a sense of pride when they advance to higher, more complex levels in the game (Gentile & Gentile, 2008; Olson, 2010).

Video games may also be priming cognitive schema or scripts for aggression through their graphics (Anderson et al., 2010). For example, pictures of weapons may prime aggressive thoughts (Buckley & Anderson, 2006), and participants who played a fighting game with more blood output had increased hostility and physiological arousal over time than participants who played the same violent game with less blood output (Barlett et al., 2008). Finally, game users can identify with an aggressive character with

whom they are playing, by allowing a variety of characters from which the player can choose. Game consoles and computers are becoming more powerful, and thus video games are becoming more realistic in both graphics and sound, coupled with more violent storylines (Krahe & Moller, 2004). Obviously, video games provide an environment ripe for the learning of aggressive thoughts and behaviors.

However, violent video games may increase aggression in other ways by affecting players' helping behaviors. Researchers have studied the effects of violent video games on a number of prosocial behaviors through laboratory, correlational, longitudinal, and meta-analytic studies. Donating and helping behaviors have been shown to decrease immediately after playing a violent video game (Chambers & Ascione, 1987). Playing a violent video game may also desensitize participants to violence. In one study, players of a violent video game took longer to respond to another person in need of their help than participants who did not play the violent game (Bushman & Anderson, 2009). Correlational studies have shown a significant negative relationship between empathy and violent video game exposure (Bartholow et al., 2005; Funk et al., 2004). Longitudinal studies show that those children who watched more educational media as rated by their parents showed more prosocial behavior as well as less aggressive behavior (Ostrov et al., 2006). Meta-analyses confirm the negative relationship between playing violent games and prosocial behavior (Anderson & Bushman, 2001).

Video games have continually become more violent in recent years. Currently, research is showing stronger effects of violent games on externalizing behaviors than when this research was beginning in the 1970s and 1980s; for example, experimental studies have shown that the greater the difference between the treatment (violent) and

control (nonviolent) games used in the study, the bigger the effect size (Gentile & Anderson, 2003).

The following literature review presents the existing research on the relationship between violent video game usage and aggression, and the different ways that video games teach aggression to its players. First, the review examines the research linking violent video game use and aggressive behaviors. Next, the relationship between violent video game exposure and prosocial behaviors is examined.

Aggression

Aggression is typically defined as an act intended by the perpetrator to hurt another person. This act is intended to harm another, is expected by the perpetrator to inflict some harm, and is something the perpetrator thinks the victim wants to avoid (Anderson et al., 2003; Gentile & Anderson, 2006). Verbal aggression, physical aggression, and relational aggression are all types of aggression. Verbal aggression refers to the use of words to hurt another person; physical aggression involves using physical acts, such as punching, biting, and kicking, to hurt another. Relational aggression involves behavior conducted out of the target's view (behind their back). Physical aggression that is particularly severe is referred to as violence; this form of physical aggression risks serious harm to the victim (Anderson et al., 2003). Four types of research comprise the vast literature on the relationship between video game violence and externalizing behaviors: (1) laboratory (experimental) studies; (2) correlational studies; (3) longitudinal studies; and (4) meta-analyses.

Laboratory studies. Laboratory studies typically examine externalizing behaviors right after a participant has played either a violent or nonviolent video game,

which is important in determining causality. Anderson and Dill (2000) conducted a laboratory study where college students played either a violent or nonviolent game for a total of 45 minutes over three sessions. The study was a 2 (male, female) X 2 (low irritability, high irritability) X 2 (violent game, nonviolent game) design. During the first session, participants played either a violent or nonviolent game for 15 minutes, completed a task measuring aggressive affect, returned to the game for 15 minutes, then given a task measuring aggressive cognitions. The measure of affect was the State Hostility Scale; though they found main effects for gender and irritability, significant effects were not found for game play. That is, women and those with high irritability had higher scores on state hostility than men and those with low irritability. The reading reaction time task had people reading aggressive words as well as three types of control words (anxiety words, escape words, and control words); participants were told to read the words presented to them as quickly as possible. This was presented as a measure of aggressive accessibility, or aggressive cognition. Main effects were found for gender and game type, but not irritability, suggesting that men and those who played the violent game had greater access to aggressive cognitions than women and those who played the nonviolent game.

Finally, participants returned a week later to play the video game assigned for another 15 minutes and then complete the competitive reaction time task (CRT). On this task, participants were told that they would be competing with another participant (a confederate of the study) on a task of reaction time and decision making. The loser of a trial would receive a blast of white noise, whose loudness and duration would be determined by the winner; the trials were set up by the examiner so that the participants

would win half of the trials and lose the other half of the trials. Aggressive behavior was assessed through how loud the participant set the noise blasts. After having experienced a supposed "loss" on the CRT, women, participants with high irritability, and participants in the violent game play condition delivered longer blasts of white noise than men, participants with low irritability, and participants in the nonviolent game play condition. The results of this study suggested that playing violent games had the potential to prime players for aggressive thoughts and increase aggressive behavior.

Anderson and Carnagey (2009) examined the effects of violence in sports video games on aggression, with the intent to test whether the violence in these games significantly increased aggressive cognitions, affect, attitudes towards violence in sports, and aggressive behavior, or whether there were competition effects that impacted the results. They chose two baseball games and two football games; one of each type of sport game was not excessively violent, while the other contained violence not typically seen in these sports. Participants in each of three experiments were asked to complete questionnaires regarding the extent of their previous violent video game exposure, how often they played both violent and nonviolent sports games, sports experience, and aggression. Their blood pressure and pulse were measured at several times before, during, and after game play. They were assigned randomly to play either a nonviolent or violent sports game and then were asked to evaluate the game they just played and complete measures of aggressive cognition (Experiment 1), affect and attitudes towards sports violence (Experiment 2), and behavior (Experiment 3). Those who played the violent sports game demonstrated significantly more aggressive cognitions, increased aggressive affect, gave more approval to violence in sports, and behaved more

aggressively than those who played the nonviolent game, suggesting that playing violent video games increases aggression through violent content and not through feelings of competitiveness in players.

Hasan, Bègue, and Bushman (2012) examined the relationship between hostile expectation bias and aggressive behavior. Hostile expectation bias is the tendency to expect others to react to potential conflicts with aggression; it differs from hostile attribution in that hostile attribution is the tendency to attribute others' ambiguous actions as hostile. The experimenters randomly assigned participants to play either a violent video game or nonviolent video game for 20 minutes; participants then completed two ambiguous, unfinished stories detailing a possibly stressful event. Participants were asked for 20 items addressing what could happen next for each story, including what the main character would do, say, think, and feel. After completing these stems, participants then engaged in a CRT task. Those who had been assigned to play the violent game had more hostile expectations and demonstrated more aggressive behavior on the CRT task than those assigned the nonviolent game; men also demonstrated more hostile expectations and behavior than women. Hostile expectation bias was a mediator of the effects of violent video game play on aggression.

Hasan, Bègue, Sharkow, and Bushman (2013) followed this study by examining the cumulative effects of violent video game play on hostile expectations and aggression. Participants were randomly assigned to play either a violent video game or nonviolent video game 20 minutes a day for three consecutive days. After each game play session, the participants completed three ambiguous story stems followed by a CRT task. Results suggested that both hostile expectations and aggressive behaviors increased over time for

the violent game players, but not for the nonviolent game players. Participants assigned the violent video game were more aggressive on day one of the study, and became more aggressive on subsequent days. Hostile expectations again mediated the link between violent video game play and aggression.

Carnagey and Anderson (2005) assigned participants to play one of three versions of a racing game: one where hitting pedestrians and opponents were rewarded, one where hitting pedestrians and opponents were punished, and one where hitting pedestrians and opponents were not possible (nonviolent). Participants played the game for 20 minutes; number of kills was recorded and afterwards participants filled out a survey of state hostility as a measure of affect. Those in the reward condition killed more pedestrians than those in the punishment condition. Both games produced more hostile affect than did the nonviolent condition; women were more hostile than men. In a second experiment, the method was replicated, except that the measure of hostile affect was replaced with a measure of aggressive cognitions. Participants had to complete word fragments, some of which could be made into aggressive words. Those in the reward condition were higher in aggressive cognitions than those in the punishment or nonviolent condition. In the final experiment, participants completed the CRT task, as a measure of aggressive behavior. Before participating in the CRT task, participants were led to believe that the person they were competing against had severely negatively evaluated an essay they had written previously; this was used to mildly provoke participants before the CRT task. Participants in the reward condition were more aggressive than participants in both the punishment and nonviolent conditions; men showed more aggressive behaviors than did women.

Barlett and colleagues (2008) examined the amount of blood in a violent game and whether seeing that increased state aggression, hostility, and arousal. They assigned participants to play the same fighting game with four different levels of blood: no blood content, low blood, medium blood, and maximum blood content. Participants completed a scale of state hostility and their heart rate was measured. They then had the chance to practice playing the video game for 2 minutes before playing the game for a 15-minute time period. After this time period, heart rate was measured again and the participants filled out another state hostility scale. Time spent using the character's weapon was also used as a measure of state aggression. All participants experienced a significant increase in hostility and physiological arousal, regardless of the condition to which they were assigned. However, those in the higher level blood conditions experienced more physical arousal, state aggression, and state hostility compared to the lower blood conditions.

The studies described above have several limitations. First, participants are assigned to play either a violent or nonviolent game; as such, these experiments do not get at the pleasure derived from voluntarily playing video games (Goldstein, 2001). These experiments demonstrate the effects of video game violence on people who play for a short amount of time, and therefore do not get at the real-life consequences of extended amounts of violent game play on those people who choose to, and enjoy, playing these games. Also, the measures of aggressive behavior that are used in many of these studies are contrived and do not measure real-life aggressive behavior. Several studies (Anderson & Dill, 2000; Bartholow et al., 2005; Carnagey & Anderson, 2005) have used the CRT task to measure aggressive behavior. The CRT has been demonstrated to be a valid measure of aggressive behavior (Anderson & Bushman, 1997;

Bushman & Anderson, 1998); however, it still does not measure aggressive behaviors that might occur in the real world. The strength of experimental studies is that they can determine the relationship of causality between playing violent video games and aggression in children, adolescents, and adults. These studies have shown that playing a violent video game for as little as 20 minutes causes short-term increases in aggressive cognitions and behaviors (Anderson & Dill, 2000; Carnagey & Anderson, 2005). However, the weakness of experimental studies lies in the fact that they do not necessarily measure the real life effects of video game play (Gentile, Saleem & Anderson, 2007; Gentile & Anderson, 2006).

Correlational studies. Correlational studies attempt to capture the real life relationship between video game play and externalizing behaviors. These studies typically require participants to fill out surveys measuring a number of variables and then determine the strength of the relationships among these variables. Correlational studies have also looked at aggressive cognitions and affect, which may be more sensitive to change than aggressive behavior. Correlational studies can determine if there is a relationship among variables, but it is more difficult to establish causality using these types of studies than with experimental studies (Gentile & Anderson, 2006; Gentile et al., 2007).

In their correlational study, Anderson and Dill (2000) used questionnaires to study the relationship between violent video game play and irritability, world view, trait aggression, delinquency, and academic achievement. Exposure to violent video games was significantly related to delinquent behavior, including both aggressive and nonaggressive behavior. Exposure to violent video games was also a significant

predictor of aggressive behavior. Gentile, Lynch, Linder, and Walsh (2004) found that exposure to violent video games was positively related to trait hostility, frequency of arguments with teachers, and having participated in a physical fight.

As a part of their correlational study, Anderson and Dill (2000) devised a way to measure overall violent game exposure by asking participants to rate their five favorite video games. For each of these games, they were then asked to rate how frequently they played the game, and how violent they perceived both the content and the graphics on a seven-point Likert scale. The ratings on violent content and graphics were summed together and then multiplied by the frequency rating for each game. The five video game violence exposure scores were then averaged to provide an overall index of exposure to violent games. This scale has been used frequently in research on the effects of violent video games on aggressive thoughts, feelings, and behaviors (Anderson & Carnagey, 2009; Bartholow et al., 2005; Englehardt et al., 2011). However, these ratings heavily rely on the rater's perception of violence in games, and therefore may be fairly subjective. They also do not take into account factors within these games that may contribute to increased aggression, including levels of positive reinforcement, presence of weapons in the game, and levels of blood. These ratings look at an overall exposure to violence in participant's favorite video games, rather than examining these individual factors in a comprehensive review of video game habits. Ferguson et al. (2008), in their research on the effects of violent video games on violent behavior, indicated that in their use of this measure of violent video game exposure, "it should be noted that this is not a perfect measure of violence exposure" (p. 318). However, they felt that a more objective

rating system was not feasible, due to the wide range of games available as well as rapid production of new games.

Longitudinal studies. Longitudinal studies merge the strengths of both experimental and correlational studies, while simultaneously reducing weaknesses. Longitudinal studies may use measures typically used in correlational studies (e.g., surveys and questionnaires) to determine causality, because the variables thought to cause other variables are measured first; the dependent variables are measured after a certain period of time. Because some variables are measured before others, some causality can be inferred, while still measuring the real life effects of video game violence on aggression. Unfortunately, few longitudinal studies have been conducted in the field of video game aggression (Gentile & Anderson, 2006; Gentile et al., 2007).

Gentile, Walsh et al. (2004) studied the effects of long-term media exposure on aggressive and prosocial behaviors. Participants for the study were 430 third, fourth, and fifth grade students from suburban public and private schools, as well as a rural public school. Measures of aggressive and prosocial behavior were taken from both peers and teachers, and self-reports were taken of media habits including television viewing, video game playing, and movie watching, as well as a self-report of hostile attribution bias, the tendency to perceive others' actions in ambiguous situations as being hostile and viewing the world as a hostile place. All of the surveys were completed at two points in time, between two and six months apart. The researchers found that exposure to violent media led to an increase in aggressive behaviors and hostile attribution bias, as well as a decrease in prosocial behavior. Violent media exposure indirectly increased aggressive behaviors through increasing hostile attribution bias. Finally, participants who initially

had higher levels of aggressive behavior, hostile attribution bias, and lower levels of prosocial behavior were more likely to expose themselves to violent media.

Willoughby et al. (2012) decided to examine the long-term relationship between violent video game exposure and aggression. Both violent and nonviolent video game play were assessed in 1,492 high school students beginning in ninth grade and once each year during ninth, tenth, eleventh, and twelfth grade; only students who had completed data collection at a minimum of two points over the four years were included in the study. Violent game play was assessed by participants indicating *yes* or *no* to whether they played action or fighting games, as these games typically contain violence. Nonviolent game play was assessed in the same manner concerning the game genres of puzzle, art, building model worlds, or quiz video games. In grades 11 and 12, frequency of violent and nonviolent video game play was also assessed. Direct aggression was measured through rating scales administered during each grade year. Results suggested that students who reported sustained higher violent game play had steeper increases in aggression scores over time than those who reported less sustained violent game play. Meanwhile, nonviolent game play did not predict aggression scores at a later time. These results remained significant after controlling for possible third variables that may contribute to aggression, including: gender, parental education, number of computers in the home, at-risk background factors, academic marks, depressive symptoms, delay of gratification, involvement in sports activities, peer deviance, friendship quality, parental relationship quality, parental control, and school culture.

Meta-analyses. Finally, meta-analysis is a statistical technique that combines the empirical results of all studies in a certain area of research. This type of study allowed

the researchers to make general conclusions about all the studies done in a certain topic without having to rely on only one research method or sample population (Gentile & Anderson, 2006). Several meta-analyses of video game play and aggression have been conducted (Anderson, 2004; Anderson & Bushman, 2001; Anderson et al., 2010; Bensley & Eenwyk, 2001; Gentile & Stone, 2005) and show causal effects of violent game play on aggression for all age groups, from childhood up to young adulthood, except for adolescence. Specifically, a review of the literature (Bensley & Eenwyk, 2001) revealed that while some articles found a relationship between violent game play and aggression amongst adolescents, others found no relationship at all, and others revealed that participants reported feeling calmer after playing violent games.

Anderson (2004) performed a *best practices* meta-analysis; he gathered all studies that examined a link between exposure to violent video games and either aggressive behavior, cognition, affect, arousal, or helping behavior. After this initial meta-analysis, he conducted another meta-analysis, including only those studies that were coded as following best practices. Those studies that were excluded were those which used violent video games that were not truly violent, nonviolent game control conditions that included violence, a difference in frustration levels between the violent and nonviolent condition that could confound results, aggressive behavior that was measured through aggression against non-humans, as well as other methodological flaws. Studies without any of these flaws were coded as best practices and included in the second meta-analysis. Anderson found that the best practices meta-analysis actually produced larger effect sizes than the total sample meta-analysis. For both meta-analyses, he found that playing violent video games was associated with aggressive behaviors, cognitions (i.e., thoughts), affect (i.e.,

feelings), physiological arousal (i.e., increased heart rate, blood pressure), and negatively related to prosocial, helping behaviors. Anderson et al. (2010) conducted a new meta-analysis looking at aggressive behavior, cognition, affect, arousal, and prosocial behaviors. This time the researchers included studies from Japan. They again found that exposure to violent games was significantly related to higher levels of aggressive behavior, aggressive cognition, aggressive affect, and lower levels of prosocial behavior.

Two recent meta-analyses (Anderson & Bushman, 2001; Gentile & Stone, 2005) have calculated effect sizes of video game violence on aggressive behaviors, cognitions, affect, and physiological arousal. Gentile and Stone (2005) performed a meta-analysis on the relationship between violent video game exposure and aggressive cognitions, affect, behaviors, and physiological arousal. Affect seems to be the most difficult variable to measure. Some studies measured emotions such as hostility, frustration, and anger. Others included depressed mood and emotional desensitization as measures of aggressive affect. Gentile and Stone's meta-analysis revealed a significant average effect size of r = 0.17; Anderson and Bushman (2001) found a similar effect size of r = 0.18, indicating that exposure to violent video games increases feelings of anger and hostility. This same effect size was also found for physiological arousal (r = 0.22 in the Anderson & Bushman meta-analysis). The effect size on aggressive cognitions was slightly larger (r = 0.23, but r = 0.27 in the Anderson & Bushman analyses), suggesting that violent game exposure increases aggressive thoughts. The effect size on aggressive behaviors was r = 0.19 (Anderson & Bushman found the same effect size). All of these effect sizes are small, but significant, suggesting that violent video game exposure can work through all of these variables.

In summary, violent video game exposure may cause aggression in its players through priming aggressive cognitions, affect, and behavior. Games do this by providing positive reinforcement for using violence in game, causing gamers to continually rehearse violent behaviors, allowing players to choose a character with whom they can identify, and providing more realistic violence through improved graphics and sound effects. Increased levels of blood in a game can increase physiological arousal, state hostility, and state aggression. Positive reinforcement in video games has been shown to cause higher aggressive cognitions and behaviors than games that punish or do not allow violent behavior. Both games that reward and punish violent actions increased hostile affect. Playing a violent video game may also increase aggression through increasing hostile expectations of how another person may react in a conflict situation. Playing a video game over three consecutive days has led to increases in hostile expectations and aggressive behavior, and a longitudinal study conducted over the course of four years found that that students who reported sustained higher violent game play had steeper increases in aggression scores over time than those who reported less sustained violent game play. This suggests that playing violent video games has a cumulative effect on aggressive thoughts and behaviors.

Prosocial Behaviors

Sandra Calvert (1999) describes prosocial behavior as "socially desirable activities that our society generally values" (p. 209). She goes on to classify prosocial behavior into three general areas: positive social interaction skills, self-regulation and achievement behaviors, and creative fantasy and imaginary play. Most of the research on video games focuses on the area of positive social interaction skills; specifically, the

research looks at donating and helping behaviors, empathy, emotional desensitization, and moral evaluation (Bartholow et al., 2005; Chambers & Ascione, 1987; Funk, Buchman, Jenks, & Bechtoldt, 2003).

Empathy is described as the ability to identify and experience the emotional states of others (Bartholow et al., 2005; Funk et al., 2003). Desensitization to violent stimuli may be one of the ways that violent game exposure affects aggression and violence. Emotional desensitization occurs when there is a numbing of emotional responses to a situation that would typically elicit a strong emotional response (Funk et al., 2003). Cognitive desensitization occurs when the belief that violence is uncommon becomes the belief that violence is common, and even inevitable (Funk et al., 2003). When a person exposed to violence stops feeling strong emotions about violent situations and comes to believe that such violence is common and inevitable in the real world, it is less likely that person will censor their own violent behavior. Empathy, as well as emotional and cognitive desensitization, are common variables assessed in relation to prosocial behavior and violent video games.

Prosocial behaviors have been researched in relation to violent video game play through laboratory studies, correlational studies, longitudinal studies, and meta-analyses. Players who spend a lot of time playing violent games have shown fewer prosocial behaviors than others who do not play violent games (Anderson & Bushman, 2001; Chambers & Ascione, 1987; Ostrov et al., 2006).

Laboratory studies. Research that looks at donating/helping behaviors is typically experimental in design; participants are randomly assigned to a group and play either a violent or nonviolent game. After game play, participants are assessed in a

situation where they are given the opportunity to either help or donate. For example, Chambers and Ascione (1987) studied children in the third, fourth, seventh, and eighth grades who were assigned to play either a violent or prosocial game alone or with the participation of another child; the hypothesis was that children playing cooperatively or in the prosocial game would show an increase of donating/helping, while those playing the aggressive games would show a decrease in prosocial behavior. After playing the game, the children were left in a room with a dollar in nickels, a tin for donations, and a box of unsharpened pencils that one of the graduate assistants needed sharpened. Prosocial behavior was measured by number of donations/pencils sharpened. Participants who played the violent game donated less than those who played the nonviolent game.

Bushman and Anderson (2009) tested the hypothesis that exposure to violent video games leads to a reduction in helping behavior. Participants were randomly assigned to play either a violent or nonviolent game. They played the video game for 20 minutes and then were asked to rate the video game on several dimensions including fun, action packed, absorbing, entertaining, addicting and violent, among others. The participants were then asked to fill out a bogus questionnaire to keep them occupied while a fight was staged outside the laboratory, which led to one of the "fighters" being injured. After the audio portion of the fight was over, the experimenter timed how long it would take for participants to leave the room and help the injured person. While there was no significant difference in helping rates between those who played the violent or nonviolent games, it took significantly longer for those who played the violent game to

help the victim. Additionally, people who played the violent game were less likely to report hearing the fight and thought the fight was less serious.

Funk et al. (2003) conducted an experimental study to determine a causal relationship between violent game play and desensitization. In this study, children ages 5 to 12 years were asked to fill out surveys about their game-playing habits, empathy, and attitudes towards violence. They were then randomly assigned to either play a violent or nonviolent game. Finally, they answered questions about vignettes describing common situations; the children were asked what happens next in the story as well as what they would do in the situation. The vignettes were designed specifically to elicit either empathic or aggressive responses. Children with higher empathy scores and lower exposure to game violence had higher empathy scores on the vignettes. However, playing the violent or nonviolent game did not affect children's empathic or aggressive responses to the vignettes.

Englehardt and colleagues (2011) also looked at desensitization in response to violent game play; they specifically looked at P3 amplitudes of the brain. Recent theory suggests that smaller P3 amplitudes indicate weaker activation of aversive motivation, in other words, physiological desensitization to aversive stimuli. Over 2000 undergraduates were polled on their violent video game exposure; 35 individuals scoring above the 75th percentile and 35 who scored below the 25th percentile were chosen to participate in the experiment. Scalp electrodes were applied for electroencephalogram (EEG) recording and participants were randomly assigned to play either a violent or nonviolent video game for 25 minutes. They then viewed a series of neutral and violent pictures and completed a CRT task. Results suggested that participants who played the violent game

were more aggressive than those who played the nonviolent game; this effect was similar in magnitude for those high and low in previous violent game exposure. The violent images elicited smaller P3s among participants high in previous violent game exposure than those with low violent game exposure. Those low in prior exposure but played the violent game had smaller P3 amplitudes to violent images than did their peers who played the nonviolent game. The P3 amplitudes were found to be a significant mediator of the effects of violent video games on aggressive behavior, suggesting that physiological desensitization is an indirect pathway to aggression.

Just as studies have suggested that violent video games may decrease prosocial behaviors, studies are now examining whether prosocial video games increase prosocial behaviors and decrease aggressive cognitions, affect, and behaviors. Sestir and Bartholow (2010) had participants play either a violent or nonviolent game for 30 minutes. Participants then rated their frustration, arousal and interest levels following gameplay. The participants were also randomly assigned to complete measures of aggressive cognition (word completion task) and affect (measure of state aggression) either immediately, or after a 15 minute delayed drawing task. Results showed that those who played the violent game used significantly more aggressive word completions than those who played the nonviolent game; however, these aggressive cognitions decreased after the delay, while aggressive cognitions increased after the delay for the nonviolent game condition. Similar results were obtained for aggressive affect.

Another experiment was conducted similar to the one described previously, with the exception that a no-game condition was added, and aggressive behaviors were measured with a CRT task. Similar to the previous experiment, the violent game

condition was significantly more aggressive than the nonviolent condition, and marginally more aggressive than the control group; aggression levels did not differ significantly between the nonviolent game and control conditions. Again, the delay resulted in significantly fewer aggressive responses in the violent game condition, and more aggressive responses in the nonviolent game condition (Sestir & Bartholow, 2010).

A final experiment conducted by Sestir and Bartholow (2010) followed similar procedures, but removed the delayed condition and assessed both prosocial and aggressive cognitions by giving the participants three ambiguous story stems. The word completion test was also given, but this time with a prosocial subscale. Violent game participants chose more aggressive words than both the nonviolent and control participants, and they chose fewer prosocial words than nonviolent participants. They also chose more aggressive story completions than the nonviolent and control participants, and chose fewer prosocial completions than nonviolent players. Finally, the nonviolent players chose more prosocial words and story completions than the control group. This suggests that while violent game play increases aggressive cognitions and affect in the short-term, nonviolent game play may also reduce aggression-related outcomes and increase the accessibility of prosocial cognitions. It is important to note that the nonviolent games chosen did not have explicitly prosocial content.

Greitemeyer and Osswald (2009) examined the effects of prosocial video games on aggressive cognitions. In two experiments, participants were randomly assigned to play either a prosocial or neutral video game for 10 minutes. They then completed three ambiguous story stems. In the second experiment, instead of the story stems, participants were administered a word completion task. Results of these experiments revealed that

prosocial game players expected fewer aggressive responses from the characters in the stories, both in actions, cognitions, and feelings. Prosocial game players also had fewer antisocial word completions than those who played the neutral game.

Greitemeyer and Osswald (2010) conducted four more experiments examining the effect of prosocial games on prosocial thoughts and behavior. In the first experiment, participants were randomly assigned to either a prosocial, neutral, or aggressive video game. After 8 minutes of game play, the participants were asked to fill out a questionnaire; while the experimenter reached for the questionnaires, a cup of pencils was knocked onto the floor. The prosocial behavior was whether the participant helped the experimenter pick up the pencils. Participants in the prosocial condition were more likely to pick up the pencils than those in the neutral or aggressive condition. In the second experiment, participants played either a prosocial or neutral game for 10 minutes, after which they were introduced to a confederate who allegedly needed participants for her master's thesis. Participants were asked, for no compensation, if they would be willing to participate and how much time they would be willing to donate. Those who were in the prosocial condition were more likely to assist in further studies and were willing to devote more time than those in the neutral condition. In the third experiment, participants in the prosocial game condition were more likely to intervene in a staged harassment situation than those in the neutral game condition. Finally, in the last experiment, after playing the neutral or prosocial game participants were asked to write down all the ideas they were thinking about while playing the game. Also, as in the first experiment, the experimenter dropped a cup of pencils. Those who played the prosocial game reported more prosocial thoughts and were more likely to pick up pencils than

those who played the neutral game. This experiment also suggested that the activation of prosocial thoughts elicits prosocial behavior, and acts as a mediating mechanism.

Correlational studies. Bartholow et al. (2005) had undergraduate males ages 18 to 22 fill out surveys about violent video game exposure, aggressive behavior, trait hostility, basic personality, and empathy. Violent game exposure was negatively associated with empathy. Moreover, the researchers found an indirect effect of violent game exposure on aggressive behavior through empathy, suggesting that empathy is one pathway that violent video games work through to influence aggressive behavior. Specifically, violent game exposure may increase desensitization and decrease empathy, which may lead to an increase in aggressive behaviors.

Funk and her colleagues (2004) studied the relationship between exposure to violence, both in media and in real-life, empathy, and attitudes towards violence in elementary school children from the fourth and fifth grades. Children were asked to fill out several surveys on their exposure to violence in the media, exposure to violence in real life, attitudes towards violence, and empathy. They found that exposure to video game violence was significantly related to lower empathy scores in the children, as well as stronger proviolence attitudes; exposure to violence in real life was not significantly related to either proviolence attitudes or lower empathy. However, because this study was correlational in nature, a causational relationship could not be inferred between video game violence and lower empathy and stronger proviolence attitudes.

Longitudinal studies. Ostrov et al. (2006) studied prosocial behaviors in preschool children; they also looked at the children's media exposure, as well as physical, verbal, and relational aggression. Parents of participants filled out questionnaires about

their involvement in monitoring their children's media consumption, as well as a survey about their children's exposure to both violent and educational media. The children were then observed for instances of physical, verbal, and relational aggression as well as prosocial behavior over a period of three months. Teachers also filled out a survey of physical and relation aggression and prosocial behavior. Being exposed to educational media was negatively associated with physical aggression for boys, and was positively associated with prosocial behavior; that is, the more boys were exposed to educational media, the more prosocial they were.

Meta-analyses. In their meta-analysis, Anderson and Bushman (2001) found that playing violent video games causes at least a temporary decrease in prosocial behavior. Anderson (2004), in a meta-analysis using a *best-practices* approach, found that playing violent video games causes a decrease in helping behavior. Anderson et al. (2010) updated their meta-analysis, including studies from Japan. They again found that playing violent games was related to less empathy, more desensitization, and lower levels of prosocial behavior.

In summary, prosocial behaviors which include helping/donating behavior and empathy have been negatively associated with violent video game play. The more one plays a violent video game, the less empathy one demonstrates. Children who were exposed to educational, prosocial media demonstrated more prosocial behavior and less aggressive behavior than those with less exposure to educational media. Exposure to violent media, including playing video games, may emotionally and cognitively desensitize game players. These players may express less empathy towards others, and come to see violence as a normal part of everyday life. Participants who played a violent

video game were less likely to hear a fight, thought the fight was less serious, and took longer to act than those who played a nonviolent game. Becoming desensitized to violence and adopting proviolence attitudes may be a mechanism through which violent game exposure affects aggressive behaviors. Finally, while violent video games may decrease prosocial behaviors and increase aggressive cognitions, affect, and behaviors, neutral games may decrease aggressive cognitions, affect, and behaviors, and increase access to prosocial cognitions. Prosocial video games, when compared to neutral games, decreased aggressive cognitions, and may increase both prosocial cognitions and behaviors.

Demographic Variables

Gender. Several studies have examined the relationship between gender and violent game play, both in preference for violent game play, amount of game play, and whether the effects of playing violent games differ for males versus females. In a study conducted by Anderson and Murphy (2003), women were assigned to play either a violent game with a female hero, a violent game with a male hero, or a nonviolent game. The women were then placed in a competitive setting with a confederate; the winner of each trial set the length of an aversive tone the loser would hear. This was used as a measure of aggressive behavior. Women who played the violent game with a female hero showed significantly more aggressive behavior than the women who played the nonviolent game, whereas the women who played the violent game with the male hero did not. This suggests that identifying with the video game characters being played may play a role in increased aggression. In a study by Bartholow and Anderson (2002), men showed more aggressive behavior after playing a violent video game than did women.

However, in a meta-analysis conducted by Anderson et al. (2010), there were no sex effects detected for aggressive cognition, affect, behavior, or prosocial behavior.

There have also been observed gender differences in access to video games, preference for violent games, and amount of game play (Funk et al., 2000; Gentile, 2009; Homer et al., 2012; Phan et al., 2012; Rideout et al., 2010; Roberts et al., 1999; Roberts & Foehr, 2008; Witt et al., 2011; Wright et al., 2001). Video game ownership appears to be related to gender: 77% of boys and 64% of girls reported having one video game system in the house, and this difference in ownership only increases when multiple video game systems are considered. Boys are almost twice as likely as girls to have a video game in their bedroom – 43% compared to 23% (Roberts et al., 1999). Males also play more than females in a given week; in a group of 16 to 18 year olds, males played an average of 6.7 hours a week compared to females who played an average of 2.5 hours a week (Bonanno & Kommers, 2005). Boys aged 14 to 18 years old were more likely to report playing video games for at least one hour a week than girls, and girls were more likely to report playing less than seven hours a week (Desai et al., 2010). In children ages 8 to 18 years of age, boys played an average of 13.2 hours a week, while girls played an average of 9.2 hours per week (Gentile, 2009); among 10 to 15 year olds, boys reported playing an average of 43 hours a week, while girls played on average 30 hours per week (Homer et al., 2012). While Rideout et al. (2010) did not find a significant difference between boys and girls in terms of amount of time spent playing games on handheld platforms and cell phones, boys spent an average of 15 minutes more on the computer than girls, primarily due to playing computer games. Girls actually spent less time playing computer games as they got older. Males tend to prefer more realistic violence in

their games (Funk et al., 2000) and reported playing more violent games than females (Phan et al., 2012; Willoughby et al., 2011). Both boys and girls find it socially acceptable for boys to play video games; a majority of boys and girls stated that it is also socially acceptable for girls to play video games, although more girls than boys stated that it was possible for girls to be popular and play video games. Boys also find it socially unacceptable for girls to play fighting games, whereas girls do not find it unacceptable (Funk & Buchman, 1996). Males aged 18 to 51 were more likely to classify themselves as *frequent* or *expert* game players, while females were more likely to classify themselves as *novice* or *occasional*. Males reported a preference to play video games on the computer, while females tended to prefer consoles and handheld devices. Finally, while males were more likely to report video games as their main hobby, females were less likely to be involved in gaming, started gaming at a later age than males, were more likely to report feeling guilty when they played video games, and spent more time than males doing non-video game-related activities (Phan et al., 2012).

In terms of game genre, substantially more boys play action and sports games, while girls are more likely to choose classic, arts & crafts, and kids games (Roberts et al., 1999). Phan and colleagues (2012) also found that males ages 18 to 51 were more likely to prefer strategy, role-playing, action, and fighting games, while females of the same age were more likely to prefer social, puzzle/card, music/dance, edutainment (educational entertainment), and simulation games. Additionally, Homer et al. (2012) found that among 10 to 15 year olds, first person shooters (FPS), fighting, sports, and action games were favored more by males than females, while puzzle, virtual, and party games were favored by significantly more females than males. The research suggests that boys have

more access to video games, play for longer, and may play games that are more violent when compared to girls.

Ethnicity. Very little research has looked into differences between children of differing ethnicities and the effects of violent video game play. A meta-analysis conducted by Anderson et al. (2010) found that violent video game effects were significant in both Eastern and Western cultures, with some evidence that effects may be larger in Western than Eastern cultures, though this was in nonexperimental studies only.

Research has begun to examine the difference in access to games, game preference, and amount of time spent playing video games among different ethnic groups. The Kaiser Foundation collaborated with Stanford University Professor Donald F. Roberts, Ph.D., and staff at Harris Interactive, Inc. to design a national study of the media environment and media habits of U.S. children ages 2 through 18 years (Roberts et al., 1999). Two nationally representative samples, one of 1,090 children aged 2 through 7 years and one of 2,065 children in the third through twelfth grades, were included in the study. The older cohort completed written questionnaires regarding media availability and use the previous day, while this information was provided by the parents for the younger cohort through face-to-face interviews. A smaller sample of the older cohort was also asked to complete week-long media use diaries. The information gathered suggested that more Caucasian children came from homes with at least one computer than African-American and Hispanic children; however, African-American children were more likely than Caucasians to own three or more video game systems and to have a system in their bedrooms. African-American and Hispanic children spent 12 minutes more daily playing video games than did Caucasian children. Children of different

ethnicities also chose to play different genres of game: Caucasian children were more likely than Hispanics to select role-playing games and more likely than African-American children to play simulation games. African-American youths were more likely than Hispanic and Caucasian children to select classic, gambling, and puzzle video games. This research was repeated in 2004 and 2009; the Kaiser Family Foundation again found that Caucasian children spent less time daily playing video games, although in 2009, Hispanic children spent the most time playing per day, followed by African-American and Caucasian children (Rideout et al., 2010). Witt et al. (2011), in researching youths aged 11 to 16 years old and their technology habits, found that Caucasian children were less likely to report using the computer, video game systems, and communication technology than other ethnicities. Finally, in a study of 14 to 18 year olds, Desai and colleagues (2010) found that video gaming was more prevalent for Asian children than for Caucasian, African-American, and Hispanic children.

This research demonstrates that ethnic groups do differ in the number of video game consoles they have access to, as well as amount of game play and preference for different genres of game play. This suggests that different ethnic groups may have more or less exposure to violence in video games. More research in the area of video game usage may determine if there is indeed a difference in level of exposure to violence in the video games preferred and played among different ethnicities.

Socioeconomic status. Socioeconomic status (SES) is another variable that has the potential to affect the relationship between video game violence, externalizing behaviors, and prosocial behaviors. Socioeconomic status is not simply a measure of

family income, but comprises other variables, including parental education levels and job status.

In a study of media use in infants, toddlers and preschoolers, parental education and employment status was significantly related to children's media usage. Specifically, children of fathers with moderate levels of education spent less time playing video games than did other groups, including fathers with the highest levels of education and fathers with some high school education but no degree. Additionally, children whose mothers were unemployed played more video games than did children of working or retired mothers. These results suggest that SES may have some influence on children's video game habits (Anand & Krosnick, 2005). This in turn may have an indirect effect on children's externalizing and prosocial behaviors.

Roberts and colleagues (1999), in collaboration with the Kaiser Foundation, described the national media habits of children as described previously. Parental education and median income level of the zip code in which children attended school were taken as measures of SES. The results suggested that children from the higher income zip codes were less likely to live in households equipped with video game systems then their middle income counterparts. They were also least likely to report a bedroom with a video game system. These children were more likely to play computer games and less likely to play video games, probably due to disparity in availability of the two game platforms; children in lower income households had less access to computers. Children from higher income zip codes also spent significantly less time in a day playing video games than the other two income groups – middle and low. They were also more likely to play educational games and role-playing games than the middle income group.

Children living in zip codes where the median household income is under $25,000 were three times more likely to have played a video game the previous day than to have played a computer game, and were exposed to more total media than those who attended school in high income zip codes. In terms of parental education, children from the low parental education subgroup (finished high school only) had slightly more video game exposure and slightly less computer use. A greater proportion of computer players whose parents completed college played educational games than those whose parents had only finished high school. In a study of 715 children ages 6 to 11, children from households with lower SES, as measured by highest level of parental education and household income, were more likely to have a video game system in their bedroom (Tandon et al., 2012). However, in contrast to these studies, in a study of 11 to 16 year olds and their technology use, Witt et al. (2011) found that children with higher parental incomes reported higher rates of technology use in the areas of computer use, video games, and communication technologies. This difference may be due to the fact that this study only looked at household income, and not at level of parental education. Also, their questions regarding frequency of video game play included play on consoles and the computer; other studies discussed previously found that children from lower SES households have more access to video game consoles and less access to computers.

Roberts and Foehr (2008) summarized data on media usage trends from several previous studies conducted by the Kaiser Family Foundation. They found that parental education and household income were negatively related to screen exposure in general. That is to say, the lower the household income and parental education, the more children reported screen exposure. Specifically, a 1999 study indicated that children from

households earning more than $40,000 reported less time exposed to video games than those from incomes less than $25,000. However, more recent research from 2004 suggested a more curvilinear relationship between level of parental education and media exposure. Youths whose parents had some college education reported the least exposure than those whose parents had completed college or had only finished high school. There are no definitive answers to as why this relationship has changed recently, although the authors speculated that changing social attitudes towards media may play a part, as well as economic barriers to access no longer being a dominant issue for most families, as most low-income households have multiple televisions and video game systems.

Overall, these studies suggest that SES may have a role to play in access to and amount of time spent playing video games. Children from lower income households and families with lower parental education appear to spend more time playing video games than those from higher income households and whose parents have a higher level of education; they were also less likely to play educational games. However, with economic barriers being less of an issue, and with attitudes towards use of different kinds of media changing, more research is needed to determine what role SES has to play in exposure to violence in video games.

Age. Each time a person plays a violent video game, they are rehearsing aggressive scripts (Anderson et al., 2010), being reinforced for aggressive behavior (Olson, 2010; Swing et al., 2009), and are desensitized to violence (Bushman & Anderson, 2009). The younger a person begins to play video games, the more opportunities they will have to experience these effects.

Younger children may also be more susceptible to the effects of violent media than are adolescents and adults. Bensley and Van Eenwyk (2001) reviewed the available research on violent video games and aggression pertaining to three age groups: children, adolescents, and young adults. Results were most consistent for young children; those who played violent games showed more aggressive behaviors or aggressive play immediately after playing the violent game. Although some studies found a relationship between violent play and aggression among adolescents, others found no association between violent game play and aggression, and others that players may feel calmer after playing a violent game. In a meta-analysis conducted by Anderson et al. (2010), effect sizes were slightly larger for younger participants in aggressive behavior, but not for other areas including cognition, affect, and prosocial behaviors.

Video games affect aggression in players when players can identify with the character they are playing. Lachlan, Smith, and Tamborini (2005) studied several video games to determine what attributes playable characters have. When young children committed violent acts in games, 95% of the time, that violence was justified; that is, there was some reason to commit the act of violence. Thus, when children are playing violent games, they may be playing characters with whom they can identify, who are committing acts of violence which are almost always justified.

Youth who are middle school aged seem to devote the most time to playing video games. Roberts and Foehr (2008) found in their research that overall media exposure starts out low and increases fairly rapidly until Preschool and Kindergarten, at which point it declines slightly. However, it climbs to a peak around the age of 11 to 12 years before declining again during later adolescence. The Kaiser Foundation, in a study of

children's media habits during the latter part of the 20th century found that while very young children spend little time with video games, time spent playing increases to 13 minutes daily for 5 to 7 year olds and escalates to 32 minutes daily for children ages 8 to 13 years. This declines to 20 minutes daily for the 14 to 18 year age group. While only 13% of children ages 8 to 13 years played video games for an hour or more daily, those who did spend a great deal of time playing video games (Roberts et al., 1999).

Roberts et al. (1999) also found that the types of video games being played changed with age. With computer games, educational games dominated the early years, while classic and gambling games take over in later years. The percentage of children choosing educational and classic games decreases with age. Among 8 to 13 year olds, children chose action, classic, educational, and sports games at about the same rate. However, among 14 to 18 year olds, class, gambling, and puzzle games were preferred. A substantial percentage of this age group also chose sports, adventure, and simulation games. Wright et al. (2010) also found that while younger children played more educational games, older children more often chose sports games. This suggests that children of different ages may be playing games of differing levels of violence, as some genres of video game are more likely to contain violence than others. Willoughby et al. (2012), in developing their measures of violent and nonviolent game exposure, consulted with professionals who determined that all games within the action and fighting genres contain some form of violence, while all games within the puzzle, art, quiz video, and building model worlds genres are nonviolent. Genres such as strategy and sports were not included, as some games in those genres may include violence and some may not.

In summary, research suggests that young children may be more susceptible to the effects of violent video game play than older children. Research has more consistently shown a link between violent game play and aggressive behavior in younger age groups; results have been inconsistent for adolescents. However, amount of game play increases until it peaks around the ages of 11 to 12 years; with this increase in game play, educational game play also declined. This suggests that as children get older, they may experience more exposure to violence in video games. They may be playing as characters with whom they identify, whose violent behavior is often justified, and with age they may be exposed more and more to positive reinforcement for practicing aggressive behaviors in game. More research into the violent gaming habits of children middle school age may help determine whether this age group is at higher risk for exposure to violence in video games.

Summary

In conclusion, age, gender, ethnicity, and SES appear to have a significant relationship to amount of game play, access to video games, and content/genre of video game played. African American and Hispanic children spend more time playing video games and have more access to video game consoles than Caucasian children. Males have more access to video games, play video games more often, and report a preference for violent games more than their female counterparts. Children from lower levels of parental education and income are more likely to have access to and play video games, and are less likely to play educational games. This suggests that certain children have higher levels of exposure to violence in video games than others.

Past research has consistently found a small but significant relationship between violent video game exposure and aggressive thoughts, feelings, and behaviors. Being reinforced for violent behavior in game and being exposed to higher levels of blood have been found to increase aggressive cognitions, affect, and behavior. Sustaining violent game play over years may increase aggressive behaviors in the future. Finally, playing violent video games is negatively related to a number of prosocial behaviors, including empathy, desensitization, and helping/donating behaviors. Children who are exposed to violence in video games may be more likely to expect a hostile reaction from others in a situation and attribute ambiguous behaviors as openly hostile. This decrease in prosocial behavior may be another avenue in increasing aggressive cognitions, affect, and behavior.

The current study examined whether there is a significant difference in violent video game exposure among children depending on their gender, ethnicity, and socioeconomic status. This study looked at overall level of violence experienced in game play as well as particular areas of violence in games which may place children at risk for increased aggression. These areas include positive reinforcement of violent actions in games, use of weapons, and violent graphics and audio. This study attempted to create a comprehensive view of children's video game habits, and in particular exposure to violence in games, at an age when game play in children is at its peak.

Current Study

Based on the aforementioned research, several hypotheses were proposed regarding the video gaming habits of children. The present study seeks to expand on prior knowledge in the area of violent video games and the characteristics of *at-risk* players.

The following hypotheses were tested:

1. Boys will spend more time during the week and weekend playing video games than girls.
2. Caucasian children will play video games for less time during the week and weekend than children of different ethnicities (e.g. African American and Hispanic youth).
3. Children from lower SES will spend more time playing video games than children from higher SES.
4. Boys will play video games that are more graphically violent than girls. This may include increased play in games that provide access to weapons and have higher levels of blood.
5. There will be significant differences in children's violent video game exposure based on gender, ethnicity, and SES. Previous research has suggested that boys prefer more violence in their video game play than girls (Funk et al., 2000). Other studies have suggested that youth from different SES and ethnicities have a preference for different genres of video game, suggesting there may be a difference in levels of exposure to violent video games (Roberts et al., 1999).

Method

Participants

One hundred twenty four students in the sixth, seventh, and eighth grades participated; they were from three middle schools in a large metropolitan county in Maryland. Student ages ranged from 11 to 15 years of age, with mean age being 12.33 years. In terms of grade, 43 participants were in sixth grade (34.7%), 52 were in seventh grade (41.9%), and 29 were in eighth grade (23.4%). Seventy-eight students (62.9%) were male, and forty-six (37.1%) were female. Over half of the sample identified as Black, not of Hispanic Origin (52.4%, n = 65). Additionally, 21 participants (16.9%) identified as Hispanic and 19 identified as White, not of Hispanic Origin (15.3%). The other 17 (13.7%) students identified as American Indian, Asian, or Other. Specifically, six students identified as Asian/Pacific Islander, ten identified as Other, and one identified as American Indian/Alaskan Native. Two students did not identify with any of the listed ethnicities. This sample contained a small number of Hispanic and Caucasian youth, and is not consistent with national demographic data, making it difficult to generalize results. However, this sample is consistent with the population of the schools from where participants were recruited.

In terms of socioeconomic status, two thirds of the sample came from households with married parents (66.9%, n = 83). Eighteen were from households in which their parents were separated or divorced (14.5%), and 13 came from homes in which the parent had never married (10.5%). Most of the parents with children participating in the study had some college education (26.6%), followed by those who held a Bachelor's degree (19.4%), a Master's degree or its equivalent (16.9%), and an Associate's degree (13.7%).

Less than 10 percent of parents obtained only a high school degree or its equivalent (8.9%); approximately 5 percent did not finish high school (5.6%), while less than that earned a Doctoral degree (3.2%). When parents reported having a partner in the household, that partner was most likely to have completed high school (15.3%), closely followed by holding a Bachelor's degree (14.5%) and having some college (12.9%). Less than 10 percent reported having an Associate's degree (6.5%), a Master's degree, or not having finished high school (5.6% each). Less than 1 percent reported having earned a doctoral degree. The Hollingshead Two Factor Index provides an estimate of socioeconomic status by combining scores on education and occupation; scores range from a minimum score of eight to a maximum score of 66. Scores for the sample in this study ranged from 10.5 to 60, with a mean score of 40.72 and standard deviation of 10.73. This suggests that a wide range of socioeconomic statuses were present in the sample. A summary of demographic data on the sample is provided in Table 1.

Variables and Measures

Demographic variables. Parents completed a demographic questionnaire about their child's gender, ethnicity, age, and parental SES (Appendix A).

Gender. Gender was coded as a categorical, dummy variable.

Ethnicity. Ethnicity was coded as a categorical variable, in which six variables were created. These six variables are: White not of Hispanic origin, Black not of Hispanic origin, American Indian or Alaskan Native, Asian or Pacific Islander, Hispanic, and Other. These variables were chosen based on questions recommended by the Office of Management and Budget (OMB) when assessing race and ethnicity. Due to the

number of participants in each category, the White, Black, and Hispanic categories were then transformed into dummy variables for inclusion in regression analyses.

SES. Participants' parents were asked about their profession and level of education. Answers regarding profession were coded using seven-point scale ranging from 1 (unskilled worker) to 9 (higher executives, proprietors, major professionals). Education was also assigned a score using a 7-point scale, and these answers were used to create a score of socioeconomic status for both mother and father using the Hollingshead Two Factor Index (HI) based on the following formula: (Occupation Score x 5) + (Education Score x 3). SES scores were only calculated when information on both education and profession were available. When information on both parents was available, their scores were then averaged to create a combined score. This combined score was used as the SES score for further analyses; if only parent or partner information was available, that was used in place of a combined score. SES scores ranged from 10.5 to 60, with a mean of 40.72 and standard deviation of 10.73.

The HI was developed using data from the United States Census. Ribas (2001, as cited in Ribas, Moura, Soares, Nascimento Gomes, & Borstein, 2003) found that 367 articles between 1988 and 2001 utilized either the HI Four Factor Index or the Two Factor Index in their research. Pascual, Galperin, and Bornstein (1995, as cited in Ribas et al., 2003) also found that the HI correlated highly with another SES Index used in Argentina (Argentinean Index of SES). Lawson and Boek (1960) ran correlations between the HI and several other indexes of social status; the HI highly correlated to another measure, the Warner, and was moderately correlated with the Centers Scale, income levels, Self-Estimation Scale, and the interviewer rating of their own SES.

Video game questionnaire. The researcher created a video game questionnaire to evaluate participants' video game habits (Appendix B). The questionnaire focuses on exposure to video game violence, amount of time spent playing video games, and age that participants began playing video games (age of onset). In the past, previous violent game exposure has been assessed by asking participants to rate their five favorite video games on how violent they perceived both the content and the graphics on a 7-point Likert scale. These ratings may be fairly subjective, and do not take into account aspects of violence in video games that research has found to increase aggression. The creation of the current video game attempted to provide an objective rating of a person's exposure to violence in the video games they are currently playing, with an emphasis on assessing the aspects of violent game play that has been demonstrated in the previous research to increase aggressive cognitions, affect, behavior, and physiological arousal.

The researcher developed the questionnaire used in the current study in part based on experience with a variety of video games ranging in ratings derived from the Entertainment Software Rating Board (ESRB), from *E* for *Everyone*, to *M* for *Mature*. So called *sandbox* games, such as Grand Theft Auto 3, were focused on in particular as these games allow freedom of play for its players, who can choose to go off mission and explore the massive game environment. As a result, these games allow for a variety of violent actions with a variety of weapons and targets for said violence. Questions were initially devised based on violent actions, weapons, and violent imagery encountered in these games. Questionnaire items were then aligned with research in the field of violent video games suggesting that positive reinforcement of violent acts in game, presence of weapons, and levels of blood may influence aggressive cognitions, affect, behavior, and

physiological arousal (Barlett et al., 2008; Carnagey & Anderson, 2005). Several individuals experienced in playing video games in a variety of genres as well as differing levels of violence were approached to review the questionnaire on its face validity and usability.

A focus group of 36 sixth graders were approached at an elementary school in a large metropolitan county in Maryland during their lunch time. They were asked to read the questionnaire and, guided by the researcher, discussed the questionnaire in terms of readability, clarification of content, and whether there are aspects of violence in video game play that are not currently addressed by the questionnaire. The students affirmed that they understood the directions and could complete the questionnaire based solely on reading the directions. In fact, although advised not to complete the questionnaire, several students did so and were able to complete all questions within the time allotted for their lunch. Several students wrote their names at the top of their questionnaires, and so additional directions were placed at the top of the questionnaire letting students know that their responses were confidential and not to place their names on the paper.

Some students indicated that newer consoles had not been included on the questionnaire item asking students which consoles and portable devices they used to play video games. These consoles included: Playstation 4, X-Box One, and GameCube. The Gameboy DS was also changed to Nintendo DS based on student comments, and the Nintendo 3DS was included under portable devices. Other students suggested that the following questions were missing from the questionnaire: "type of gun used," "use a tank," "knifing people," "do you play a lot of violent games," "do you play outside more than you play video games," and "what kind of games do you play?" Some of those

questions were already included in the questionnaire; for instance, the item "you can use a knife/sword to stab people," includes the term "knife." The item "you can use a vehicle to hurt people," was altered to include car, motorcycle, and tank as examples of vehicles. Finally, under the Play Frequency category, the option "no time spent" was included for students who may not spend any time playing video games, or who may only play during certain times of the week (e.g., during the weekend and not during the week).

Violent video game exposure. Students were asked to answer questions based on the video games they play. These questions evaluate the amount of violent content and graphics found in the video games the participant plays. Questions include what types of enemies the player has to fight, what weapons can be used by the player in the game, how realistic the graphics are, and how much gore and blood is in the game. Students reported how many games they play that have some of these characteristics on a 7-point Likert scale (*never*, *almost never*, *less than half of the time*, *half of the time*, *more than half of the time*, *almost always*, and *always*).

Amount of video game play. Participants reported how many hours a day they played video games on a school day as well as on Saturday and on Sunday. Responses included "*no time spent, less than 1, 1-2, 3-4* and *more than 4*. These responses were scored from a range of 1 (*no time spent*) to 5 (*more than 4*). A weekly gameplay score was calculated based on the following formula: (Schoolday x 5) + (Saturday) + (Sunday).

Age of onset. Participants reported how old they were (in years) and what grade they were in when they began playing violent video games. This was used to determine age of onset of exposure to violent games. Participants also reported their current age and grade. Their answers in conjunction with age of onset were used to determine how

long participants had been playing violent video games (in years). Research has suggested that violent video games have a cumulative effect on aggressive behaviors, and the longer one sustains violent game play, the greater the effect on aggression (Hasan et al., 2013; Willoughby et al., 2012).

Access to video games. Participants reported on what systems they play video games. This measure was used to describe participants' video game habits. Past research has suggested that boys, non-Caucasian youth, and children from lower SES households, both in terms of highest level of parental education and household income, are more likely to have access to video game systems than girls, Caucasian children, and children from higher SES households (Anand & Krosnick, 2005; Roberts & Foehr, 2008; Roberts et al., 1999; Tandon et al., 2012).

Procedures

The researcher recruited three middle schools in a large metropolitan county to participate in the study. The researcher approached principals of potential schools in order to ask for their participation in the research. The principals made an announcement to the students in the morning, informing them that a guest would be in the cafeteria during lunch to discuss a research opportunity with them. The researcher made a general announcement about the research during lunch time and asked for participants.

Students who expressed interest in participating in the study were handed an envelope consisting of a letter explaining the purpose of the study, informing the parents of their rights and their children's rights as participants, and requesting both parental consent and student assent to participate in the study. The envelope also contained a

demographic questionnaire (Appendix A) for the parents to complete. Students were informed to bring back the completed packets on specific dates during their lunch time.

Students who returned the written consent and assent to participate in the study as well as whose parents had completed the demographic questionnaire were asked to complete a questionnaire gathering data about their video game playing habits (Appendix B) during their lunch time. Students were instructed that the term video game includes computer games, console games (such as Xbox), hand-held games (such as PSP), and arcade games. Those students who participated in the study were entered into a raffle to win a new Wii U Console Deluxe Set.

Each school had three lunch periods, and there were approximately 300 students in the cafeteria during any given lunch period. Approximately 1,000 packets were provided to students who expressed an interest in participating in the study. A total of 124 students from all three schools returned the completed packet and the video game questionnaire. It is possible that this study suffered from self-selection bias; although previous research suggests that most children have experience with video games, and approximately 1,000 students expressed interest in the study and took packets home, only 12% of those students returned signed packets and completed the video game questionnaire. Those who did participate in the study are believed to be good reporters, as many of the questions on the video game objectively measure specific aspects of violence in game and, due to the confidentiality of the study, there is no reason to withhold information regarding level of violence in the games being played.

Results

Those students who chose to participate in the study reported a mean age they began playing video games as 6.14 years of age with a standard deviation of 2.24 years. Age of first game play ranged from 1 to 12 years of age. Mean number of game systems students have used to play video games is 6.57 with a standard deviation of 3.73; number of systems played ranged from 1 to 18. The mean number of consoles used to pay video games is 2.95 with a standard deviation of 2.29; number of consoles reported ranged from 0 to 11. The mean number of portable devices used is 2.6, with a standard deviation of 1.74 and range of 0 to 8 portable devices. Over 75% of the participants reported having played video games on a computer, while only 24.2% reported ever playing video games in an arcade.

In terms of weekly gameplay, a minimum score of 7 indicates that no time is spent during the week and weekend playing video games, while a maximum score of 35 indicates that more than 4 hours every day during the week is spent playing video games. The mean weekly gameplay score was 22.67, with a standard deviation of 7.3. On a weekday, 34.7% of participants reported playing for 1-2 hours (n = 43), 21.8% reported playing for 3-4 hours (n = 27), 17.7% reported spending no time playing games (n = 22), 14.5% reported playing video games for more than 4 hours (n = 18), and 11.3% of participants reported playing video games for less than 1 hour (n = 14). On Saturday, 43.5% of participants reported playing video games for more than 4 hours (n = 54), while 33.1% reported playing for 3-4 hours (n = 41). Twenty participants (16.1%) reported playing for 1-2 hours on Saturday, while five (4%) reported playing video games for less than 1 hour and four (3.2%) reported spending no time playing video games. On Sunday,

most participants reported playing video games for 1-2 hours (31.5%, n = 39), followed by 27.4% of participants who reported playing for 3-4 hours (n = 34). Twenty-six participants (21%) reported playing video games for less than 1 hour on Sunday, and 22 (17.7%) played video games for more than 4 hours. Only three participants (2.4%) reported spending no time playing video games on Sunday. Player characteristics are summarized in Table 2.

Factor Analysis

Sampling Adequacy. An exploratory factor analysis of the 40 Likert scale questions from the video game questionnaire was conducted to determine whether the data gathered from the questionnaire could be reduced to several factors measuring various aspects of violence in video games. The factor analysis was conducted on data gathered from 116 participants. Several measures of sampling adequacy were examined to determine whether the sample was appropriate for factor analysis, based in part on the recommendations provided by Dziuban and Shirkey (1974).

The Kaiser-Meyer Olkin (KMO) measure of sampling adequacy is an overall index, between 0 and 1, of the proportion of variance among the variables that might be common variance. A KMO near 1.0 supports factor analysis, while anything less than 0.5 is likely not amenable to factor analysis. The index may be further refined as follows: in the .90s is "marvelous," in the .80s "meritorious," in the .70s "middling," in the .60s "mediocre," in the .50s "miserable," and below .5 "unacceptable" (Dziuban & Shirkey, 1974, p. 359). An examination of the Kaiser-Meyer Olkin measure of sampling adequacy suggested that the sample was meritorious (KMO = .828).

Bartlett's Test of Sphericity tests the null hypothesis that the residual correlation matrix is in fact an identity matrix; in other words, that the variables are not correlated with each other. A significant result would indicate a rejection of the null hypothesis of independence among variables, suggesting that the sample is appropriate for factor analysis. Bartlett's Test of Sphericity was significant (χ^2 (780) = 2655.88, $p < .001$).

The anti-image represents the part of the variable which cannot be predicted by regressing each variable on all other variables; the anti-image correlation matrix is a matrix of the negatives of the partial correlation coefficients. The diagonals of the anti-image correlation matrix were over .6 with the exception of two variables, which were above .5, supporting the inclusion of each item in the factor analysis. Finally, the communalities measure the proportion of variance in the observed variables that are due to the common factors in the factor analysis. The communalities were all above .5, further confirming that each item shared some common variance with other items. Given these overall indicators, factor analysis was conducted.

Principal component analysis. Principal component analysis was initially used because the primary purpose was to reduce the number of items in the questionnaire into several factors and compute composite scores for these factors. The initial eigenvalues showed that the first factor explained 29.42% of the variance, the second factor 8.62%, the third and fourth factors 5.86% and 5.17% respectively. The fifth and sixth factors explained 4.55% and 4%, respectively, while the seventh factor explained 3.53% of the variance. The eighth, ninth and tenth factors each explained less than 3% of the variance, and had eigenvalues just over one. Six, seven, eight, nine and ten factor solutions were examined using both varimax and promax rotations of the factor loading matrix. The

seven factor solution, which explained 66.71% of the variance, was preferred because of the *leveling off* of eigenvalues on the scree plot after seven factors, as well as the simple structure presented by this solution.

During several steps, a total of 14 items were eliminated because they did not contribute to the factor structure and failed to meet a minimum criteria of either: having a primary factor loading of .4 or above, no cross-loading of .4 or above, or no longer had an extracted communality of .5 or above. The items "you have to defeat/kill a certain key person to go to the next level," "the graphics are 3-Dimensional, like watching a movie," "you can use a baseball bat/crow bar/blunt object to hit people with," "if your character gets hurt, he/she bleeds," and "you can use a vehicle (car, motorcycle, tank) to hurt people" did not load above .4 on any factor. The item "your character gets experience/points when you defeat enemies" had factor loadings over .4 on two factors, as did the items "the enemies look human," "the enemies look real," "the enemies look like cartoons," "your character can kill other characters in gory ways," "your enemies will try to hurt/kill your character," and "you can destroy property." The item "if your character hurts a character, he/she bleeds" had a cross loading of .3 on two factors, and had no primary loadings of .4 or above on any factors, and so it was not included. The item "to win a mission you have to torture people" no longer had an extracted communality over .5 when oblique rotation was applied to the factor analysis.

A final principle components analysis was conducted of the remaining 26 items using promax rotation with Kaiser normalization. The promax, or oblique, rotation allowed the seven factors to correlate with each other somewhat, whereas an orthogonal rotation would require that factors be uncorrelated. As the seven factors all measured

some aspect of video game violence, the promax rotation with Kaiser normalization was conducted on a total of 118 participants, with the seven factors explaining 66.47% of the variance. An examination of the Kaiser-Meyer Olkin measure of sampling adequacy again suggested that the sample was 'middling,' bordering 'meritorious' (KMO = .791), and Bartlett's Test of Sphericity was significant (χ^2 (325) = 1338.907, $p < .001$). The diagonals of the anti-image correlation matrix were all over .5, and the communalities were all above .5 (see Table 3). All items had primary loadings over .4, and each factor contained at least three items with a primary loading of .5 and above. The factor loading matrix for this final solution is presented in Table 3.

Factors. Five items loaded onto factor 1, related to violent actions taken in a video game. This factor was labelled "Violent Acts." The five items are: "to win a mission you have to hurt/kill people," "to win the game you have to kill your opponent," "you can hit or kick people," "you can use a gun to shoot people," and "you can use a knife/sword to stab people."

The six items that loaded onto factor 2 were related to rewards obtained as a result of violent actions. This factor was labelled "Reinforcement." The six items include: "your character gets stronger when you defeat enemies," "your character gets special items when you defeat enemies," "your character gets more money/coins when you defeat enemies," "your character can get better weapons by defeating enemies," "your character gains special skills/abilities by defeating enemies," and "you can choose to play a good or a bad guy." This last item only had a loading of .4, and did not seem theoretically tied to the other items, and so was not included in the factor.

Items loaded for factor 3 identified game ratings that students reported playing. This factor was labelled "Game Rating." The three items on this factor are: "you play games rated T for Teen," "you play games rated M for Mature," and "you play games rated AO for Adults Only."

Factor 4 included items that identified auditory indicators of violence in video games. This factor was labelled "Audio Violence." The three items included on this factor are: "when your character hurts other characters, they scream," "if your character hurts other characters enough, you can hear bones crunching," and "if enemies hurt your character, he screams in pain."

The three items that load onto factor 5 are involved with playing a character with a "bad" alignment. The items included on this factor include "you choose to play the bad guy," and two negatively loaded items, "you choose to play the good guy," and "you play games rated E for Everyone." These two items were reverse scored for inclusion in this factor, which was labelled "Villain."

Three items loaded onto factor 6. This factor was labelled "Targets." These items pertain to potential targets of violent actions in the game. The items included on this factor are: "you can choose whether or not to hurt/kill innocent people," "you can choose whether or not to hurt/kill your friends in the game," and "you can choose whether or not to hurt/kill police officers."

Three items loaded onto factor 7. This factor was labelled "Graphics." These items pertained to the cartoonish graphics of some video games. The items on this factor are "the graphics are flat, 2-Dimensional," "you have to defeat/kill a boss monster to go to the next level," and "the enemies look like monsters."

Composite scores. Composite scores were created for the entire scale as well as for each of the factors by summing all items with primary loadings for each factor. Higher scores reflected a higher level of violence exposure in the video games played by participants. The Total Score was obtained by summing all 40 items, with some items reversed score based on negative factor loadings as well as relevant theory on violent game exposure. The six items that were reversed scored include: "you play games rated E for Everyone," "the enemies look like monsters," "the graphics are flat, 2-Dimensional," "the enemies look like cartoons," "you choose to play the good guy," and "you have to defeat/kill a boss monster to go to the next level."

Kurtosis and skewness were screened for assuming a normal distribution for the Total Score, Violent Acts, Reinforcement, Target, and Villain scales. Kurtosis is the peakedness of the distribution, while skewness is the symmetry of the distribution. According to Cameron (2004), both skewness and kurtosis should fall in the range from – 2 to + 2 if data are normally distributed. As seen in Table 4, levels of skewness fell within a range of − .5 to + .5 for all factors. In terms of kurtosis, most of the factor scales fell within the range of − .5 to + .5. Only one factor, Reinforcement, had a kurtosis outside of this range; however, the kurtosis for this scale was 0.84. This suggests that it is appropriate to assume that the distributions for the Total Score and all factor scales are normal.

Mostly large significant correlations existed between the total score and factors. The Villain factor had small to moderate significant correlation coefficients with the Total score, Violent Acts, Targets, and Audio Violence. Only the Reinforcement factor

correlated significantly with the Graphics factor. The correlation matrix for the factor scores are presented in Table 5.

Reliability. The internal consistency of the total scale as well as each of the factors was examined using Cronbach's alphas. The alphas were high for the Total Score ($\alpha = .92$) and two factors: Violent Acts ($\alpha = .86$) and Reinforcement ($\alpha = .84$). Three other factors had alphas over .7: Game Ratings ($\alpha = .72$), Audio Violence ($\alpha = .77$), and Targets ($\alpha = .71$).

The two other factors, Villains and Graphics, had alphas under .7 (as seen in Table 3), suggesting a lower internal consistency for these factors. Additionally, each of those factors only consisted of three items. The items that factored together under the Villains factor did not appear to have a theoretical underpinning. Finally, the items that made up these two factors could predominantly be considered to contribute negatively to a violence score, and were in fact reverse scored for inclusion in the Total Score. For instance, two of the items in the Villains factor were about playing a *good* character, or playing games that were rated E for Everyone by the ESRB based in part on low levels of violence in the game. Included under the Graphics factor were items assessing two dimensional graphics and amount of monsters as enemies instead of human enemies and more realistic graphics. Taking all of this into consideration, these two factors were not included for further analysis.

Recommendations. It is recommended that for further research, researchers primarily use the Total Score as an estimate of exposure to video game violence. The Total Score contains all 40 items from the questionnaire, including questions on realistic graphics, presence of blood, and human enemies that were deleted from the factor

analysis. Additionally, the Total Score demonstrated the highest internal consistency which was comparable to the internal consistency of the measure that has been frequently used in previous research, which had alphas that ranged from .84 (Anderson & Dill, 2000) to .88 (Ferguson et al., 2008). The factor scores should be used in place of the Total Score only when researching specific dimensions of video game exposure, such as reinforcement of violent behaviors in game or violent acts available within video games played.

Summary. Overall, analyses of the data indicated that the data was appropriate for factor analysis. A total of 14 out of 40 items were eliminated, leaving 26 items for analysis. Seven distinct factors were found to be underlying responses on the video game questionnaires: Violent Acts, Reinforcement, Game Rating, Audio Violence, Target, Villain, and Graphics. Five of the seven factors, as well as the total score of all items, were moderately to highly internally consistent. An approximately normal distribution was evident for all of the factors, and most factors had moderate to large significant correlations with each other, with the exception of the Graphics factor. As the Villain and Graphics factors did not hold high internal consistency, only consisted of three items apiece, items did not appear to have a theoretical underpinning, and appeared to measure aspects of games with low levels of violence, they were not included in further analyses.

Multiple Regression Analyses

Weekly playing time. Simultaneous multiple regression analyses were conducted to examine the relationship between weekly playing time and various potential predictors. These predictor variables included sex, ethnicity, SES, as well as years spent playing video games. In terms of ethnicity, the Black and Hispanic dummy variables

were compared to a group containing Caucasian, Asian and Other participants. The results of the analyses are summarized in Table 6.

The multiple regression model was not significant, $R^2 = .04$, $F(5, 105) = 0.78$, $p > .05$. The combined predictors only account for 4% in the variance in the dependent model.

Hypothesis 1. The first hypothesis that boys spend more time during the week and weekend playing video games than girls was not found. Sex was not a significant predictor of weekly gameplay.

Hypothesis 2. The second hypothesis tested, that Caucasian children would play video games for less time than children of other ethnicities was also not found. Neither the dummy variables of Black or Hispanic were significant predictors of weekly gameplay when compared to Caucasians and Others.

Hypothesis 3. The third hypothesis tested was that children from lower SES households would spend more time playing video games than children from higher SES households. SES was not a significant predictor of weekly gameplay.

Violent game exposure. Simultaneous multiple regression analyses were conducted to examine the relationship between the total score and five factor scores of the violent video game questionnaire and various potential predictors. These predictor variables include sex, ethnicity, SES, and years spent playing video games. In terms of ethnicity, the Black and Hispanic dummy variables were compared to a group containing Caucasian, Asian, and Other participants. Weekly gameplay was also included as a possible predictor of various aspects of violent video game play. The results of these analyses are summarized in Table 7.

Total Score. The multiple regression model was significant, $R^2 = .22$, $F(6, 96) = 4.51$, $p < .001$. The model accounted for 22% of the variance in total scores. Both sex and weekly gameplay had significant positive regression weights. This suggests that boys played games with overall more violence than girls, and those who played more during the week and weekend played games with more violence. Ethnicity, SES and years spent playing video games did not contribute significantly to the model.

Violent Acts. The multiple regression model with Violent Acts as the dependent variable was significant, $R^2 = .23$, $F(6, 100) = 5.04$, $p < .001$. This model accounted for 23% of the variance in Violent Acts scores. Again, sex and amount of weekly gameplay were the only predictor variables with significant regression weights, indicating that boys played games with more possibility for violent acts than girls, and those who played more during the week and weekday played games with more possibility for violent acts than those who played for less time. Ethnicity, SES, and years spent playing video games did not contribute significantly to the model. However, the *Beta* for the Hispanic dummy variable was $-.17$, which was not detected as significant. This may be related to issues with the power of the study.

Reinforcement. The multiple regression model for Reinforcement was not significant and only accounted for 12% of the variance, $R^2 = .12$, $F(6, 104) = 2.31$, $p > .05$. Years spent playing video games was the only predictor variable that contributed significantly to the regression model, indicating that participants who began playing video games at a younger age, and therefore had accrued more time in years playing video games, reported experiencing more reinforcement for violent acts when playing video games. Sex, Ethnicity, SES, and weekly gameplay did not contribute significantly

to the model. However, it is important to note that the Hispanic dummy variable had a *Beta* of − .14, which may signify an issue related to the power of the study as this effect size was not detected as significant.

Audio Violence. The multiple regression model was not significant and only accounted for 10% of variance in scores, $R^2 = .09$, $F(6, 103) = 1.87$, $p > .05$. Sex had a significant positive regression weight, and was the only variable that contributed significantly to the regression model; weekly gameplay approached significance, with p = .051 (*Beta* = .19). Boys were more likely to report exposure to audio violence in game play (e.g., screaming) than were girls. Ethnicity, SES, and years spent playing video games did not contribute significantly to the model.

Game Rating. The multiple regression model for Game Rating was significant, $R^2 = .14$, $F(6, 104) = 2.81$, $p < .05$. The model accounted for 14% of the variance in Game Rating scores. Weekly gameplay was the only significant contributor to the regression model, and had a positive regression weight indicating that those who played for more time during the week and weekend were more likely to play games rated T, M, or AO. Sex, Ethnicity, SES, and weekly gameplay did not contribute significantly to the model; however a *Beta* of − .13was found for SES, signifying possible issues related to the power of the study as this effect size was not detected as significant.

Targets. The multiple regression model accounted for 14% of the variance in scores and was considered significant, $R^2 = .14$, $F(6, 103) = 2.76$, $p < .05$. Again, sex and weekly gameplay had significant positive regression weights, and were the only variables that contributed significantly to the regression model. This indicates that boys and those who spent more time during the week playing video games were more likely to be able to

target innocent characters, police officers, and friends in the game. Ethnicity, SES, and years spent playing video games did not contribute significantly to the model. A *Beta* of .12 was detected for the Black dummy variable, suggesting an underlying issue related to the power of the study, as this effect size was not detected as significant.

Hypothesis 4. The factor analysis did not reveal a factor for violent graphics that was internally consistent for use in the multiple regression analyses. However, the regression analyses models for the Violent Acts, Audio Violence, and Targets factors indicates that boys were more likely to encounter the possibility to commit violent acts in the game, be able to target certain in game characters, and be exposed to auditory indicators of violence (e.g., screaming) than were girls.

Hypothesis 5. The final hypothesis posited that there would be significant differences in children's violent video game exposure based on gender, ethnicity, and SES. Significant results were found for gender, with boys being more likely to play violent games, encounter auditory indicators of violence, and have the possibility to commit violent acts towards specific targets. However, no significant results for found with ethnicity and SES as predictor variables. These variables did not significantly contribute to any of the simultaneous multiple regression models performed.

Discussion

The current study sought to examine the relationship between various types of violence found in popular video games and key demographic variables including sex, ethnicity, and SES. Specifically, a questionnaire was designed to explore violent situations that students may encounter in the video games they play, as well as how often students play video games and on how many different platforms. An exploratory factor analysis was conducted to determine whether the 40 questions that comprise the questionnaire could be reduced into latent factors representing various aspects of violence found in video games. Student demographic information including sex, ethnicity, and socioeconomic status were then examined in the context of these factors to determine whether certain demographic variables predicted exposure to video game violence. Overall, the results of the current study indicate that boys, and those who have played video games for longer periods of time throughout the week, are exposed to more levels of violence including: being able to perform violent acts, listening to violent sound effects, and having more opportunities to target characters in the game for violence.

Violent Video Game Questionnaire

A major strength of the current study is the development of a questionnaire that targets specific aspects of violence in video games. Previous research has suggested several avenues through which video games may increase aggressive thoughts, feelings, and behaviors in game players. This includes cognitive priming to weapons in game (Buckley & Anderson, 2006), positive reinforcement of violent acts in game (Bandura, 1965; Carnagey & Anderson, 2005; Masia & Chase, 1997), and increase in visual and audio graphics (Krahe & Moller, 2004). The rating scale developed for the current

research included multiple items measuring these aspects of video game violence, and exploratory factor analysis revealed factors measuring such aspects including audio violence, reinforcement, targets of violence, game ratings of T for Teen and above, and violent acts involving weapons. Two other factors, one involving being able to play as a villain and graphics in the game, were also found but were not internally consistent for use in subsequent analyses, nor did the items comprising these factors have clear theoretical underpinnings for factoring together.

Violent video game exposure has been measured in the past with a rating scale consisting of only two questions: how violent participants viewed the storyline, and how violent the graphics were perceived (Anderson & Dill, 2000). Ferguson and colleagues (2008) in their research indicated that "it should be noted that this is not a perfect measure of violence exposure" (p. 318). However, they posited that the wide range of games available for play and rapid production of new games would prohibit a more objective rating format for violent content in games. The questions derived to create the current violent video game questionnaire used in the present research were internally consistent ($\alpha = .92$), which was comparable to internal consistency of the measure that has been frequently used in previous research, which had alphas that ranged from .84 (Anderson & Dill, 2000) to .88 (Ferguson et al., 2008).

Not only does this questionnaire provide an internally consistent measure of overall exposure to violence in video games, but also breaks down the types of violence encountered in video games, for instance amount of reinforcement for violent acts, ability to act violently in game, and targets for violence in game. This may be beneficial for researchers desiring to examine specific aspects of video games and their possible effects

on aggressive thoughts, behaviors, and feelings, in particular when examining prior exposure to violent video games in participants. This questionnaire also includes measures of how many game platforms or systems students have access to, amount of time spent playing video games weekly, and how early game play began. Therefore, this questionnaire may in fact be a more comprehensive measure of video game playing habits in conjunction with violent video game exposure.

Demographic Variables

The current study is the first to explore the relationship between violent game play and several demographic variables, including ethnicity and SES. The first three hypotheses in the current study sought to find a relationship between demographic variables and amount of weekly gameplay. Specifically, it was posited that boys would play for longer during the week than girls, Caucasian and Other youth would play for less time than African-American or Hispanic youth, and that children from lower SES households would play for longer than children from higher SES households. The current study did not find a link among gender, ethnicity, and SES on amount of time spent playing video games. This appears to be in contrast to other studies that found that boys spend more time playing video games than girls (Bonanno & Kommers, 2005; Desai et al., 2010; Gentile, 2009; Homer et al., 2012), Caucasian children spent less time playing video games than children of other ethnicities (Rideout et al., 2010; Roberts et al., 1999; Witt et al., 2011), and children from higher SES zip codes spent less time playing video games than children from lower SES zip codes (Roberts et al., 1999; Roberts & Foehr, 2008).

Although the youngest in terms of media entertainment, video games are becoming more prolific, with games accessible at home on consoles or computers, and easily accessible abroad through portable devices including phones. It is possible that there is no significant difference in amount of game play among youth who are used to video games being so easily accessible. However, it is just as possible that the rating of time spent playing video games, which was measured in two hour increments, was not sensitive enough to changes in time spent playing video games. Much of the previous research has shown a significant difference in daily amount of time spent playing video games in minute increments, while the current study measured time spent playing video games in hourly increments. The mean weekly gameplay of 22.67 suggests that most participants reported playing video games for some amount of time during the week and weekend; it also suggests that most participants reported playing for 4 hours or less during a given week day and weekend. However, almost half of participants reported playing video games for more than 4 hours on Saturday, which makes it likely that there is a ceiling effect on this question and that it may not accurately assess the amount of gameplay for those who do spend more than 4 hours at a time playing video games.

The fourth hypothesis posited that boys would play games that were more graphically violent than girls. Regression analyses indicated that boys were more likely than girls to play games with overall more violent content; specifically, they were more likely to play games that allowed more possibility to commit violent acts, target characters like friends and innocent characters in game, and had more instances of audio violence. Several studies have previously found that boys prefer more violence (Funk et al., 2000) and played games with more violence (Phan et al., 2012; Willoughby et al.,

2011) than girls. The current research confirms these findings, with multiple regression analyses finding that sex was related to amount of overall violence, violent acts, ability to target characters, and amount of audio violence.

The current study additionally found that students who spent more time during the week playing video games were also more likely to encounter violent content in the games they chose to play. They were more likely to be allowed the possibility of committing violent acts, target certain characters, have audio violence, and play games with a rating of T for Teen and above. Additionally, those who have been playing video games for longer (began playing at a younger age) were more likely to encounter positive reinforcement for using violence in games played. This suggests that the younger children begin playing video games, the more likely they are to be rewarded for violence in video games.

The final hypothesis examined sought to find differences in exposure to violence among students of different ethnicities and SES. No differences in exposure to violence were found in regards to ethnicity and SES. This suggests that children are exposed to similar amounts of violence in the video games they choose to play. Again, this may be due to the ease of access to video games, being available both at home on consoles as well as the mobility of video games on portable devices and cell phones. Video games have also become relatively cheap, making them more available for students in lower SES households. Though a new medium, video games may be more acceptable as a form of entertainment for children, due to their proliferation as well as relative cheap price: one video game may provide upwards of 60 hours of entertainment compared to a 2 hour movie.

However, the sample size of the current study was too small to detect small effect sizes; it is possible that a significant difference could be detected with a larger sample. For instance, the current study had difficulty detecting significant differences for African - American or Hispanic children even with moderate effect sizes of .12 and above (see Table 7). Additionally, only Caucasian and Other, African-American, and Hispanic children were examined, as there were not enough participants of other ethnicities, such as Asian-Americans, to examine separately in the analysis. While the effect sizes when examining students from differing SES was typically small, suggesting that there were no limitations in terms of statistical power, there was a moderate effect size for the Game Rating factor. A bigger sample may have found a significant difference in game ratings of games children play based on SES.

Limitations

The primary limitation of the current study is its small sample size. The power to detect small effect sizes was rather limited, as was the ability to examine diverse demographics such as ethnicity. While the sample is representative of the area in which the sample was recruited, it is not representative of national demographics and therefore the results may not be generalizable to the population at large. Additionally, only three different categories of ethnicity were examined: Caucasian and Other, African-American, and Hispanic. Other ethnicities could not be represented for analysis due to limited sample size.

Finally, although the total score of the video game questionnaire included items regarding graphic violence, a separate factor for graphic violence was not found through exploratory factor analysis. Previous research has indicated that making an adjustment as

simple as adding more blood to a video game can increase aggressive cognitions, affect, behavior, and physiological arousal (Barlett et al., 2008). However, while questions regarding graphic violence were subsumed in the Total Score, the individual items either cross-loaded onto too many factors, did not have loadings higher than .3 on one factor, or did not have a high enough communality to be considered for inclusion in the final factor analysis. The questionnaire also may have a ceiling effect in terms of amount of weekly gameplay, and may not be sensitive in terms of measuring amount of time spent playing video games over 4 hours daily.

Future Research

To better generalize the results of this research beyond the sample, future research would benefit from recruiting a nationally representative sample from multiple locations in the United States. A large sample may also better define the factors present in the video game questionnaire, and confirmatory factor analysis would confirm factors available in the questionnaire. Future research could also examine inter-rater reliability of the video game questionnaire by recruiting participants to play a video game and rate the levels of violence present using the questionnaire. An objective video game questionnaire examining multiple aspects of violence could be utilized to determine the levels of violence in various video games and examine closely the efficacy of the rating system established by the ESRB. Finally, this questionnaire could be used to attempt to reproduce findings from previous research regarding exposure to violence in video games and increases in aggressive thoughts, affect, behavior, and arousal along with decreases in prosocial behavior.

Practical Implications

As previously stated, the construction of this violent game exposure will benefit future researchers who may wish to utilize a comprehensive measure of exposure to violence, as well as of video game playing habits which may contribute to violent game exposure. Researchers may also be able to use the questionnaire to focus on specific aspects of violent game exposure and their effects on aggressive cognitions, affect, and behavior.

School Psychologists and other clinicians working with children should not work under the assumption that there is a certain type of child who is more likely to be drawn to violent video games. Boys may still be more likely to be exposed to violence in video games, but according to the results of the present study, all children are likely to be exposed to video games at some point in their lives and there was no difference in amount of time spent playing video games based on gender, ethnicity, or SES. Video games are becoming ubiquitous, being easily accessible both at home and abroad. Being exposed to violence in video games may not cause violent behavior, the most extreme form of aggression, but past research has shown that violence in video games has the potential to increase aggressive thoughts, feelings, and behavior. Children who play frequently may see the world as a more hostile place, be quicker to attribute ill intentions to ambiguous behaviors, be less likely to help others in need, and identify and act out aggressive solutions to problems. Those who work with children should be aware of the effects of video games; clinicians in particular may want to address media usage, in particular video game usage, with both children and parents. Interventions may include workshops regarding appropriate media use, educating parents about the existing video

game rating system provided by the ESRB, and providing resources on family friendly video games.

As video games have increased in popularity, so has the national discourse as to its role in violent behavior. Those who choose to play violent video games may experience an increase in aggressive thoughts, feelings, and behavior, and may be less likely to help others in need. As video games are becoming both more accessible and more violent, it is important to examine who, if anyone, may be at risk for increased exposure to video game violence. It appears so far that violent games do not discriminate based on ethnicity or SES, and even though boys seem to prefer violence in their games, girls may eventually catch up to their male counterparts. As the landscape surrounding video games changes, as it has done for the past 30 years, it will be important to revisit this question.

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Table 1

Participant Characteristics

Characteristics	N	%
Sex		
Male	78	62.9
Female	46	37.1
Ethnicity		
White	19	15.3
Black	65	52.4
Hispanic	21	16.9
Other	17	13.7
Grade		
6	43	34.7
7	52	41.9
8	29	23.4
Marital Status		
Married	83	66.9
Divorced/Separated	18	14.5
Never Married	13	10.5
Widow/Widower	5	4
Other	5	4
Parent Education		
Below High School	7	5.6
High School/GED	11	8.9
Some College	33	26.6
Associate's Degree	17	13.7
Bachelor's Degree	24	19.4
MA/Equivalent	21	16.9
Doctoral Degree	4	3.2
Partner Education		
Below High School	7	5.6
High School/GED	19	15.3
Some College	16	12.9
Associate's Degree	8	6.5
Bachelor's Degree	18	14.5
MA/Equivalent	7	5.6
Doctoral Degree	1	.8

Table 2

Participant Video Game Playing Habits

Player Characteristics	N	Minimum	Maximum	Mean	Standard Deviation
Total Game Systems	124	1	18	6.57	3.73
Portable	124	0	8	2.60	1.74
Console	124	0	11	2.95	2.29
Computer	124	1	2	1.23	0.42
Arcade	124	1	2	1.76	0.43
Age of First Play	122	1	12	6.14	2.24
Years Played	122	1	11	6.21	2.41
Weekly Gameplay	124	7	35	22.67	7.30

Table 3

Factor Loadings and Communalities Based on a Principle Components Analysis with Promax Rotation for 26 Items from the Video Game Questionnaire

Item	Violent Acts	Reinforcement	Game Rating	Audio Violence	Target	Villain	Graphics	Communalities
Kill Character to Win Game	.84							.75
Kill Character to Win Mission	.74							.69
Can Hit or Kick Others	.64							.58
Can Use Knife or Sword	.67							.69
Can Use Gun	.61							.79
Get Special Items		.81						.71
Get Stronger		.82						.65
Get Special Skills or Abilities		.73						.60
Get Money		.65						.61
Get Better Weapons		.69						.68
Can Play as Good or Bad		.47						.60
Rated M			.80					.74
Rated T			.83					.68
Rated AO			.80					.73
Bones Crunch				.76				.74
Character Screams				.84				.74
Enemies Scream				.75				.75
Can Hurt Innocent People					.84			.64
Can Hurt Friends					.78			.69
Can Hurt Police Officers					.70			.63
Choose Good						− .80		.69
Choose Bad						.59		.57
Rated E						− .67		.56
Flat Graphics							.66	.61
Monsters							.66	.55
Boss Monster							.64	.61

Note. Factor loadings < .40 are suppressed. N = 118.

Table 4

Descriptive Statistics for the Total Score and Seven Video Game Questionnaire Factors

	N	Number of Items	Min Score	Max Score	Mean		Skewness			Kurtosis			Alpha
					Statistic	SD	Statistic	SE	Z	Statistic	SE	Z	
Total Score	116	40	40	280	163.09	(36.64)	− 0.38	0.23	1.6	− 0.29	0.45	0.64	.92
Violent Acts	120	5	5	35	22.98	(7.42)	− 0.45	0.22	2.05	− 0.40	0.44	0.91	.86
Reinforcement	124	5	5	35	23.06	(7.15)	− 0.06	0.22	0.27	− 0.84	0.43	1.95	.84
Audio Violence	123	3	3	21	11.45	(3.90)	0.15	0.22	0.68	− 0.00	0.43	0	.77
Game Rating	124	3	3	21	10.47	(4.44)	0.33	0.22	1.5	− 0.31	0.43	0.72	.72
Target	123	3	3	21	13.04	(4.85)	− 0.39	0.22	1.77	− 0.46	0.43	1.07	.71
Villain	123	3	3	21	10.08	(4.17)	− 0.02	0.22	0.09	− 0.35	0.43	0.81	.59
Graphics	123	3	3	21	12.42	(3.46)	0.16	0.22	0.73	0.09	0.43	0.21	.47

Note. SD = Standard Deviation, SE = Standard Error.

Table 5

Pearson Two-Tailed Correlation Matrix for the Seven Video Game Questionnaire Factors and Total Score

	Total Score	Violent Acts	Reinforcement	Game Rating	Targets	Audio Violence	Villain	Graphics
Total Score		.85***	.63***	.67***	.54***	.76***	.46***	− .10
Violent Acts			.42***	.52***	.36***	.61***	.35**	− .12
Reinforcement				.27**	.22*	.44***	.11	− .33***
Game Rating					.25**	.46***	.33***	− .17
Targets						.41***	.12	− .16
Audio Violence							.20*	− .14
Villain								− .09
Graphics								

Note. *p < .05. **p < .01. ***p < .001.

Table 6

Simultaneous Multiple Regression Analyses Predicting Weekly Gameplay from Sex, Ethnicity, Socioeconomic Status, and Years Spent Playing Games

	Weekly Gameplay		
Predictor	B	SEB	Beta
Constant	21.39***	3.90	
Sex	0.10	1.47	.01
Black	− 0.71	1.54	− .05
Hispanic	1.17	2.37	.06
SES	− 0.04	0.07	− .05
Years Playing	0.43	0.29	.14
R^2	.04		
F	.78		
N	111		

*p < .05. **p < .01. ***p < .001.

Table 7

Simultaneous Multiple Regression Analyses Predicting Violent Video Game Factor From Sex, Ethnicity, Socioeconomic Status, Weekly Gameplay, and Years Spent Playing Games

	Violent Video Game Factors																	
	Total			Violent Act			Reinforcement			Audio Violence			Game Rating			Targets		
Predictor	B	SEB	Beta	B	SEB	Beta	B	SEB	Beta	B	SEB	Beta	B	SEB	Beta	B	SEB	Beta
Constant	120.63***	20.07		14.09***	4.01		18.92***	4.17		8.36***	2.24		7.89**	2.48		5.32*	2.67	
Sex	20.39**	6.53	.29	3.07*	1.32	.21	0.05	1.39	.00	1.93**	0.75	.25	0.72	0.82	.08	2.44**	0.89	.26
Black	.29	6.96	.00	− 0.42	1.40	− .03	0.78	1.46	.06	− 0.17	0.78	− .02	− 0.44	0.87	− .05	1.11	0.94	.12
Hispanic	− 10.29	10.42	− .11	− 3.42	2.14	− .17	− 2.83	2.24	− .14	− 0.09	1.20	− .01	− 0.27	1.33	− .02	0.45	1.44	.03
SES	− 0.18	0.32	− .05	− 0.04	0.07	− .06	− 0.06	0.07	− .09	0.01	0.04	.02	− 0.05	0.04	− .13	0.04	0.04	.09
Weekly Gameplay	1.47***	0.43	.31	0.37***	0.09	.09	0.05	0.09	.05	0.09	0.05	.19	0.18***	0.55	.31	0.12*	0.06	.19
Years Playing	1.04	1.33	.07	0.22	0.27	.08	0.86**	0.28	.29	− 0.06	0.15	− .04	0.05	0.17	.03	0.19	0.18	.10
R^2	.22			.23			.12			.09			.14			.14		
F	4.51***			5.04***			2.31*			1.87			2.81*			2.76*		
N	103			107			111			110			111			110		

Note. SES = socioeconomic status; SEB = standard error
*p < .05. **p < .01. ***p < .001

Appendix A

Demographic Questionnaire

Please take 5-10 minutes to complete the following information on your student and family.

Student Information

1. Sex

- ☐ Male
- ☐ Female

2. Age _____

3. Grade _____

4. Race or Ethnicity

- ☐ American Indian or Alaskan Native
- ☐ Asian or Pacific Islander
- ☐ Black, not of Hispanic origin
- ☐ Hispanic
- ☐ White, not of Hispanic origin
- ☐ Other: _____

Parent/Guardian Information

What is your relationship to the student?

- ☐ Mother
- ☐ Father
- ☐ Grandparent
- ☐ Foster Parent
- ☐ Other: _____

Please indicate your marital status:

- ☐ Married
- ☐ Divorced/Separated
- ☐ Never Married (live with a partner)
- ☐ Never Married (live apart from other parent)
- ☐ Widow/Widower
- ☐ Other: _____

Please write "S" next to your highest completed educational level and "P" for your partner (if any):

___ ___ Did not finish high school
___ ___ High School Graduate or GED
___ ___ Some College
___ ___ Associate's Degree or equivalent
___ ___ Bachelor's Degree or equivalent
___ ___ M.A. or equivalent
___ ___ Ph.D., M.D. or other doctoral degree

Please write "S" next to your occupation and "P" for your partner (if any):

Occupation

Management

___ ___ Chief Executives, General Managers
___ ___ Financial Mgrs., Treasurers, Controllers
___ ___ Retail (store) Managers
___ ___ Food Service & Lodging Managers
___ ___ Public Administrator/Officials
___ ___ Small Business Owners
___ ___ Educational Administrators (elementary, secondary, college)
___ ___ Advertising, Promotions & Public Relations Managers
___ ___ Computer & Information Systems Managers
___ ___ Medical & Health Services Managers
___ ___ Property & Real Estate Managers
___ ___ Social & Community Services Managers
___ ___ Farm & Ranch Owners, Agricultural Managers
___ ___ Other Management: _____

Business & Financial

___ ___ Marketing/Sales Managers
___ ___ Personnel/Human Resources Managers
___ ___ Consultants (Management, Computer)
___ ___ Purchasing Agents/Buyers
___ ___ Insurance Underwriters
___ ___ Insurance Claims Adjusters/Examiners
___ ___ Business Other
___ ___ Accountant, Auditors
___ ___ Bank Officers & Loan Counselors
___ ___ Financial, Budget & Credit Analysts
___ ___ Securities/Investment Analysts
___ ___ Other Financial: _____

Computer & Mathematical

___ ___ Computer Programmers/Software Engineer
___ ___ Database & Network Administrators and Analysts
___ ___ Computer and Information Scientists
___ ___ Actuaries
___ ___ Mathematicians & Statisticians
___ ___ Mathematical Technicians/Other: _____

Architecture & Engineering

___ ___ Architects & Landscape Architects
___ ___ Agricultural Engineers
___ ___ Civil & Environmental Engineers
___ ___ Computer Hardware Engineers
___ ___ Electrical/Electronic Engineers
___ ___ Materials & Metallurgical Engineers
___ ___ Mechanical Engineers
___ ___ Chemical & Petroleum Engineers
___ ___ Technicians/Other: _____

Life, Physical & Social Sciences

___ ___ Atmospheric & Environmental Scientists
___ ___ Agricultural & Food Scientists
___ ___ Soil, Plant & Conservation Scientists
___ ___ Biochemists & Chemists
___ ___ Physicists & Astronomers
___ ___ Life Scientists & Microbiologists
___ ___ Technicians/Other Life & Physical Scientists
___ ___ Social Scientists (including Economists, Geographers, Historians, Sociologists, Anthropologists, Political Scientists)

___ ___ Psychologists
___ ___ Urban & Regional Planners
___ ___ Other Social Scientists: _____

Health

___ ___ Dentists
___ ___ Optometrists
___ ___ Physicians & Surgeons
___ ___ Veterinarians
___ ___ Nurses
___ ___ Occupational, Physical & Recreation Therapists
___ ___ Speech Therapists & Audiologists
___ ___ Pharmacists
___ ___ Dietitians, Nutritionists
___ ___ Laboratory Technicians/Technologists
___ ___ Technicians/Aides/Assistants/Other: _____

Legal

___ ___ Attorney, Lawyers & Judges
___ ___ Legal Support Workers

Community & Social Service

___ ___ Recreation Workers
___ ___ Clergy & Religious Workers
___ ___ Social, Community & Probation Workers
___ ___ Counselors (Mental Health, Substance, Rehab., Family)
___ ___ Other Legal: _____

Education & Library

___ ___ Early Childhood Teachers (Day Care, Preschool & Kindergarten)
___ ___ Elementary Teachers
___ ___ Middle School Teachers
___ ___ Secondary School Teachers
___ ___ College/University Faculty
___ ___ Special Education Teachers
___ ___ Educational & Career Counselors
___ ___ Teaching & Research Assistants
___ ___ Librarians, Archivists, & Curators
___ ___ Technicians/Aides/Other: _____

Art, Design, Entertainment, Media & Sports

___ ___ Artists & Designers
___ ___ Actors, Dancers, Musicians, Singers, Composers
___ ___ Athletes, Coaches, Referees, Athletic Trainers
___ ___ Producers & Directors
___ ___ Authors, Writers, Editors
___ ___ Radio/Camera & Broadcast Operators & Technicians
___ ___ Journalists, Reporters
___ ___ Radio/TV Broadcasters, Announcers
___ ___ Technicians/Other: _____

Sales

___ ___ Insurance Agents
___ ___ Corporate Sales Representatives
___ ___ Real Estate Agents, Brokers
___ ___ Retail/Wholesale Salespersons
___ ___ Securities & Commodities Brokers
___ ___ Other: _____

Office & Administrative

___ ___ Office Managers & Supervisors
___ ___ Clerical & Support Personnel
___ ___ Tellers
___ ___ Other: _____

Protective Occupations

___ ___ Fire Fighter
___ ___ Police & Correction Officers
___ ___ Other: _____

Other

___ ___ Cooks, Bartenders, Food Service Workers, Other
___ ___ Janitors, Cleaners, Landscaping Workers, Other
___ ___ Flight Attendants, Child Care, Hairstylists & Personal Care, Hotel & Travel Industry, Other
___ ___ Farm Workers, Animal Care, Foresters, Loggers, Other
___ ___ Carpenters, Electricians, Painters, Plumbers, Miners, Other
___ ___ Telecommunications, Auto. Repairers, Heating & Cooling Systems Mechanics & Installers, Other
___ ___ Machinist, Assembler, Industrial Technicians, Other
___ ___ Airline Pilots, Flight Eng, Air Traffic Controllers, Drivers, Other
___ ___ Officers & Enlisted Personnel, Other
___ ___ Other: _____

Appendix B

Video Game Questionnaire

Your answers to this questionnaire will be kept secret. Do not write your name on this questionnaire.

Game Platform

1. What do you play video games on ? (check all that apply):

- ☐ Portable Device
  - ☐ Gameboy
  - ☐ Gameboy Advance
  - ☐ Nintendo DS
  - ☐ Nintendo 3DS
  - ☐ PSP
  - ☐ Smart Phone
  - ☐ Tablet
  - ☐ Other (specify):
- ☐ Console
  - ☐ Xbox
  - ☐ Nintendo Wii
  - ☐ Playstation
  - ☐ Playstation 2
  - ☐ Playstation 3
  - ☐ Playstation 4
  - ☐ Xbox
  - ☐ Xbox 360
  - ☐ Xbox One
  - ☐ Gamecube
  - ☐ Wii
  - ☐ Wii U
- ☐ Computer
- ☐ Arcade

Play Frequency

Think about how often you have played videogames in the past 3 months. Answer the following questions as best you can.

2. How many hours do you typically play video games on a school day?

☐	☐	☐	☐	☐
No time spent	Less than 1	1-2	3-4	More than 4

3. How many hours do you typically play video games on Saturday?

☐	☐	☐	☐	☐
No time spent	Less than 1	1-2	3-4	More than 4

4. How many hours do you typically play video games on Sunday?

☐	☐	☐	☐	☐
No time spent	Less than 1	1-2	3-4	More than 4

5. How old were you when you started playing video games? (Write N/A if you've never played a video game) _____

6. What grade were you in when you started playing video games? (Write N/A if you've never played a video game) _____

Game Content

Think about the types of video games you play. You can play these games in the arcade, on the computer, on a console (for example Xbox 360), or on a portable device (for example Gameboy Advance). For each statement below, think about the video games you have played in the past 3 months and check the answer that best describes how often you encounter these situations

7. The enemies look like monsters

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

8. The graphics are flat, 2-Dimensional

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

9. The graphics are 3-Dimensional, like watching a movie

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

10. The enemies look human

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

11. The enemies look like cartoons

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

12. The enemies look real

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

13. You have to defeat/kill a boss monster to go to the next level

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

14. You have to defeat/kill a certain key person to go to the next level

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

15. To win a mission you have to torture people

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

16. To win a mission you have to hurt/kill people

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

17. To win the game you have to kill your opponent

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

18. You can hit or kick people

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

19. You can use a gun to shoot people

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

20. You can use a baseball bat/crow bar/blunt object to hit people with

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

21. You can use a knife/sword to stab people

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

22. You can use a vehicle (car, motorcycle, tank) to hurt people

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

23. You can destroy property.

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

24. Your character gets experience/points when you defeat enemies

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

25. Your character gets stronger when you defeat enemies

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

26. Your character gets special items when you defeat enemies

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

27. Your character gets more money/coins when you defeat enemies

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

28. Your character can get better weapons by defeating enemies

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

29. Your character gains special skills/abilities by defeating enemies

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

30. You can choose whether or not to hurt/kill innocent people

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

31. You can choose whether or not to hurt/kill your friends in the game

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

32. You can choose to play a good guy or a bad guy

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

33. You choose to play the good guy

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

34. You choose to play the bad guy

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

35. You can choose whether or not to hurt/kill police officers

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

36. Your enemies will try to hurt/kill your character

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
□	□	□	□	□	□	□
1	2	3	4	5	6	7

37. When your character hurts other characters, they scream

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

38. If your character hurts other characters enough, you can hear bones crunching

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

39. Your character can kill other characters in gory ways

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

40. If enemies hurt your character, he screams in pain

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

41. If your character hurts a character, he/she bleeds

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

42. If your character gets hurt, he/she bleeds

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

43. You play games rated .E. for Everyone

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

44. You play games rated .T. for Teen

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

45. You play games rated .M. for Mature

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

46. You play games rated .AO. for Adults Only

Never	Almost Never	Less than Half of the Time	Half the Time	More than Half of the Time	Almost Always	Always
☐	☐	☐	☐	☐	☐	☐
1	2	3	4	5	6	7

If you have any feelings of discomfort as a result of completing this questionnaire, you are welcome to discuss these feelings with your school counselor.

Appendix C

Parent Consent Form

Do Demographic Variables Make a Difference in Level of Violent Game Play?

Your child is invited to participate in a study about the types of video games being played among by young adolescents. I am a graduate student currently completing my doctoral degree in psychology at Alfred University, and I am doing research to try to understand the video game playing habits of children.

Your child must have your consent to participate in this study. In addition to providing this consent, you will be asked to fill out and return a brief questionnaire asking for some general background information. Your child will be asked to fill out a questionnaire packet about his or her video game playing that should take approximately 15-20 minutes to complete. It will be administered sometime before the end of the school year.

There are no known risks if you and your child decide to participate in this research study. Participation is completely voluntary. When filling out the questionnaires, your child will be able to stop at any time without consequences of any kind, and the data associated with his/her responses will be discarded. Confidentiality will be maintained by using only code numbers on your and your child's questionnaires. A master list will be maintained matching names with numbers to allow data analysis of the entire group who participate in the study. The individual answers of participants will not be reported anywhere. The questionnaires will be identified by code number only. There will be no names on research materials, and the data will be analyzed by group averages only and not by individual responses. Only I will have access to the master list matching names with numbers, and that is only to keep the data organized. The master list will be stored separately in a locked file cabinet in a locked room, and will be destroyed once the data are collected.

As an incentive, students who participate will have their names placed in a lottery drawing for a chance to win a Nintendo Wii U Console Deluxe Set.

As stated above, your participation and your child's are completely voluntary. If you do consent for your child to participate in this study, please tear off and return the form below with the completed demographic questionnaire.

If you have any questions concerning this research, feel free to call Sulma Rowland (smr3@alfred.edu, 631-294-7343), Dr. Edward Gaughan (dissertation advisor, fgaughan@alfred.edu, 607-871-2856), or Dr. Danielle Gagne (chair of the Alfred University Human Subjects Research Committee, hsrc@alfred.edu, 607-871-2213).

Sincerely,

Sulma Rowland

I have read the above information. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily for my child to participate as a participant in this study about video games.

Print Name of Student: _____

Print Name of Parent or Guardian: _____

Signature of Parent or Guardian: _____

Date: _____
Day/month/year

Appendix D

Student Assent Form

Do Demographic Variables Make a Difference in Level of Violent Game Play?

You are being asked to participate in a research study about the video game playing habits of young adolescents. If you decide to be a part of this study, you will be asked to fill out a brief questionnaire, which takes approximately 15-20 minutes and asks about the video games that you play. You will do this during your lunch time.

When we are finished with this study we will write a report about what was learned. This report will not include your name or that you were in this study, and your name will not appear on the questionnaire you complete. Code numbers will be used instead of names to protect your privacy.

I do not believe that you will be hurt or upset by being in this study. If you take part in the study and believe that you have been hurt or upset in any way, you may stop being in the study.

As a reward for completing the questionnaire, you will have your name placed in a lottery drawing for a chance to win a Nintendo Wii U Console Deluxe Set.

You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too. You will not get in trouble and no one will be upset if you don't want to be in the study or even if you change your mind later and want to stop. Your parents know about the study as well.

If you have any questions about this research and/or your participation in it, please ask your parents or the researcher Sulma Rowland.

If you decide you want to be in this study, please sign your name.

I, _____, want to be in this research study.

_____ _____

(Sign your name here) **(Date)**

Sulma M. Rowland
sulmarowland@gmail.com

Education

ALFRED UNIVERSITY
Certificate of Advanced Study, 2008
Master of Arts in School Psychology, 2006

UNIVERSITY OF FLORIDA
Bachelor of Science in Psychology, with Honors, 2002
Minor in English

Honors/Awards

ALFRED UNIVERSITY
Psi Chi National Honor Society in Psychology

UNIVERSITY OF FLORIDA
Psi Chi National Honor Society in Psychology
President's Honor Roll: 1 Semester
Dean's List: 4 Semesters
National Hispanic Merit Scholar

Certifications

NEW YORK STATE DEPARTMENT OF EDUCATION
Permanent Certificate, February 2013

NEW JERSEY STATE DEPARTMENT OF EDUCATION
Standard Certificate, September 2012

MARYLAND STATE DEPARTMENT OF EDUCATION
Advanced Professional Certificate, July 2010

NATIONAL ASSOCIATION OF SCHOOL PSYCHOLOGISTS
Nationally Certified School Psychologist, October 2008

Work Experience

SCHOOL PSYCHOLOGIST
Prince George's County Public Schools, Upper Marlboro, MD, July 2008 to June 2014

- Conducted comprehensive assessments for students aged 3-21 with various educational disabilities
- Participated in pre-referral, eligibility and IEP meetings
- Provided group and individual counseling to students based on social/emotional needs
- Collaborated with school staff in designing and implementing tiered interventions, including conducting functional behavior assessments (FBA) and developing behavior intervention plans (BIPs)
- Supported staff and students during a crisis through participation in the county-wide Crisis Team
- Developed and participate in professional development opportunities designed to enhance assessment, counseling, and intervention skills

SCHOOL PSYCHOLOGIST INTERN (UNDER SUPERVISION)
Prince George's County Public Schools, Upper Marlboro, MD, August 2007 to June 2008

- Conducted cognitive, psycho-educational and social-emotional assessments for students aged 3-21 with various educational disabilities
- Participated in 8 week rotations in an Early Childhood Center and a secondary school Transition Program for students with Emotional Disabilities
- Involved in pre-referral, eligibility and IEP meetings
- Designed and implemented cognitive and behavioral interventions, including conducting functional behavior assessments (FBA)
- Provided individual and group therapy to students
- Consulted with parents and school personnel
- Provided staff workshops on a variety of topics, including progress monitoring, Response to Intervention, and reading the IEP

GRADUATE STUDENT CLINICIAN
Athens School District, Athens, PA, October 2006 to June 2007
Pioneer School District, Arcade, NY, September 2005 to June 2006
Child and Family Services Center, Alfred University, Alfred, NY, September 2005 to May 2006

- Provided access to therapeutic services for families in rural areas
- Consulted with parents
- Provided therapy to children and parents
- Participated in case conferences

TEACHER ASSISTANT
Alfred University, Alfred, NY, September 2005 to May 2006

- Taught first year students cognitive, achievement norm-referenced tests
- Graded practice with Norm-Referenced and social-emotional tests and provided corrective feedback

ADVANCED PRACTICUM STUDENT
Hornell Intermediate School, Hornell, NY, September 2004 to May 2005

- Practiced Psycho-educational, social-emotional, and behavioral assessments
- Designed an academic intervention using Response to Intervention
- Assisted a special education consultant teacher with reading interventions

Related Experiences

MENTAL HEALTH COUNSELOR
Brookhaven Memorial Hospital, Patchogue, NY, August 2003 to August 2004

- Performed mental health evaluations on patients and assessed their safety through 1:1 interaction
- Provided education on patient illnesses and coping skills
- Facilitated therapeutic patient groups on diverse topics

TEACHER ASSISTANT
Maryhaven Center of Hope, Patchogue, NY, September 2002 to August 2004

- Assisted the teacher in implementing lesson and behavior plans
- Created functional tasks to enhance student learning
- Taught students appropriate social behaviors and functional skills
- Actively participated in staff and classroom meetings

SUBSTITUTE TEACHER AIDE
Developmental Disabilities Institute, Smithtown, NY, May 2001 to August 2001

- Taught students functional skills through discrete trial training
- Documented student progress on tasks and mastery of skills

Professional Publications

Rowland, S. (2006). Creating safer schools for GLBT young people. *New York School Psychologist, 24* (2), 17.

Roland, S. & Evangelista, N. (2005). Research Review: Medical issues in school psychology. *New York School Psychologist*, *24* (1), 4-5, 25-26.

Roland, S. & Evangelista, N. (2005). Research Review: Creative approaches to school psychology. *New York School Psychologist*, *23* (3), 5, 24-26.

Roland, S. & Evangelista, N. (2004). Research Review: Autism Spectrum Disorders. *New York School Psychologist*, *23* (2), 5, 23-24.

Technical Skills

Microsoft Windows, Word, Works, Excel, and Power Point
SPSS
Various norm-referenced scoring programs