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Video Game Violence and the Effects on Children:  
A Review of the Literature

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## INTRODUCTION

Since the 1970's video games have become an important part of many young children's lives. Video games have evolved over time from non-violent games like Pong and Super Mario Brothers to extremely graphic games such as Grand Theft Auto (which sold over two million dollars in its first five days of release) and Doom. The era of video game progression can be divided into three distinct phases. From 1977 to 1985 the Atari Era ruled. The violence was minimal and when a player defeated their opponent, they usually disappeared. From 1985 to 1995, the Nintendo era overtook and brought with it much more violent and graphic games. Games such as Mortal Combat and Street Fighter emerged. With these was more graphic violence such as ripping the head off of your opponent or blood gushing from their chest. The third era that still reigns today is the Sony Playstation Era. Today's games feature far more graphic and realistic violence. Added to this is more realistic audio that enables a player to become more absorbed in the game.

According to Comstock and Scharrer, 79 percent of video games have violence as their central theme. They found that 59 percent of games rated for children or for all audiences exhibited violent acts. In games that were rated E for everyone, 60 percent required intentionally hurting someone to progress. (2007). Much research has been done on the possible negative effects of video games and the effects on children's behaviors. Extensive research has been done on the role of observational learning in children. Observational learning happens when the subject observes the model's behavior and subsequently learns and copies this behavior. (Fleming and Rickwood, 1995). This paper looks at the research done involving video game violence and its effects on children.

## LITERATURE REVIEW

### *Types of Violent Video Games*

There are two main ways in which a player can play a video game: first person and third person perspectives. In first person shooter: multi-tiered environment (FPS-MTE) the player views the game through the eyes of the character they're using. Essentially it's as if the player is looking down the barrel of a gun. Typically these games are geared towards escaping from multiple levels. As you complete each level, a new one appears complete with new enemies.

Another first person shooter option is the rail (FPS-R). In these types of games, the character moves through the game as if tied to a rail. The game, not the player dictates where the character will go. The motto of these types of games is kill or be killed. A player uses a gun to line up their shot of their enemy. The presence of the gun adds a level of realism.

Lastly, there is third person shooting and fighting (TPSF). In these types of games, the player sees the whole virtual character and has the vantage point from above, behind, or to the side of the character they are playing. In these types of games, the player can choose their character, modifying their appearance, clothing, and ability level. (Kirsh, 2006).

### *Bandura's Social Cognitive Theory*

Alfred Bandura was the pioneer in social cognitive theory. He believed that behavior was learned. That people imitate what they see, also know as observational learning. Most human behavior is learned through example, either intentionally or accidentally--by observing others and patterning their behavior after what they see.

(Bandura, 1977). Through the modeling process, a person can acquire behaviors never before performed or exhibited. In Bandura's well-known Bobo doll study, the modeling process is demonstrated.

In this study, pre-school children watched an adult act aggressively towards an inflatable Bobo the clown doll. The adult hit, kicked, and sat on the doll, all the while yelling "Sockaroo!" When the children were let into the room, they immediately began imitating the adult. They hit and kicked the doll while yelling aggressive phrases. This study was important because the children changed their behavior without first being rewarded for it. In another experiment two young adults, Rocky and Johnny were portrayed in a film. In one version, Rocky successfully takes away Johnny's toys and is then rewarded with cookies and soda. In a second version, Johnny is able to keep hold of his toy and Rocky is then punished for the bad behavior. The first film showed an increase in aggressive behavior that mimicked Rocky's actions.

Bandura believed that children witness the behavior and see the reinforcements given, almost working vicariously through the model. If the model is rewarded for bad behavior, the child feels that they too will be rewarded for the same behavior and thus will imitate the observed actions. If the child sees the model being punished, they are less likely to replicate the same behavior. (Bandura, 1977).

Bandura determined that there were four steps to this modeling process. The first is attention. A person must be paying attention to the action to learn the behavior. Next a person must be able to retain the information they have witnessed if they wish to model the behavior. Third, a person must have the ability to reproduce the actions they observe. Finally, a person must have the motivation or incentive to reproduce the observed action.

(Schultz & Schultz, 1998). Bandura's theory gives compelling evidence that behavior is learned and children are more susceptible to these visual cues.

### *Social Informational Processing Theory*

In 1998, Huesmann developed an information-processing model that showed how aggression is developed and upheld over time. The model centers around scripts, which are mental models stored in the memory that are then used to guide one's behavior. A script includes information on what events are likely to occur, how one should respond to these events, and what is the expected consequence of these behaviors. Scripts can be acquired through personal experience, or through exposure to the media. Huesmann posits that a child's early learning experiences play a vital role in the cultivation of their scripts. Thus if a child is over-saturated with violent media, they are more likely to develop scripts that approve of aggression as a way of handling situations. They are also less likely to perceive the real consequences of violent actions. This is critical information. If many children begin playing violent video games at very young ages, physically aggressive scripts may be hard-wired into the brains.

### *General Aggression Model*

The general aggression model was created combine key ideas from earlier models: Bandura's social learning theory, Berkowitz's cognitive neoassociationist model, Dodge and Crick's social information-processing model, Geen's affective aggression model, Huesmann's script theory, and Zillmann's excitation transfer model. (Anderson, Gentile, and Buckley, 2007). According to, Gentile, Linder, and Walsh, the General Aggression Model (GAM), attempts to explain the relationships between violent media exposure and aggressive behaviors and attitudes. The model shows a "multi-stage process

by which personological (e.g., aggressive personality) and situational (e.g., video game play and provocation) input variables lead to aggressive behavior by influencing several related internal states and the outcomes of automatic and controlled appraisal (or decision) processes” (Anderson and Dill, 2001, p. 773). The GAM can be used to try to explain aggressive behavior in children after playing violent video games.

Short-term effects of exposure to violent media are predicted by GAM to include aggressive thoughts, behaviors, and actions. Irwin and Gross studied second graders who played either a martial arts game or a racing game. They showed that the children who had played the martial arts games were more aggressive in their free play than those who had played the racing game. They noticed that after playing the games, the children were seen to be copying the moves and actions of the characters in the game. Their study showed that playing violent video games led to an immediate rise in aggressive behaviors in younger children. (1995).

GAM suggests that over time, aggressive-related knowledge structures will increase. These include the hostile attribution bias (a person views an ambiguous or benign action as aggressive), aggressive behaviors towards others, expectations that others will act aggressively towards them, beliefs that the use of violence is acceptable, and the belief that violence is an appropriate method of action. GAM also states that repeated exposure to violent media can desensitize a person to actual real life violence. (Gentile, Linder, & Walsh, 2003).

In a meta-analytical review, Anderson & Bushman reported that their findings were consistent with the GAM theory. Repeated exposure to violent video games is positively associated with increased levels of aggression in children and young adults.

There is also a negative correlation with prosocial behavior. Exposure is also positively linked to physiological arousal (increased heart rate and blood pressure). (2001). The General Aggression Model takes into account that there are several contributing factors to increased aggressive tendencies.

### *Hostile Attribution Bias*

Some researchers believe that aggressive children act aggressively due, in part, to a hostile attribution bias. (Kirsh, 1997; Lynch, Gentile, Olson & Brederode, 2001; Gentile, Linder & Walsh, 2003). The hostile attribution bias states that when someone is confronted with a frustrating stimulus (e.g., having your hair pulled), the bias causes aggressive children to view this as an aggressive act and in response they act aggressively in return. It is then possible, that violent video games may cause children to experience increased aggression after playing violent video games.

Kirsh looked into this with his research. He took a group of third and fourth grade students and had them play *Mortal Combat*, a violent video game, or *NBA Jam*, a non-violent game. After playing for fifteen minutes, the children were asked a series of ambiguous questions. They were then asked a series of questions about the character's intent, the actions that followed, whether or not the character should be punished, and if so how much. The children that played the violent video game were more likely to respond in a negative way than those who played the non-violent game. This led him to believe that violent video games may have a role in short-term hostile attribution bias. (1997).

Lynch, Gentile, Olson, & Brederode found that hostile attribution was considerably linked to three measures of violent matter: the amount of violent media

adolescents like to have in video games, whether they like more or less violence than compared to two years ago, and the amount of video game violence they expose themselves to. They discovered that those who preferred violent video games were more likely to have hostile tendencies. They also confirmed their hypothesis that those who had more exposure to violent content were more likely to act out aggressively, get into physical fights, and get into arguments with their teachers more frequently. (2003).

In a longitudinal study done by Gentile, Linder & Walsh, it was found that children, who were exposed to extensive media violence early on and throughout the school year, were more verbally aggressive, relationally aggressive, and physically aggressive. These children were more likely to have a hostile attribution bias and to be less prosocial later in the year. Thus it was concluded that violent media exposure was a contributing factor for aggressive attitudes and behaviors. (2003).

This theory is important in the study of the effects of violent video games and children. According to Bandura, the more repetition that takes place, the more the aggressive habits are learned. (1973).

### *Aggression*

Aggression can surface in different ways. Physical aggression entails causing harm by direct physical means. This can include hitting, kicking, pushing, or shooting. Verbal aggression involves causing harm by verbal means such as name-calling, or the use of written words such as notes or emails. Relational aggression includes behaviors that hurt others through harm to the relationships or feelings of others. This can include gossip, spreading rumors, or the exclusion of one's peers. Boys are more likely to use a direct form of aggression such as hitting or kicking. Girls are more likely to use indirect

forms such as gossip or use of social manipulation as a means of attack. Both are equally likely to use verbal aggression as a form of attack. (Anderson, Gentile, Buckley, 2007). There are numerous studies that have linked violent video games to aggressive behaviors in children. (e.g., Fleming & Rickwood, 1995; Sherry, 2001; Gentile, Linder & Walsh, 2003; Uhlmann & Swanson, 2003). In violent video games, children are active participants, often times acting as the aggressor. In order for them to move forward in the game, they must perform violent acts to ‘win’. For example, in the game 50 Cent Bash, players must shoot, beat up, and kill their enemies to ‘save’ their friends. The Xbox cheat sheet actually states:

“When there are two or three enemies left, take one hostage to absorb oncoming fire and cap the others. When your meat shield is the last enemy on the roof, press your barrel to his dome and you know what to do.” (2008).

The child acts as the hero, while performing violent acts, and then is rewarded for these actions. (Fleming and Rickwood, 1995).

Many times children will pick characters with either characteristics that they already have or characters that possess qualities that they do not have but wished they did “real heroes”. Children identify and want to imitate these characters. In this wishful identification, a player wishes to emulate a character. Often times these “heroes” are portrayed as tough, aggressive men that they can look up to. Identifying with these “heroes” may cause players to feel more independent and mature.

Konijn and Bijvank make the distinction between similarity identification and wishful identification. In similarity identification, the player picks and identifies with a character because they share some characteristic with them. This can also be measured by

a “liking” of a character. In wishful identification, a player wishes to be more like the character they choose. Wishful identification provides the player with a “what if” scenario. (2007). This can be a powerful predictor of future behavior because children that wish to identify with violent heroes may be more likely than others to emulate aggressive behavior. It has been shown that video games, more so than passively watching television may be linked to effectively creating aggressive knowledge structures or schemas. Konijn, Bijvank, and Bushman discovered this in a study done that links video game playing with aggressive behaviors. (2007).

In this study participants were selected to play a violent or non-violent game for 20 minutes. After that they were told they would play against a “partner” to see who could press a button the fastest. The loser would receive a blast of noise through a pair of headphones. The winner was able to determine the intensity and duration of noise their partner was to receive. In the first trial tested a player’s unprovoked level of aggression (The partner had not delivered any noise to the player yet). Subsequently, the aggression was based on what they perceived their partner to have inflicted upon them (tit-for tat).

They found that those who had played violent video games were more likely to “blast” their opponents louder and longer, sometimes to the point of perceived deafness. During debriefing, one participant stated, “I blasted him with a Level 10 noise because he deserved it. I know he can get hearing damage, but I don’t care!” Another participant said, “I like Grand Theft Auto a lot because you can shoot at people and drive fast in cars. When I am older I can do such things too. I would love to do all these things right now!” Such statements led to the determination that wishfully identifying with aggressive characters can in turn make children act more violently in real world situations. (2007).

Gentile, Lynch, Linder, & Walsh did find that aggression was positively linked to three measures of violent matter: the amount of violence adolescents liked in their video games, whether they liked more or less than in the past, and how much video game violence they exposed themselves to. They confirmed that exposure to video game violence was positively correlated to aggressive tendencies such as physical fights and verbal altercations with teachers. Those who play these types of games more often are more likely to get into trouble.

Other factors can contribute to the level of aggressive actions. Level of exposure, realism of the game, first person point of view versus third person point of view, as well as type of video game played. (Human or fantasy versus sports games). Through frequent play, more elaborate schemas are formed. Sherry posits that extended play may actually cause arousal effects and aggression to drop. This can be attributed to such things as fatigue, loss of interest, or desensitization to the violence one is seeing. (2001).

The more graphic and explicit the game, the more children perceive it as violent. Some games allow players to choose to turn off the blood and gore effects. While playing the same game, children are more immersed in the game when the blood is turned on. They may also see the blood as a 'reward' for completing the task at hand. When a player is using the first person perspective, it is as if they are seeing the game through the eyes of their character. This may enable them to more fully immerse themselves into the game and become less aware of their actual surroundings. (Farrar, Krcmar, Nowak 2006).

Fantasy and human-violence games have been linked to more aggressive reactions. This can possibly be because there is more arousal during these types of games,

or perhaps because they are more graphic and realistic. Players are more easily able to identify with their character, thus more fully immersing themselves into the game. There are many factors that can be attributed to the increased aggressive tendencies in children. No one individual component is responsible for the effects of video game violence.

### *Desensitization*

Desensitization can be defined as diminished psychological or emotional responsiveness to a stimulus after repeated exposure. (Bartholow, Bushman & Sestir, 2005). Most people have a natural aversion to violence and blood and gore. Some have to overcome their natural aversions to be successful at their jobs. Soldiers must overcome their distaste for shooting a weapon, killing their enemy and seeing gross acts of violence. If they didn't they would not survive in times of war. The exposure of video game violence may cause children to be immune to real world violence.

Media violence can initially produce feelings of disgust and fear, while extended exposure can dull these effects. The research provided by Bartholow, Bushman, and Sestir showed evidence that repeated exposure to violent media correlated to "blunted evaluative categorization of violent stimulus" in the brain. (2005). They summarized that extensive exposure to violent video games, not just the playing of, has lasting negative effects on brain function and behavior in participants. ). The U.S. Department of Health and Human Services has stated that the effects of violent media exposure at an early age and its correlation to future violent behavior has been shown to be greater than the effects of low IQ, abusive parents, and being from a broken home. (2001).

According to Fleming and Rickwood, children who do not play video games, may become more aroused than those who are used to them and thus desensitized to their

effects. They also posit that those children that are repeatedly exposed to video game violence may become desensitized to observed violence and more aggressive through observed learning patterns. (1995).

GAM is linked to desensitization and a person's willingness to help a perceived victim. Latane and Darley were prompted to research this after the 1964 murder of Kitty Genovese in New York. Reports showed that several witnesses watched for over 30 minutes while Genovese was assaulted before anyone called the police. The study discovered several factors had to occur before someone would intervene. First a person must be paying attention to notice an act of violence. Desensitization could reduce a person's awareness of a violent crime occurring. Secondly, a person must actually perceive what is being seen as a violent crime. Desensitization can diminish a person's perception of the seriousness of an event. Third, a person must be motivated to act upon what they see. Desensitization can increase a person's feelings that what is occurring is normal, and decrease a person's feelings of distaste for violence, thereby decreasing a person's feelings of responsibility to act.

It has been found that video game violence can cause desensitization to real-life violence. Subjects that played violent video games were less aroused physically by real-life violence than non-violent video game players. (Carnegiey, Anderson, & Bushman, 2006). In Comstock and Scharrer's book, an example of this was given. Third and fourth graders were chosen to watch either a violent or non-violent video. Afterwards the children were asked to watch on a television monitor another group of kid's playing. If the kid's got out of control, they were told to push a button to call the adults in to help. When the children got aggressive and began tearing apart the room, those who had

watched the violent film were slower to call for help. (2007). Desensitization is a very real and serious effect of any type of violence in our society.

### *Gender*

Theorists all agree that “gender is a lens through which children view the world”. (Fleming & Rickwood 2001). There are vast differences in video game playing between the sexes. Video games are regarded as more of an activity that boys enjoy. They are estimated to play approximately 1.5 hours a day, while girls play for only about 40 minutes each day. Boys also gain more social approval for playing “fighting games”. They tend to play more aggressive and violent video games. Girls tend to perceive acts of violence as more aggressive. They are more likely to play non-violent games such as Animal Crossing or puzzle type games. Males report more feelings of dominance, which can be linked to the likeliness that they will act out aggressively after playing violent video games. It is reported that 80% of video game play occurs between 9 and 15 year old boys. This can be attributed to a male preference for violent video games. (Farrar, Krcmar, Nowak 2006).

Fleming and Rickwood found that girls were more likely to act aggressively after playing violent video games than boys. They suggest that it could be because girls are not as used to playing these types of games and thus are more sensitive in their reactions. Boys were thought to be more desensitized to the content of the video games. Boys also reported less arousal than girls, which can again be linked to a desensitizing effect. It was also suggested that boys and girls act on their aggressive feelings differently. Boys tend to be more physical while girls are more verbal. (2001). Overall there was not a huge

difference in the sex's responses. Both male and female actions had aggressive tendencies.

There is also gender bias in video games. In a 1992 search done by Provenzo, the covers of the 47 most popular video games available on Nintendo portrayed 115 male and 9 female characters. This is a ratio of nearly 13 to 1. Twenty of the males have a dominant pose, while none of the females do. Three females are submissive; being kidnapped, carried off, or hiding behind a man. Thirteen of the games have scenarios with women kidnapped or having to be rescued as part of the game. Some games include the rescue of men, but not by a woman.

#### *Age-Related Developmental Changes*

Age can play a part in the effects of video game stimulus. Wallenius, Punamaki, and Rimpella found that aggression peaks during adolescence, typically between the ages of 13 and 15 years of age. This can be attributed to biological changes occurring in their bodies. Changes in the relationships with their peers and adult figures, as well as increasing challenges in school and life may also be attributed to increased aggressive tendencies. It has been suggested that violent media may affect their brain processes. Repeated exposure to violent video games may have harmful effects on the brain, which can result in large numbers of aggressive scripts being stored in the memory.

Around the ages of 11 and 12, the grey matter in children's brain undergoes important changes. The neural connections that are not being used are discarded, while those that are being used become stronger. If adolescents spend much of their time seeking out violent media, the connections that predict aggressive behavior become hard-wired into the brain. (2006). Although there has not been a lot of research done on this

topic, it poses very serious concerns about the detrimental effects of violent video game usage.

Wallenius, Punamaki, and Rimpella provide evidence that repeated exposure to violent video games can increase direct and indirect aggression. Their findings show that younger children, boys in particular, are more susceptible to acquiring aggressive cognitive models than adolescents. In male adolescents with above average levels of social intelligence, it was found that they had increased levels of indirect aggression after playing violent video games. They suggest that boys with more highly developed social intelligence are able to use more socially acceptable ways to express indirect aggression. This supported their hypothesis that indirect aggression was more likely to occur in adolescents than in younger children.

The most compelling links found between video game violence and direct aggression was among the 10 year old boys tested. This can be due in part to the fact that children are less able to handle violent video games both emotionally and cognitively. It was suggested that parental involvement was needed to provide positive models and an explanation for the violent experiences witnessed. (2006). The link between video games and aggression is multifaceted and the effects of such games can be affected by age.

### *School Performance*

When children are spending large portions of time playing video games, they are not spending that time on their schoolwork. It has been shown that there is a negative correlation between the time spent playing video games and student's performance in school. Gentile, Lynch, Linder, and Walsh stated that it was shown that high school students who said they spent large amounts of time or money on video games,

in turn did poorly in subjects such as English. Children are also more likely to exhibit aggressive and/or antisocial behavior at school. Children that use video games as a way of releasing anger and hostility, are more likely to have a hostile attribution bias, get into arguments with their peers and teachers, and are more likely to get into physical fights. According to Chambers and Ascione, children's prosocial behavior (behavior that benefits someone else at some cost to the giver), can be changed in several ways.

It can be strengthened by modeling, repetition, and reinforcement. It can also be decreased by seeing an aggressive model, by competitive games or by punishment. The subjects were tested by exposing them to no video game, a prosocial video game, and an aggressive video game. Their work showed that these different types of games produced different short-term effects in the children. (2001).

Children with higher levels of hostility tend to be attracted to violent games and not the other way around. Exposure to video-game violence could positively correlated with trait hostility Video game violence does seem to be positively related to aggressive behaviors, especially with physical fights. The question arises, "Are young adolescents more hostile and aggressive because they expose themselves to media violence, or do previously hostile adolescents prefer violent media?" "There are many factors that can contribute to a child's performance in school. Without careful moderation, video games can cause lasting harm to a child's educational experience.

## SUMMARY

The topic of video game violence is multi-faceted and complex. Although research is available, it is not as bountiful as it is for other forms of media. Video games have only been around for about 30 years. In those 30 years the industry has evolved greatly. Gone are the days of Pong, we now have unbelievably graphic and realistic mock-killing games. There are many interesting theories about the effects violent video games have on children.

Bandura's theory states that behavior is learned by observing others and patterning your actions to mimic others. Through this process of modeling, one must notice the action taking place, retain that information for later use, replicate the observed behavior, and have some type of motivation for doing so. In the social informational process theory, one collects scripts or mental models that guide a person's behavior. These can be shaped by first hand experience or from observed behaviors. The general aggression model attempts to explain the correlation between violent media exposure and aggressive tendencies. Short-term effects include aggressive thoughts, behaviors, and actions. Long-term effects can lead to the hostile attribution bias. The hostile attribution bias shows that when confronted with an ambiguous event, an aggressive person will more likely perceive the event as an attack and will retaliate in return.

Research has shown that violent video games can bring upon aggressive tendencies. These can be in the shape of physical, verbal, or relational attacks. Many games require the player to injure, maim, or kill their opponent in order to move on. This can cause the development of more aggressive mental models. This may also be attributed to the desensitization of the player. After repeated exposure to graphic material,

a person, especially children, can become immune to real life violence. This is noted in the slower reaction times of children and adults who perceive violence.

Gender and age also play a role in the effects of video game violence. Boys are more likely to play violent games and therefore can have more long-term effects. Girls, on the other hand, may have more short-term effects because they are not as used to playing violent video games. The age of the player is important as well. Younger children tend to be more easily influenced by what they see, perhaps because their models of behavior are not yet cemented in. It can also be said that playing violent video games may potentially cause more aggressive behaviors within our school systems. This can possibly be because children are desensitized from actual right and wrong behavior.

Video game violence is a very important issue. This new digital age is not going to go away. Parents and educators need to be aware of types of games out there, what games their kids are playing, and the possible effects of playing such graphic games.

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