

- Krebs N.F., Himes J.H., Jacobson D., Nicklas T.A., Guilday P., Styne D. (2008). Assessment of child and adolescent overweight and obesity. *Journal of Pediatrics*. 120, S193-S228. Retrieved July, 2008 from PubMed database.
- Kosti, Rena I., Panagiotakos, D. B., Tountas, Y., Mihas, C., Alevizos, A., Mariolis, T., Papathanassiou, M., Zampelas, A., Mariolis, A. (2008). Parental Body Mass Index in association with the prevalence of overweight/obesity among adolescents in Greece; dietary and lifestyle habits in the context of the family environment: The Vyronas study. *Appetite*, 51, 218-222. Retrieved June, 2008 from Academic Search Premier Database.
- Kuo, JoAnn. (2007). Associations between, Family Support, and Neighborhood Violence and Physical Activity in Urban Adolescent Girls. *American Journal of Public Health*, 97, 01- 1105.
- Moos, R.H. (1974). Family Environmental Scale Form R. Family Environmental Manual. Copyright Palto Alto, Consulting Psychologists Press, Inc., 2-6
- Ogden, L., Carroll M., Curtin L., McDowell M., Tabak C., Flegal, K. (2006). Prevalence of Overweight and Obesity in the United States, 1999-2004. *Journal of American Medical Association*, 295, 13.
- Ries, A.V., Voorhees, C.C., Gittelsohn, J., Roche, K. M., Astone, N. M. (2008). Adolescents' Perceptions of Environmental Influences on Physical Activity. *American Journal Health Behavior*. 32, 26-39.
- Strauss, R.S. (2002). Childhood obesity. *Pediatric Clinics North America*, 49, 175-201. Retrieved June, 2008 from PubMed Database, at <http://www.ncbi.nlm.nih.gov/pubmed/11826804>
- Swallen, K. C., Reither, E. N., Haas, S.A., Meier, A. M. 2005. Overweight, Obesity, and Health- Related Quality of Life Among Adolescents: The National Longitudinal Study of Adolescent Health *Pediatrics* 115, 340-347.
- Vargas, I. (2006). Treatment of childhood and adolescent obesity and PCOS. Retrieved June, 2008, at <http://cumc.columbia.edu/dept/ihn/courses/documents/Vargas.pdf>
- Whitaker, R., Wright, J., Pepe, M., et al. (1997). Predicting obesity in Young Adulthood from Childhood and Parental Obesity. *New England Journal of Medicine*. 377, 863-73.
- Young, D.R., Phillips, J., Yu, T., Haythornthwaite, J. A. (2006). Effects of a Life Skills Intervention for Increasing Physical Activity in Adolescent Girls. *Archive of Pediatric Adolescent Medicine*, 160, 1255-1261.
- Bronfenbrenner, Urie. (1979). *The Ecology of Human Development: Experiments by Nature and Design*. Cambridge, MA: Harvard University Press.
- Alleyene, S. and LaPoint, V. (2004). Obesity among Black Adolescent Girls: Psychosocial, and cultural Influences. *Journal Of Black Psychology*, 30, 344.
- Elinder, L. and Jansson, M. (2008). Obesogenic Environments—aspects on measurement and Indicators. *Public Health Nutrition*, 1, 1-9.

The Effects of Reality vs. Fantasy Based First-Person Shooting Video Games on Adolescent Behavior

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Abstract

This conceptual paper reviewed the literature on violent video games and aggression. Using the General Aggression Model as a framework, this study provides evidence to support the relationship between video game violence and aggressiveness. To address the lack of research on first-person shooter (FPS) video games found in the literature, a future study will be proposed observing different types of first-person shooter video games (reality and fantasy) and the effects they may have on adolescent behavior. Consistent with the General Aggression Model, findings showed increases in aggression for adolescents exposed to violent video games. While research shows first-person shooter video games increase adolescent aggressiveness, evidence on different types of first-person shooter games and their effects on adolescent behavior were inconclusive. However, research reported by Potter (1988) showed that viewers tend to experience more emotional and behavioral issues when viewing reality based media. In addition, Anderson and Bushman (2002) reported that empirical evidence shows that violent video games and aggressiveness have a positive and significant relationship. The grouping of Anderson and Bushman (2002) and Potter (1988), provide evidence that adolescent aggressiveness will be higher when playing reality based first-person shooter games in comparison to fantasy based first-person shooter video games.

Introduction

The effects of violent video games have become an extremely controversial topic in the world of media. Research by Children Now (2001) found that 89% of video games contain some violent content and that about half include violence toward other characters that would result in serious injury or death. In addition, research has shown that adolescents prefer playing video games that have violent content (Buchman & Funk, 1996). Empirical evidence has been found that violent video game exposure increases aggressive thoughts, cognitions, and behaviors (Anderson, Berkowitz, Donnerstein, Huesmann, Johnson, Linz, Malamuth, & Wartella, 2003). Although there is empirical evidence that supports this relationship, research on specific genres of video games like first-person shooter and the effects they have on adolescent behavior has not been found.

Problem Statement

Aggression is a major problem in adolescents today. Evidence has shown that violent video games increase adolescent aggression (Anderson & Bushman, 2001). The increased popularity of first-person shooter violent video games creates a need to explore the effects different types of FPS video games have on adolescent behavior. In comparing reality based first-person shooter (RPS) violent video games with fantasy based first-person shooter (FFS) video games and the effects they have on adolescent behavior in a future study, research will address the aforementioned problem.

Purpose of Inquiry and Inquiry Questions

The purpose of this conceptual paper is to review the current literature on violent video games and adolescent behavior in order to explore adolescent exposure to the different types of first-person shooter games. Given the aforementioned problem, research will address the following questions:

1. How does exposure to violent video games affect adolescent behavior?
2. What are the different types of first-person shooter video games?
3. Is there a change in adolescent behavior when exposed to different first-person shooter video games?

The population of the U.S. spends a lot of time watching media violence (Anderson & Bushman, 2001). Of the population, our youth are the most exposed to media violence. According to Anderson and Bushman (2001), “Youths between the ages of 8 and 18 spend more than 40 hr per week using some type of media, not counting school or homework assignments” (p.354). In the past, television was the major source for access to media violence, but video games have become increasingly popular. Playing violent video games is becoming more of a greater concern because empirical evidence suggests violent video games increase adolescent aggression (Anderson et al, 2003). The three school shootings that took place in Kentucky, Arkansas, and Colorado have only expanded the need to research the effects of first-person shooter video games on adolescent behavior. Anderson and Dill (2000) reported the two shooters responsible in the Columbine Massacre created a customized version of the game Doom (a FPS video game) and investigators found that the actual shootings were similar to the customized version. The connection between FPS games and recent school shootings further supports the need for research on the effect FPS games has on adolescent behavior.

Significance of Inquiry

Research related to adolescent aggressiveness is instrumental in the struggle of creating safer and more scholastic environments in educational institutions. Research has shown that violent video games increase aggressive behavior and thoughts in adolescents (Anderson et al., 2003). Research has also shown youth heavily exposed

to violent video games see the world as more hostile, are more hostile to others, get into more arguments with teachers, get into more fights and perform more poorly in school Lynch, Gentile, Olson, and Brederode, (2001). In addition, evidence has shown a relationship between FPS video game exposure and adolescent aggression exists (Anderson & Bushman, 2001). However, research on the effects that different types of FPS video games have on adolescent aggressiveness is still inconclusive. The lack of conclusive evidence on adolescent behavior when exposed to different FPS video games creates significance for this conceptual paper and future research. This is significant because future research on FPS video games can bring attention to educators and policy makers. Policymakers can then try to better regulate violent video games, which may reduce adolescent exposure to violent video games, consequentially reducing adolescent aggression.

Summary of Theoretical Framework

Reasons exist that justify why violent video game exposure can increase aggressive thoughts and behaviors in both the long and short run. In addition, reasons exist to support why higher levels of aggressive behavior will come from playing reality based FPS games. In this analysis, the theoretical approach stems from *The General Aggression Model*. A theory used throughout video game literature that explains why adolescents exposed to violent video games show increased aggressiveness, coined by Anderson (2003). In similar studies, research has been guided through the use of Anderson’s General Aggression Model (Anderson & Bushman, 2001; Lynch et al, 2001; Chory & Cicchirillo, 2007; & Anderson & Dill, 2000) to explain why adolescent’s exhibit increases in aggressive behavior. Aggression-Related Priming is a significant procedure assumed by the GAM to further justify the relationship between video game violence and adolescent aggressiveness (Barlett, Harris, & Baldassaro, 2007).

Delimitations of the Inquiry

This conceptual paper has several delimitations. According to The University of Florida Graduate Studies, (2005) delimitations include the specific population/sample included, the main parameters covered in the research, and variables used in the research. First, the paper was delimited to a conceptual review of literature on the effects of FPS video game exposure on adolescent behavior. This does not take into account third-person shooting video games, or non-violent video games and effects they have on adolescent behavior. Second, this paper was delimited by only studying adolescents that engage in video game play and not taking into account adults or young children. Both males and females were used in this conceptual paper and ages ranged from 8-18. Third, this paper was also delimited by focusing on FPS video games and changes in behavior that occur as a result of exposure to these games.

Limitations of the Inquiry

According to The University of Florida Graduate Studies (2005), “The limitations set forth reservations, qualifications, or weaknesses inherent in the design. Generally, these will reflect anticipated inadequacies in regard to internal validity of results” (Graduate Student Services: Thesis and Dissertations, 2005). This conceptual paper had several limitations as defined by the literature.

The first limitation in this paper is the lack of empirical data gathered. Instead of using raw quantitative data from a current study to support hypotheses, this conceptual paper uses the data collected throughout the research of violent video games and adolescent aggression.

The second limitation in this conceptual paper is time. Due to a small frame of time it was difficult to fully exhaust the literature. Given more time, more research can be conducted, which may lead to more data and more or less support for the predictions in this conceptual paper. Time also was a contributing factor in not being able to collect raw data and having to resort to using the literature to support predictions.

The third limitation was the disparity between male and female participants in most research involving video games and adolescent aggressive behavior. In the majority of video game studies used as a source in this paper, males outnumber females as participants. This limitation restricts results from being completely generalized to the entire population of adolescents that play video games.

Lastly, the theoretical framework also has limitations by only explaining increases in aggression for adolescents who already exhibit aggressive thoughts and behaviors.

Analysis and Discussion of the Literature

This chapter analyzes the current research on media violence, video game violence and aggression, and first-person shooter games in relation to the Social Learning Theory. This chapter also lays out the theoretical framework that will be used throughout this conceptual paper.

Literature on Violent Media

In the United States, media violence is all around us. Whenever a person is watching movies, news, music videos, surfing the net, or playing a video game, violent content is typically viewed. Being an adolescent is extremely difficult in today’s society with the inevitable onslaught of media violence. Research by Roberts, Foehr, Rideout, and Brodie (1999) showed that youth ranging from ages 8–18 spend 40 hours or more per week viewing some form of media. Huston, Donnerstein, Fairchild, Feshback, Katz, Murray, Rubinstein, Wilcox, and Zuckerman (1992), report once the average child completes elementary school; they will have viewed about 8,000 murders and more than 100,000 additional forms of violence on TV. Consistent findings in various randomized experiments show youth who watch violent scenes usually show more aggressive behavior, thoughts, and emotions in

comparison to those that do not watch violent scenes (Anderson & Bushman, 2001). Reviewing research on media violence is important to know when researching video game violence because many of the psychological processes recognized in the research on television and movie media apply to video games (Anderson & Bushman, 2001).

Literature on Video Game Violence and Aggressive Behavior

Roberts, Foehr, Rideout, and Vrodie, (1999) report about 10% of youth ranging from age 2–18 engage in video and computer game play more than 1 hour a day. In addition, 8–13 year old males average more than 7.5 hours per week of video game play. Of the video games that are marketed to the youth, violent video games seem to be the most attractive. Game Stop (2008) rated the number one game as of April 2008 to be Grand Theft Auto IV. The Grand Theft Auto series of games include stealing vehicles, having sex with and then murdering prostitutes, gunning down cops and criminals, and using inappropriate language in the face of authority (gamestop, 2008). The combination of video games and violence has become attractive to youth in today’s society. The Grand Theft Auto Series has been very popular among youth as far as violent video games, but many other violent video games are being played.

Approximately 68% of the most popular video games contain acts of violence (Smith, Lachalan, & Tamborini, 2003). Even when video games first began gaining popularity in 1990 with games like *Mortal Kombat*, *Wolfenstein 3D*, and *Street Fighter*, violence was still incorporated like video games today. The focal points in all three of those games were to maim, wound, or kill opponents (C.A. Anderson & Bushman, 2001). A plethora of non-violent, educational games exist; however, adolescents seem to be more drawn to games that contain blood, screams, and gore. Buchman and Funk (1996), report that 73% of fourth grade male’s state that most of their favorite games contain violence. Not only do video games contain violent materials, but higher levels of aggressive thoughts and behaviors have been observed among individuals who play these types of games (Cicchirillo & Chory-Assad, 2005). To find empirical evidence that a relationship between violent video games and aggression exist, research has been conducted by many for investigation.

A meta-analytic study (Anderson & Bushman, 2002) found that after 54 independent tests of the relationship between violent video games and aggression, including 4,262 participants, the average effect size was both positive and significant. For example, a study conducted by Irwin and Gross (1995) measured physical aggression (kicking, hitting, pinching, shoving, etc) between males who either played a non-violent or violent video game. Results showed that the boys who played the violent video game exhibited more physical aggression toward their peers with an average effect size of .31. In another study, Bartholow and Anderson (2002) observed that college students playing a violent video game administered more than two and a half times as many high-intensity punishments than those that played a non-violent game. For both males and females, the average effect size was significant with males being .57 and females .50. In another example, Calvert and

Tan (1994) measured aggression in participants that played a violent virtual reality game titled, *Dactyl Nightmare*, in comparison with participants that simply acted out movements similar to those playing the actual game. Calvert and Tan's findings showed that participants who played the game displayed significantly higher rates of aggression in comparison to participants that only followed the movements ($r = .50$).

In addition to randomized experiments, cross-sectional surveys have also been conducted to further investigate this relationship. For example, Anderson and Dill (2000) formed a measure that took a deeper look at college students that played a violent video game recently before taking the survey and their self-reported acts of delinquent behavior in the last 12 months. Anderson and Dill (2002) described delinquent behavior as threatening or hitting other students, engaging in gang fights, throwing things at other people, or attacking someone with the intent of harming that person seriously or killing him/her. The correlation between the two variables resulted in being significant ($r = .46$, $p < .05$).

Literature on First-Person Shooter Games and Observational Learning

First-person shooter games are first-person perspective action based violent video games that haven been increasingly more popular throughout the last 20 years. The player gets to play the game through the characters eyes with the weapon of choice being shown on the screen. This aspect of first-person shooters creates a real-life, personal simulation for the player. The user gets to practice aiming and shooting at enemies and can also be shot at and killed, which elevates the realness of the video game (gamestop, 2008). *Goldeneye 007* was a very popular first-person shooter video game that came on the scene for Nintendo 64 in 1997. *Goldeneye* was a highly crafted game that incorporated artificial intelligence, a realistic setting, a hero in James Bond, and head shot accuracy shooting (gamestop, 2008). Users could now be able to practice aiming at the enemies head and killing them in one shot. In *Goldeneye*, users were praised for killing off enemies and reaching destinations by completing the mission and moving on to the next. Adolescents who are heavily exposed to these first-person shooter video games began to learn the rewards of their aggression.

First-person shooting violent video games has been increasingly teaching adolescents that it is better to be aggressive and use violence as a means of solving problems. Myers (2008) asserts that, "By experience and by observing others, we learn that aggression pays off" (p.352). The social learning theory proposes that we learn social behavior by observing and imitating others and by being rewarded and punished. Albert Bandura believes in a social learning theory of aggression. He believes that we learn aggression not only by experiencing its payoffs but also by observing others. He believes that the consequences of other's actions play huge in our decisions to act similarly or differently.

When an adolescent is engaging in a first-person shooter game, the player is not allowed to move on to the next level until every enemy is shot and killed. A form of positive reinforcement for killing all enemies opposing your character in

the violent game is now being created. Adolescents are able to watch television and learn aggressive responses through viewing others on the TV. Aggressiveness is then experienced when engaging in first-person shooter games because of how close to reality a lot of these games have become. Experience is one of the greatest tools for learning and adolescents are gaining tremendous amounts of experience with real life violence in first-person shooter games so much that they are beginning to carry out this violence into the real-world in schools. Lynch et al, (2001) found that adolescents who are exposed to more video game violence are more involved with arguments with the teacher and physical fights with other students.

Summary and Implications of the Literature

The aforementioned literature shows today's youth are viewing an extreme amount of violent media. Among the most popular of this violent media are violent video games as stated by Roberts et al., (1999). After a meta-analysis conducted by Anderson and Bushman (2001), showed a sufficient amount of empirical evidence that exposure to violent video games increase adolescent aggressiveness, one can see how significant violent video games are detrimental to youth behavior. In addition, Anderson and Dill (2000) showed that specific types of violent video games (first-person shooter) are contributing to violence among youth in school environments with the evidence of school shootings in Kentucky, Arkansas, and Colorado. Anderson and Dill (2000) showed a direct link between the shooters of the Columbine Massacre and the first-person shooter video game, *Doom*. The literature reviewed in this chapter highlights how much of an impact violent video games have on adolescent behavior and how FPS games contribute to adolescent aggressiveness through the Social Learning Theory.

Methodology

This section addresses the methodology used to search for the literature reviewed for this conceptual paper, as well as the methodology for a future study.

Purpose of Inquiry and Inquiry Questions

The purpose of this conceptual paper is to review the literature on the effects of adolescent behavior when exposed to violent video games. The purpose of a future study will be to compare adolescent behavior when exposed to different first-person shooter video games. Research will address the following questions:

1. How does video game violence affect adolescent behavior?
2. What are the different types of first-person shooter video game?
3. Is there a change in adolescent behavior when exposed to different first-person shooter video games?

Literature Search Procedures

An extensive search in Research Port through the University of Maryland College Park Library system was used to find and analyze the literature. Research Port was used because it contains thousands of academic and peer-reviewed journals that would provide the greatest amount of validity and reliability for this conceptual paper. The two main databases used were Psych Info and Academic Search Premier because Research Port contains so many peer-reviewed journal articles. To narrow down the articles, Psychology based indexes (e.g. Psych info and academic search premier) were only used. The following terms were used to further narrow down the research: (violent media, computer games, video games, first-person shooter violent games) and (aggression, aggressive behavior, aggressiveness, General Aggression Model, violence, hostility, and school violence/behavior). Studies were used if they measured the effects of adolescent exposure to violent video games. Studies were also used if they contained information on the way in which adolescent aggression and first-person shooter games are related to the general aggression model (GAM)

To address the lack of research on the topic of first person shooter video games, a future study will consist of the following data collection and data sources.

Data Sources for Future Research

Participants

Similar research (Anderson & Bushman, 2001) found on video game literature consists of sample sizes 50-100 with ages less than or equal to 18 years of age. Age in a future study will be defined as 13-18. Fifty (30 males, 20 females) high school students from Baltimore County Public schools who have been suspended or expelled at least once because of behavioral issues will be targeted for participation. Research (Anderson & Bushman, 2001) shows that males show higher levels of aggression than females when exposed to violent video games, which justifies having more males than females in this study. The general aggression model is based on the assumption that aggression is a characteristic of the adolescent playing the game, and that video games increase that level of aggression. Therefore, the participants will have displayed levels of aggression because of their suspensions or expulsions from school.

Materials

Two first-person shooter violent video games compatible with the Microsoft XBOX360 game console will be used. There will be two different video game conditions (fantasy and reality) and each condition will contain one game. In the fantasy FPS game condition, adolescents will play Halo and adolescents in the reality FPS game condition will be playing Call of Duty 4: Modern Warfare.

Fantasy Game. Halo has been rated by gamestop (2008) as one of the top ten best first-person shooter games available. Introduced by Bungie Studios, Halo is a game series that is about a war among future people and a group of alien races

called the “The Covenant.” In addition to their war, each side is trying to protect themselves from a deadly virus called “the flood” (wikipedia, 2008). The main character, Master Chief, is a super-soldier teamed with the future people in the fight against “The Covenant”.

Reality Game. Call of Duty 4: Modern Warfare is unlike the previous Call of Duty games because the setting is in a more modern day in age. According to Activision (2007) “Armed with an arsenal of advanced and powerful modern day firepower, players are transported to treacherous hotspots around the globe to take on a rogue enemy group threatening the world. As both a U.S Marine and British S.A.S. soldier fighting through an unfolding story full of twists and turns, players use sophisticated technology, superior firepower and coordinated land and air strikes on a battlefield where speed, accuracy and communication are essential to victory” (Activision, 2007).

Aggression Questionnaire (AQ). Using a version of a scale of measured aggression from Garcia-Leon, Reyes, Vila, Perez, Robles, and Ramos (2002), participants will be asked to rate themselves using a Likert-type scale from 0-4, where 0 is never and 4 is always (see Appendix). According to Garcia et., al (2002), The AQ is a 29-item instrument designed to measure the different dimensions of the hostility/anger/aggression construct. It consists of 4 subscales that assess: (a) anger, (b) hostility, (c) verbal aggression, and (d) physical aggression” (p.45). Through three different studies, this questionnaire has proven to be both reliable and valid (Garcia-Leon et al., 2002)

Data Collection for Future Research

Procedure

Participants will be randomly assigned to one of the two game version conditions. Each participant will play the video game assigned to their specified video game condition in an average size classroom. The participants will come into the classroom individually during the times that each participant volunteer for in advance. Each participant will sit approximately 6 feet directly in front of the TV and the volume will be set at 20 while the lights remain on. Prior to any game play, each participant will be given a consent form and the experimenter will go over the consent form with participant. If participants choose to continue with the experiment, the experimenter will administer the first part of the aggression questionnaire to measure the participant’s aggression level prior to video game exposure. Upon completing the questionnaire, the experimenter will also give brief instructions on how to play the game and administer a chart that reviews where each button is located including the function for each of those buttons. Following completion of 20 minute play of the video game, participants will be given another part of the aggression questionnaire to measure how aggression changed once exposure to the FPS video game took place.

Strategies for Minimizing Bias and Error

In order to further enhance the validity and reliability of this conceptual paper, certain precautions will be used to minimize biases and errors

Strategies for this Inquiry

In this conceptual paper, the researcher minimizes bias and error by providing citations of different researchers and scholars that have provided insight in the field of violent video games and aggressive behavior. Throughout this conceptual paper, references were made to scholarly journals, dissertations, and reliable gaming web sites to provide factual information as opposed to opinion. When providing evidence for a relationship, direct quotes from credible scholars and authors are used with statistical evidence to further increase validity of the information and decrease the lack of error.

Strategies for Future Inquiry

In order to limit bias and error in a future study, the research will use the same techniques conducted in this conceptual paper when reviewing the literature. The researcher will follow other methodologies used in similar research by scholars and doctors to provide reliability and validity in a futures study.

Ethical Considerations

APA ethical guidelines will be followed in a future study. According to APA Ethical Principals (2003), “When obtaining informed consent as required in Standard 3.10, Informed Consent, psychologists inform participants about (1) the purpose of the research, expected duration, and procedures; (2) their right to decline to participate and to withdraw from the research once participation has begun; (3) the foreseeable consequences of declining or withdrawing; (4) reasonably foreseeable factors that may be expected to influence their willingness to participate such as potential risks, discomfort, or adverse effects; (5) any prospective research benefits; (6) limits of confidentiality; (7) incentives for participation; and (8) whom to contact for questions about the research and research participants’ rights. They provide opportunity for the prospective participants to ask questions and receive answers” (APA, 2003)

The researcher will follow all APA ethical considerations when conducting a future research study.

Findings, Conclusions, Recommendations for Future Research

This chapter reports the findings of this conceptual paper and makes conclusions on what was found throughout the review of video game literature. Recommendations for future research are also included in this chapter.

Findings

RESEARCH QUESTION 1:

How does video game violence affect adolescent behavior?

FINDING:

A meta-analytic study by Anderson & Bushman (2002) found that after 54 independent tests of the relationship between violent video games and aggression, including 4,262 participants, the average effect size was both positive and significant. Throughout Anderson & Bushman (2002) “r” is used to define correlation.

According to Heiman (2001), “The Pearson correlation coefficient is used to describe the linear relationship between two interval or ration variables. The statistical basis for r is that it compares how consistently each value of Y is paired with each value of X in a linear fashion” (p. 265).

In addition to the Pearson Correlation Coefficient, Anderson and Bushman (2002) also used effect size to describe relationships. According to Heiman (2001), “The effect size indicates how consistently differences in the dependent scores are caused by changes in the independent variable. The larger the effect size, the more consistent is the influence of the independent variable” (p. 421). The following were used in this meta-analytic study: Irwin and Gross (1995) conducted a study in measuring physical aggression (hitting, kicking, pinching, shoving, etc) between males who either played violent or non-violent video games. Results showed that the boys who played the violent video game exhibited more physical aggression toward their peers with an average effect size of .31. Bartholow and Anderson (2002) observed that college students playing a violent video game administered more than two and a half times as many high-intensity punishments than those that played a non-violent game. Calvert and Tan (1994) found that participants who played the aggressive game, Dactyl Nightmare, displayed significantly higher rates of aggression in comparison to participants that did not play. In addition to randomized experiments, cross-sectional surveys have also been conducted. For example, Anderson and Dill (2000) found that the correlation between violent video games and delinquent behavior resulted in being significant ($r = .46, p < .05$).

RESEARCH QUESTION 2:

What are the different types of first-person shooter video games?

FINDING:

After reviewing the literature, there was no evidence found on the different types of first-person shooter games. However, using the definitions of fantasy and reality as cited by Potter (1988), first-person shooter video games can be split into two groups: fantasy and reality.

RESEARCH QUESTION 3:

How does exposure to different FPS video games affect behavior in adolescents?

FINDING:

Though there is inconclusive evidence to answer the research question, using the research conducted by Potter (1988) and Anderson and Bushman (2001), one can make certain predictions. Anderson and Bushman (2001) showed there is a positive correlation between video game violence and aggression which includes first-person shooter violent video games. In general, perceived reality research has suggested that more realistic content can lead to larger emotional or behavioral effects (Potter, 1988). Using Anderson and Bushman (2001) and Potter (1988), research shows that adolescents exposed to reality first-person shooter games will show higher aggressiveness than adolescents exposed to fantasy based first-person shooter video games.

Conclusions

First, today's youth are bombarded everyday with new violent media. Anderson et. al (2003) provide empirical data that reports violent media has negative effects on adolescent behavior. It is important to consider research on violent media when reviewing video game literature because research has shown that the two can be linked when measuring the effects of adolescent aggressiveness (Anderson et. al, 2003). Current research has also provided tremendous empirical data to prove that violent video game exposure leads to aggressive behavior in adolescents (Anderson & Bushman, 2001). A meta-analytic study conducted approximately 50 independent tests on about 4,000 participants and found a positive and significant relationship between violent video games and aggressive behavior.

After reviewing similar research on video game literature and school shootings, research has shown that the shooters of massacre that took place in Columbine were heavy players of the first-person shooter video game, Doom, and many of the techniques used on the day of the killings were similar to the actual game (Anderson & Dill, 2000). School violence is in relation to adolescent aggressiveness, for aggression is a direct cause of much of the arguments, altercations, and physical fights of adolescents that take place in a school setting (Lynch et al, 2001). School violence, aggression, and video game violence are all interrelated for video game violence affects aggression, and aggression is related to school violence. Therefore, violent video games have an extremely important impact on the effects of adolescent behavior and consequentially school violence.

Second, limited to no research was found on the different types of first-person shooter video games and the effects they have on adolescent behavior. However, research on reality and fantasy has contributed to the notion that in the genre of first-person shooter video games, two types of games exist: fantasy and reality. Based on the conceptual review of literature conducted by Potter (1988), people have shown to exhibit more emotional and behavioral problems after exposure to

reality forms of media. Potter's conceptual review, has led the researcher to the belief that reality based first-person shooter games will cause adolescents to display more aggression than fantasy based first-person shooter games.

Recommendations for Future Research

After critically reviewing the literature on video game violence, there is need to further research the area of first-person shooter video games. Since there was no research on the different types of FPS video games, in a future research study the different types of FPS video games need to be explored. After studying what the different types of FPS video games are, a future study can then measure the different effects that different types of FPS games have on adolescent behavior. To address the major disparity in gender throughout the literature, future research needs to focus more attention on the effects video game violence has on females. Once more research is available to female behavior after being exposed to video games, better comparisons can be made between the two genders. Because the General Aggression Model is key in understanding video game literature, future research needs to follow this model more. The GAM is based on the premise that adolescents who play violent video games hold aggressive characteristics; future research can look at naturally aggressive adolescents (i.e. adolescents with ADHD or juvenile delinquent history). Many factors can contribute to the aggression that is learned through playing violent video games, and lots of future research can address these different factors.

References

- Activision, Inc. (2007). *Call of Duty 4: Modern Warfare* [Video Game]. Santa Monica, CA: Activision Publishing, Inc.
- Anderson, C. A., Berkowitz, L., Donnerstein, E., Huesmann, L. R., Johnson, J. D., Linz, D., Malamuth, N. M., & Wartella, E. (2003). The influence of media violence on youth. *American Psychological Society*, 4(3), 81-110
- Anderson, C.A., & Dill, K.E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology*, 78, 772-790
- American Psychological Association (2003). Retrieved July 7, 2008 from <http://www.apa.org>
- Barlett, C., Harris, R., & Baldassaro, R. (2007). Longer you play, the more hostile you feel: examination of first person shooter video games and aggression during video game play. *Aggressive Behavior* 33, 486-497
- Bartholow, B.D., & Anderson, C.A. (2002). Effects of violent video games on aggressive behavior: Potential sex differences. *Journal of Experimental Social Psychology*, 38, 283-290
- Buchman, D.D., & Funk, J.B. (1996). Video and computer games in the '90s: Children's time commitment and game preference. *Children Today*, 24, 12-16
- Calvert, S.L. & Tan, S. (1994). Impact of virtual reality on young adults' physiological arousal and aggressive thoughts: Interaction versus observation. *Journal of Psychology & Human Sexuality*, 4, 55-70
- Carll, E. (2007). Violent video games: Rehearsing aggression. *Chronicle of Higher Education*, 53(45), B12-55
- Children Now. (2001). *Fair play? Violence, gender and race in video games*. Los Angeles: Author
- Cicchirillo, V. & Chory-Assad, R. (2005). Effects of affective orientation and video game play on aggressive thoughts and behaviors. *Journal of Broadcasting & Electronic Media*, 49(4), 435-449
- Gamestop (2008). Retrieved June 9, 2008 from <http://www.gamestop.com>
- Garcia-Leon, A., Reyes, G.A., Vila, J., Perez, N., Robles, H., & Ramos, M.M. (2002). The aggression questionnaire: A validation study in student samples. *The Spanish Journal of Psychology*, 5(1), 45-53.
- Huston, A.C., & Wright, J.C. (1997). Mass media and children's development. In I.E. Siegal & K.A. Renninger (Eds.), *Handbook of child psychology: Vol 4. Child psychology in practice* (5th ed., pp. 999-1058). New York: John Wiley & Sons.
- Irwin, A.R., & Gross, A.M. (1995). Cognitive tempo, violent video games, and aggressive behavior in young boys. *Journal of Family Violence*, 10, 337-350
- Lynch, P., Gentile, D., Olson, A., & Brederode, T. (2001). The effects of violent video game habits on adolescent aggressive attitudes and behaviors. *Violent Video Games*

- Mendelson, A.L., Papacharissi, Z. (2007). Reality vs. fiction: how defined realness affects cognitive & emotional responses to photographs. *Visual Communication Quarterly* 14(1), 231-243
- Myers, D. (2008). *Social psychology*. New York: McGraw-Hill
- Pooley, E. (1999), May 10). Portrait of a deadly bond. *Time*, 26-32.
- Potter, J.W. (1988). Perceived reality in television effects research. *Journal of Broadcasting & Electronic Media* 32(1), 23-41
- Rideout, V.G., Foehr, U.G., Roberts, D.F., & Brodie, M. (1999) *Kids & media @ the new millennium: executive summary*. Menlo Park, CA: Kaiser Family Foundations
- Roberts, D.F., Foehr, U.G., Rideout, V.J., & Vrodie, M. (1999). *Kids & media @ the new millennium*. Menlow Park, CA: Kaiser Family Foundation
- Schneider, E.F., Lang, A., Shin, M., Bradley, S.D. (2004). Death with a story; How story impacts emotional, motivational, and physiological responses to first-person shooter video games. *Human Communication Resources* 30, 361-375
- Smith, S.L., Lachlan, K., & Tamborini, R. (2003). Popular video games: quantifying the presentation of violence and its context. *Journal of Broadcasting & Electronic Media*, 47(1), 58-76
- Tamborini, R., Eastin, M., Skaliski, P., Lachlan, K., Fediuk, T., & Brady, R. (2004). Violent virtual video games and hostile thoughts. *Journal of Broadcasting & Electronic Media* 48(3), 335-357
- The University of Florida Graduate School Services: Thesis and Dissertations (2005). Retrieved July 8, 2008 from <http://www.coe.ufl.edu/web/?pid=86>
- Wikipedia (2007). Retrieved June 9, 2008 from <http://www.wikipedia.com>