TELEVISION AND VIDEO GAME VIOLENCE: AGE DIFFERENCES AND THE COMBINED EFFECTS OF PASSIVE AND INTERACTIVE VIOLENT MEDIA

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ABSTRACT

The present research examined the combined effects of violent video games and violent TV programs on third and sixth-grade boys' thoughts and behavior. In individual sessions, demographic information about the children's television viewing and video game playing habits was collected. Participants were exposed to one of six following media conditions for 15 minutes; a) watch a violent (wrestling) or a non-violent video segment (basketball), b) play a violent or a non-violent game, or c) watch a violent or non-violent video segment and then play a video game containing the same characters and content.

The potential for violent media to prime aggression was examined by utilizing two cognitive (word-stem completion task and normative beliefs about aggression questionnaire) and one behavioral measure (Bobo doll interaction). Exposure to violent media was expected to lead to increased aggressive thoughts and behaviors in both younger and older children. Younger children were expected to be more strongly influenced by violent media than older children. However, older boys were expected to demonstrate greater priming on the word-completion task. Finally, consistent with Huesmann's (1986) social developmental theory, the combination of violent video games and violent television content was expected influence children more strongly than either video games or television alone.

Key findings of the present research were as follows: 1) Children exposed to violent media content endorsed higher levels of aggressive behavior than did children exposed to non-violent content. 2) Children exposed to violence in the combined media condition endorsed significantly higher levels of aggressive behavior than did those in

the non-violent media condition. 3) Sixth-grade boys endorsed higher levels of aggressive behavior and produced more aggressive words on the word-stem completion task than did third-grade boys. 4) Third-grade boys were more aggressive toward the Bobo doll than were sixth-grade boys.

CHAPTER 1. INTRODUCTION

Children in the United States are exposed to a great deal of media violence. On average, 70% of prime-time television programs and 93% of children's programs contain violence (Gerbner, Gross, Morgan & Signorielli, 1994). Furthermore, prime-time programs averaged approximately five violent acts per hour, while programs aimed at children averaged 23 violent acts per hour between 1973-1995 (Gerbner, et al., 1994). The authors defined violence as acts that threaten to hurt or kill people. Neilson ratings indicate that children 2 to 17 years old spend approximately 20 hours per week watching television (Neilson Research Media, 1997).

Adding to children's exposure to violent media are video games. Video game play is a common form of leisure activity for children in the U.S., particularly for boys. Funk, Germann, and Buchman (1997) found that most children report spending at least two hours per week playing video games. In their study, the average amount of time boys spent playing video games peaked at 9.5 hrs per week in fourth grade. Video game play decreased from fifth grade on, declining to an average of five hours of play per week by eighth grade. Compared to boys, girls spent half as much time playing video games. Much of video game content is violent in nature (Braun & Giroux, 1989; Funk, 1993; Funk &, Buchman 1996; Provenzo, 1991). Violent games are popular across all grades (fourth through eighth), but boys are more likely than girls to list violent games as their favorite (Funk, et al., 1997).

Many children in the U.S. spend a significant amount of time in front of television and video games, and much of the content is violent in nature. Many researchers have examined the relation between exposure to violent media and

aggressive behavior. How does all of this exposure to violence on television and in video games affect children's thought about aggressive acts and their behavior in social situations that provide an opportunity to aggress against another? With this question in mind, I will first examine the research conducted on the effects of television/movie violence on thoughts and behavior. Next, I will summarize the major empirical findings on the relation between playing violent video games and aggressive behavior. Third, I will discuss the phenomenon of linkages between violent video games and television (e.g. popular video games based on movies or television programs, and vice versa) and their potentially combined effects on aggression. Fourth, I will review some theoretical perspectives of the link between exposure to media violence and aggressive thoughts and behaviors, including how age might factor into an individual's vulnerability to media violence. Finally, I will describe the specific hypotheses that were addressed in the present research.

Television and Violence

Is there a link between viewing televised violence and aggressive behavior? Homicide rates in the United States and Canada doubled between 1957 and 1974, coinciding with the introduction and spread of television (Centerwall, 1989). In addition, census regions late in acquiring television showed correspondingly later jumps in homicide rates. A similar pattern of events ensued in 1975, when white South Africans were introduced to television (Centerwall, 1989, 1992).

As early as 1972, an investigation by the U.S Surgeon General (1972) concluded that a significant correlation between viewing violence and aggressive behavior exists. Later, a study conducted by the National Institute of Mental Health (1982) supported

and extended the findings of the Surgeon General. Specifically, the NIMH study revealed that heavy exposure to media violence contributes to increased aggression in children, as well as to fears of becoming a victim and exaggerated perceptions of how much aggression and crime occur in the world. After much debate, in 1992, the American Psychological Association (APA) established a commission on youth and violence. The APA commission reviewed hundreds of studies spanning several decades and came to essentially the same conclusion that the NIMH had reached; mainly, that heavy exposure to media violence is correlated with increased aggressive behavior and increased acceptance of aggressive attitudes (APA, 1993). The APA also suggested that television violence affects an individual's attitudes in two ways. First, exposure to television violence might lead to emotional desensitization to real world aggression and its victims. Second, exposure to media violence might also lead to unrealistic fears and beliefs about becoming a victim of violence. Finally, Paik and Comstock (1994) conducted a meta-analysis of 217 studies conducted over the past thirty years on media violence and aggression. They concluded that the association between television violence and antisocial and aggressive behavior is extremely robust. In addition, Paik and Comstock conclude that "the data of the past decade and a half strengthens rather than weakens the case that television violence increases aggressive and antisocial behavior" (p. 54).

In sum, the preponderance of research reveals that exposure to violent television is related to aggressive thoughts and behaviors on the part of the viewer. Specific studies that demonstrate the role of television violence in aggressive behavior are reviewed later, in the context of theories on this topic. Given the strong relation between

exposure to violent television and aggression, what can be said about the relation between video games and aggression? It seems likely that violent video games would have detrimental effects similar to those of television.

Video Games and Violence

There is a strong consensus among researchers that viewing violent television programs leads to increased aggression. The same might soon be said of violent video games. Researchers have examined the effects of violent video games using a wide variety of dependent measures (e.g., self-report, observation, projective tests, etc.), types of violent video game content (e.g., shooting, karate, etc.), and ages of players (young children, teens, and adults). A preponderance of the evidence supports the conclusion that playing violent video games leads to increased aggression.

Children

The negative effects of violent video games are most obvious for younger (4 to 10-year-olds) children. The majority of experimental studies show that younger children do become more aggressive (e.g. hostile thoughts, negative affect, physical contact intended to harm) after playing or watching violent video games (Cooper & Mackie, 1986; Irwin & Gross, 1995; Schutte et al., 1988; Silvern & Williamson, 1987). For example, Irwin and Gross (1995) examined the effects of both impulsivity and video game content on aggressive behavior in sixty 7- and 8-year-old boys. The children were randomly assigned to play either an aggressive or a non-aggressive video game. The aggressive game (*Double Dragon*) was a typical action game in which the main characters use karate and various weapons to kill their enemies. The non-aggressive game (*Excitebike*) involves a lone player racing a motorcycle around a track filled with

obstacles. After playing one of the games for 20 min, the children were observed during free play, as well as in a frustrating/competitive situation. Video game content, but not impulsivity, had a significant effect on the children's behavior. Specifically, violent video game play led to increased aggression towards objects, toward a confederate in a free play situation, and toward a confederate in a frustrating/competitive situation. It is also noteworthy that the aforementioned study, along with other studies of younger children, utilized a common basic behavioral dependent measure - observation of free play. The consistent use of this particular measurement method across studies might partially explain the strong cohesiveness of research findings in this age group. This is not the case in studies involving adolescents and young adults, instead a variety of dependent measures (e.g. self-report, physiological, laboratory behavioral measures) with varying degrees of reliability and validity have been employed. It is therefore not surprising that the results of studies involving older age groups are likely to be less consistent.

Adolescents and Young Adults

Similar to the findings with young children, we find that a majority of experimental research findings suggests that violent video games can adversely affect adolescents and young adults (Anderson & Marrow, 1995; Anderson & Dill, 2000; Ballard & Weist, 1996; Calvert & Tan, 1994; Chambers & Ascione, 1987). In one recent study, Ballard and Wiest (1996) examined the effects of differing levels of violent video game content on college students' blood pressure, heart rate, and self-reported hostility. Participants played either a non-violent video game (Billiards) or 1 of 2 versions of the popular violent video game Mortal Kombat (MK1 = game set not to

show blood and gore, MK2 = game set to show blood and gore). The study found that participants who played either version of Mortal Kombat had significantly higher heart rates than participants in the control condition. Also, the authors found that the more violent of the two versions of Mortal Kombat elicited significant increases in systolic blood pressure. Finally, two self-report measures of hostility indicated that post-game hostility increased linearly with level of video game violence.

In addition to experimental findings, several descriptive studies have also provided evidence in support of the relation between violent video games and aggression in adolescents and young adults (Anderson & Ford, 1986; Dominick, 1984; Fling, et al., 1992; Griffiths & Hunt, 1993; Lin & Lepper, 1987; Rushbrook, 1986; Mehrabian & Wixen; 1986). One study (Anderson & Dill, 2000) is notable for efforts to examine both the short and long term effects of exposure to violent video games. In a series of studies, Anderson and Dill (2000) used a correlational method to assess the effects of long-term exposure to violent video games, and a laboratory measure to examine the short-term effects of violent video game play. In the first study, the researchers used participants' (college students) previous video game exposure and several individual difference measures (e.g. trait aggression, irritability, delinquency) to predict self-reported aggressive behavior and delinquency. The study found that real-life violent video game play was positively correlated with self-reported aggressive behavior and delinquency. However, the authors noted that the relation was stronger for men and those individuals who are characteristically aggressive. In addition, the study also examined the relation between video game play and academic achievement. A negative relationship was found between academic achievement and overall amount of

time spent playing video games. Finally, while the results of this study suggest a connection between violent video game play and aggressive behavior, the correlational nature of the data did not permit causal inferences.

In the second study, directly addressing the issue of causation, participants played either a violent (*Wolfenstein 3D*) or non-violent (*Myst*) video game (Anderson & Dill, 2000). Aggressive thoughts and behavior were measured three ways: (a) participants played a competitive reaction time game in which they could punish an opponent by delivering a noxious blast of white noise; (b) participants responded to a State Hostility Questionnaire; and (c) participants took part in a reading reaction time test (priming measure). The study found support for the hypothesis that playing violent video games both primes aggressive thoughts and increases aggressive behavior. Specifically, participants who played the violent video game had higher Aggression Accessibility scores (i.e., faster reaction times to aggressive words) than participants who played the non-aggressive game. In addition, participants who played the violent video game were more likely to deliver longer noxious noise blasts to opponents than were participants who played the non-aggressive game. The results of these studies reinforce previous descriptive and experimental studies in demonstrating that exposure to violent video games is linked to increased aggression.

Studies Not Supporting a Connection

While most studies support the hypothesis that violent video game play can lead to aggressive behavior, a handful of studies do not support such a relation (Graybill, Strawniak, Hunter & O'Leary, 1987; Kestenbaum & Weinstein, 1985; Scott, 1995; Winkel, Novak & Hopson, 1987). For example, Scott's (1995) study of video game

violence failed to demonstrate a predicted linear increase in aggressive affect related to playing games with varying levels of violent content (e.g. non-aggressive, mildly aggressive or highly aggressive). Results indicated an irregularity of changes in aggressiveness inconsistent with the study's predictions. The author interpreted this finding as evidence that playing aggressive video games does not lead to an increase in aggressive feelings (Scott, 1995). However, as Dill and Dill (1998) point out, a majority of studies that do not support the link between violent video and increased aggression failed to support their own hypotheses due to methodological problems. In Scott (1995), two methodological problems preclude confident interpretation of the study results. First, the researchers did not statistically control for pre-existing group differences (e.g. video game or television exposure) in their analysis. Second, the questionnaires (Buss-Durkee Inventory, 1957; Eyesenck Personality Questionnaire, 1975) used to assess hostility and personality were split in half and administered in a pre-test, post-test fashion, rendering the reliability and validity of the two scores questionable. Thus, notwithstanding a handful of disconfirming studies with methodological difficulties, there is considerable evidence in support of a significant relation between violent video game play and aggressive thoughts, feelings, and behaviors.

Combined Influences

Findings on the effects of violence in both television and video games have independently demonstrated that exposure to violence in these media can lead to increases in aggressive thoughts and behaviors. From a research standpoint, video games and television have been separately studied as potential sources of influence on children's behavior. However, there is reason to believe that in some cases these media

do not have independent effects on the individual. Indeed, there is often an intentional link between television and video games; many video games are derived directly from their television and movie counterparts, and some television programs and movies have been derived from popular video games. Some of the many examples of video games that are derived directly from their television counterparts include sports and action games such as Jurassic Park, Wrestle Mania 2000, NFL Blitz 2000, and South Park. Conversely, the movie Mortal Kombat was modeled after the immensely popular Mortal Kombat video games. The fact that popular video games or movies are directly modeled after one another presents an interesting question: Is it possible that children could be influenced by a combination of two different but explicitly connected types of violent media?

The potential for television and video games to act together as a combined influence on children has not been directly tested before. In fact, to the best of my knowledge, only one comparison of the effects of television vs. video game violence exists at all. Using a between-subjects design, Silvern and Williamson (1987), examined the separate effects of a violent cartoon (*Road Runner*) and a violent video game (*Space Invaders*) on young children's behavior. The study found that both the cartoon and the video game separately produced significant increases in aggression, as indicated by the number of aggressive behaviors (physical attacks, verbal teasing, etc.) observed during a post-test free play session. However, the issue of combined effects remains an important unanswered question. I will now discuss some existing theoretical support for the proposal that video games and television might have combined influences,

particularly when the content of one is based on the other (e.g. Mortal Kombat – a movie based on a popular video game).

According to a behavioral framework, video games modeled after specific television programs could provide an opportunity for children to act out and receive reinforcement for performing the same behaviors that they witness on television. As Bandura (1965) describes it, children learn aggression whenever they are exposed to violent content, but they behave aggressively only when they believe they will receive rewards. In this sense, playing video games modeled after specific television programs might provide a special opportunity for children to receive reinforcement for acting aggressively (e.g. earning points). The opportunity to enact what was seen on television is not always available in a child's social environment.

Such a combined effect (TV/Video game) is also consistent with Huesmann's (1986) social developmental theory. He argued that aggressive behavior is influenced to a great extent by scripts that are encoded, stored, and retrieved in much the same way as scripts for intellectual behavior. With regard to media violence, Huesmann (1988) suggests that not all violent television scenes are encoded and stored in memory. Instead, certain factors (e.g. identifying with an aggressive character) heighten the probability of encoding. One way that video games allow children to identify with aggressive characters is by providing them with a venue to enact the actions of those aggressive characters. Aggressive scenes must also be rehearsed in order to be maintained over time. The rehearsal of aggressive scenes, by way of fantasizing or cognitive rumination, increases the probability that an aggressive script will be stored in memory. Here again, video games might play a special role in fostering aggression.

This time, the storing of aggressive scripts is facilitated by making cognitive rumination not only likely, but also very specific. Through video games, children are able to repeatedly re-enact violent scenes. For example, a child might watch a wrestling match on television, then enact the exact same match, complete with the same characters, via one of the many video games modeled after popular wrestling television programs. This view will be discussed more fully, at a later point, in the context of Huesmann's social development theory.

So far, evidence linking violent television and video games to increased aggression, as well as theoretical support for the combined effects of the two media, has been presented. I now turn to a discussion of the various theories proposed to explain how violent media exposure might lead to aggressive behavior, as well as specific research findings that support those theories.

Social Learning Theory

Social learning theory (Bandura, 1965; 1971; 1986) holds that individuals learn social behaviors both through direct experience and through the observation of models (in person or in the media). It is through the observation of these models (peers, parents, media characters, etc.) that children learn which social behaviors are rewarded and which are punished. Children's ability to learn aggressive behaviors through observation is well-documented (Bandura, 1965; Berkowitz & Geen, 1967, Liebert & Baron, 1972). In a series of classic experiments (Bandura, 1965, Bandura, Ross & Ross, 1963a), it was demonstrated that young children exposed to an aggressive live or TV model who was rewarded were significantly more likely to behave aggressively than children exposed to the same content in which the model was punished. It should also

be pointed out that, according to social learning theory, behavior that is not punished might be rewarded in a tacit way (Bandura, 1965). Furthermore, if children learn that aggressive behavior goes unpunished, they are more likely to choose aggressive solutions to conflicts that arise in their own lives (Dill & Dill, 1998). Finally, in addition to the consequences of violent acts, research (Bandura, 1986,1994) also indicates that children and adults are more likely to attend to, identify with, and learn from attractive models than unattractive ones. This last point is of particular importance because the main characters on television and in video games are, by design, attractive models (e.g. physically or in terms of social status). Finally, it should be noted that all of the aforementioned factors, shown to increase the likelihood of aggressive behavior, are common in television and video game violence.

A three year longitudinal study of television violence found that the previously mentioned contextual factors that place children at risk for imitating violence were prevalent in televised violence (Kunkel, 1995b). The observed risk factors included: (1) attractive perpetrators; (2) violence that is justified; (3) violence that goes unpunished; (4) violence that has no pain or consequences to the victim; and (5) violence that seems realistic to the viewer. These same factors are also present in violent video games, in some cases to an even greater degree. First, players are directly reinforced for their aggressive actions in violent video games (i.e., the player earns points). In contrast, viewers receive only vicarious reinforcement when observing violent acts on television (i.e. the TV character is rewarded). Second, the vast majority of the most popular video games are created using a fixed-ratio schedule of reinforcement, which promotes habit maintenance (Braun & Giroux, 1989). Third, violent video games simultaneously

expose the player to modeling, reinforcement, and rehearsal of behaviors. Television, on the other hand, offers only the opportunity for modeling and vicarious reinforcement. Finally, Dill and Dill (1998) suggest that identification with video game characters might be stronger than identification with television characters. This is because games such as Mortal Kombat, Killer Instinct, and wrestling games allow the player to choose their favorite character and act as that character in the video game. Television does not offer this kind of choice and interactivity. Thus, from a theoretical standpoint, there is reason to believe that video game violence might have an even greater effect on individuals than does television violence. In sum, social learning theory predicts that exposure to both violent television and video games will lead to increased aggression. However, violent video games might be the more significant of the two.

Measuring the Effects of Modeled Aggression.

The Bobo doll is a well-known laboratory measure of aggression and has been used in numerous modeling studies (e.g., Bandura, Ross & Ross, 1961; 1963a), as well as many other types of investigations involving the measurement of aggressive behavior (Hayes, Rincover & Volosin, 1980; Mathews & Angulo, 1980; Plomin, Foch & Rowe, 1981). In an early criticism of this paradigm, Hartly (1964) argued that aggression against a Bobo doll could not be equated with social aggression. However, a study conducted by Johnston, DeLuca, Murtaugh and Diener (1977) directly addressed the question of whether laboratory aggression against a Bobo doll is related to aggression in naturalistic settings. The researchers found that aggression against the Bobo doll was significantly correlated with both peer ($r = .76$) and teacher ratings of aggression ($r = .57$) in nursery school children.

There are some other methodological issues to be considered, including the role of sensory reinforcement in the maintenance of aggressive behavior. Hayes et al. (1980) found that while modeling is responsible for the acquisition of behavior, the maintenance of that behavior is determined by sensory reinforcement. That is, at some point, an individual might continue to interact with the Bobo doll simply because it is reinforcing to do so. For this reason, it might be advantageous to limit the length of exposure to the Bobo doll (e.g., one minute) to ensure that the effects of modeling are measured, rather than maintenance. Plomin et al. (1981) suggested another reason to use a brief exposure when employing a Bobo doll. They found that many children quickly wear themselves out when interacting with the Bobo doll. Thus, the experimenter might be measuring individual differences in physical conditioning and fatigue if extended exposure periods are used, rather than aggressive intentions.

The Bobo doll has long proved itself a useful measure of laboratory aggression. Johnston et al. (1977) and others have shown that aggression against a Bobo strongly relates to aggression in naturalistic settings. For these reasons, the Bobo doll procedure is an effective measure of aggression, and was employed in the present research.

Cognitive / Information Processing Theories

In addition to social learning theory, researchers have found cognitive and social information processing approaches helpful in explaining the connection between viewing television violence and aggressive behavior. The general assumption is that children's behavior, aggressive behavior in particular, can be better understood if we examine how children think about their social worlds.

Priming Effects

One important contribution has been Berkowitz's (1984, 1990, 1993) priming effects perspective. This perspective maintains that the presentation of a certain stimuli with a particular meaning (e.g., a fist fight) primes semantically related concepts (e.g., aggressive thoughts), thus heightening the likelihood that such information will be activated (Jo & Berkowitz, 1994). Berkowitz's priming effects perspective is based on the concept of spreading activation within a network in memory (Collins & Loftus, 1975): thoughts send out radiating activation along associative pathways, thereby activating or lowering the activation threshold for semantically-related thoughts. Thus, activation of the concept of a fistfight could result in a temporarily lower threshold of activation for other related thoughts, such as kicking or throwing objects. This temporary increase in accessibility of a semantically-related concept is typically referred to as priming (Bushman, 1998).

Extended to media violence, Jo and Berkowitz suggest that violent stimuli seen in the mass media can, for a short time, activate or prime related thoughts, emotions, or action tendencies in viewers. Specifically, the results of priming via violent media are as follows: media violence increases the chance that, for a short time, viewers will (a) have hostile thoughts that can color their interpretation of other people, (b) believe other forms of aggressive behavior are justified or will benefit them, and (c) be inclined to act aggressively (Jo & Berkowitz, 1994). Priming theory is particularly important for two reasons. First, it explains how violent media might have an immediate effect on the viewer, as the related information is primed at the time of exposure. Second, priming

theory can explain why viewing media aggression is often followed by aggressive acts that differ from the observed behavior.

Several studies have demonstrated the priming phenomenon using television and film violence (Berkowitz, 1970; Berkowitz & Rogers, 1986; Bushman & Geen, 1990; Bushman, 1996; Carver, Ganellen, Froming, and Chambers, 1983; Worchel, 1972). For example, Bushman (1996) found that undergraduates exposed to a violent film clip generated a greater number of aggressive associations to stimulus words than did undergraduates exposed to a non-violent film clip. Priming effects have also been demonstrated with children using a different form of violent media - comic books. Berkowitz, Parker and West (cf., Berkowitz, 1973, pp125 – 26) found that children who read a war comic book (i.e., Adventures of the Green Berets) were significantly more likely to choose words with aggressive meanings in a sentence completion task than were children who read a neutral comic book (i.e., Gidget). In sum, the aforementioned findings demonstrate the potential of violent media to evoke aggressive thoughts and ideas in individuals exposed to it.

Measuring Primed Aggression in Children

While the research literature is replete with studies of primed aggression in adults (e.g. Berkowitz, 1970; Bushman & Geen, 1990; Carver, Ganellen, Froming, and Chambers, 1983; Donnerstein & Berkowitz, 1983; Wann & Branscombe, 1990; etc.), relatively few studies have specifically focused on primed aggression in children (e.g. Atkin, 1983, Berkowitz, Parker and West [cf., Berkowitz, 1973]; Josephson, 1987). In all but one of the previously mentioned adult studies (and many other adult studies of primed aggression), priming is measured either by providing an opportunity for the

participants to shock another person or by negatively evaluating another person. With regard to children, there does not seem to be a standard method for measuring primed aggression. However, Berkowitz, Parker and West (cf., Berkowitz, 1973) demonstrated that a sentence completion task could be an effective measure of primed aggression (thoughts) in young children. In that study, children were asked to choose one of two words (aggressive or non-aggressive) to complete a sentence. For example, "I want to _____ the book (read/tear)." In the sentence completion task, a tendency to select the aggressive word would indicate primed aggression. Sentence completion tasks have also been employed more recently by other researchers (e.g. Lorsbach & Reimer, 1997) to measure priming effects in young children.

In addition to the sentence completion task, another effective priming measure appropriate for use with young children is the word fragment/stem completion task. Naito (1990) used the measure to study priming effects in children as young as first-grade. Further, the word fragment/stem completion tasks are accepted methods of measuring priming in adults (Roediger & McDermott, 1993, pp. 66-69). Participants are asked to complete word stems with letters to make a word. For example, the fragment _IGHT can be completed with the letter F to make an aggressive word (FIGHT) or completed with the letter L to make a non-aggressive word (LIGHT). Those primed with aggressive thoughts would be most likely to produce aggressive words. In sum, the sentence and word completion tasks seem appropriate not only for use in priming studies in general, but for use with young children in particular.

Social Developmental Theory

Another important approach to explaining the connection between media violence and aggressive behavior is Huesmann's (1986, 1988) social developmental theory. Huesmann suggests that social behaviors are largely controlled by cognitive scripts, or knowledge representations that guide behavior. These scripts are developed either through direct experience or by observing models, including television and video game characters. From exposure to media violence, children develop aggressive scripts for dealing with problems as well as normative beliefs that encourage aggressive responses to those problems (Huesmann & Guerra,1997). As previously mentioned, not all violent television or video game scenes are encoded and stored in memory. However, several factors inherent to violent television and video games (e.g. attractive perpetrators and justified violence) greatly heighten the probability of encoding. Specifically, studies indicate that both children and adults are more likely to attend to, identify with, and learn from attractive models than unattractive ones (Bandura, 1986, 1994). Further, a recent meta-analysis of 217 experiments revealed that justified violence increases the risk of aggressive behavior in viewers (Paik & Comstock, 1994).

Despite the heightened probability of encoding that television and video games carry with them, it should be noted that not every script that is encoded and stored in memory is retrieved when a child faces a problem situation. Huesmann (1988) suggests that cues present at the time of recall are particularly important. Characteristics of the environment that match one's experience at encoding are most important, even seemingly irrelevant ones. However, Huesmann also points out that other cues (e.g. guns or other weapons) not present at encoding might also trigger the retrieval of

aggressive scripts. In sum, Huesmann (1988) has argued that violent television and video game content facilitate the formation of aggressive scripts, which in turn guide behavior in problem solving situations. Further, these media might trigger and strengthen existing aggressive scripts stored in memory.

There is extensive support for Huesmann's assertion that observing violence (real–life or mass media) leads to the encoding of aggressive scripts, which in turn guide behavior (see Paik & Comstock, 1994; Dodge, 1985; Huesmann, 1982b). As Berkowitz (1993) has pointed out, copycat crimes and the well-known contagion of suicide provide some of the clearest examples of specific scripts acquired through media exposure, which in turn affect behavior. The fact that exposure to television violence can affect children's expectations or schemas has also been effectively demonstrated by Thomas and Drabman (1977). In that study, third-and fifth-grade children viewed either an aggressive or non-aggressive 15min-television program. Next the children were given hypothetical situations and asked to predict how their peers would resolve these conflicts. Children who viewed the aggressive program (vs. children who viewed the non- aggressive program) were more likely to believe their peers would act aggressively in a conflict situation. As previously stated, once created, aggressive schemas can guide behavior. For example, many people would give another person the benefit of the doubt (accidental vs. intentional) in an ambiguous situation, such as pushing in line. According to several studies conducted by Dodge (1980, 1985; Dodge & Frame, 1982;), however, aggressive boys tend to believe that the other person's actions are intentional in ambiguous situations. The result is this: "By expecting aggression, aggressive boys might create a situation in which an accident

escalates into real aggression" (Calvert, 1999). Due to the importance of age differences in the acquisition of aggressive scripts/schemas, the question of how to measure aggressive scripts/schemas will be discussed in the next section.

Age Differences

Up to this point, I have discussed theory and research that indicate a connection between violent media and aggressive behavior. I now turn to the question of how age differences might relate to media influences. Young children are presumed to be at higher risk for being affected by what they see on television than are older children and adults. From a cognitive perspective, this age difference is due to differences in cognitive maturity. Two areas where important cognitive differences between younger and older children exist are: a) the ability to draw inferences, and b) normative beliefs about and scripts relating to aggression.

Inference

One line of evidence that suggests that younger children are more susceptible to the effects of exposure to violent media comes from research that examines children's ability to draw inferences from television. Research reveals that older children are better at (a) linking scenes in a story, (b) integrating pieces of a story together, and (c) drawing inferences from story information (Collins, 1979; 1983; Schmidt, Schmidt, & Tomalis, 1984; Thompson & Myers, 1985). These abilities (or a lack thereof), have important implications for how young children interpret the violence that they see on television. Many violent programs include a perpetrator who acts violently throughout the program, but is not caught until the end of the program. In such cases, even when a character is punished for aggression, young children often do not link the punishment to

the character's aggressive behavior (Calvert, 1999). In a study conducted by Collins (1973), children and adults viewed a violent program in which violent acts and the punishment for those acts were sometimes separated by commercials. Second grade boys who viewed the programs with commercial interruptions were more likely to choose aggressive solutions to conflict situations than were peers who saw an uninterrupted version. In contrast, older children and adults were not influenced by commercial interruptions. These results suggest that younger viewers have trouble linking behavior and punishment in situations in which the aggressive actions and subsequent punishments are temporally separated. Around the age of nine or ten, children begin to acquire the ability to make such inferences, allowing them to bridge temporal gaps (e.g., the time between aggressive behavior and punishment for that behavior), understand the motivations and feelings of characters, and consider content not explicitly presented (Collins, 1983). In short, the limited ability of younger children to draw correct inferences makes it difficult for them to accurately interpret much of the violent content to which they are exposed through television and video games.

Normative Beliefs and Scripts

Normative beliefs represent another important developmental factor that might affect the likelihood that children will behave aggressively in response to violent media exposure. Specifically, aggressive content is filtered through an individual's normative beliefs about aggression (Huesmann, 1998). For example, the expected outcome of aggressive behavior might be deemed undesirable when filtered through beliefs about the environment (e.g., presence of authority figures) or self-efficacy (i.e. children with high self-efficacy for prosocial behavior would be less likely to initiate/promote

aggressive behavior). Longitudinal studies have shown that normative beliefs crystallize during childhood (Huesmann & Guerra, 1997). According to Huesmann (1998), children aged 6 and 7 years have very unstable beliefs about aggression, which makes it difficult to predict aggressive behavior. As such, younger children's beliefs about aggression do not predict their aggressive behavior. Older children (i.e. 10-and-11 year-olds), in contrast, have more stable normative beliefs, which are more predictive of subsequent aggression. Thus, an older child who believes that fighting is wrong will be less likely to fight than the child who is less stable in this normative belief.

Huesmann suggests that between the ages of six and nine years, children develop relatively stable normative beliefs and other schemas related to aggressive behavior. Indirectly, Huesmann's research suggests that exposure to violent media poses a greater risk to younger children because they are still in the process of developing normative beliefs about aggression. Even more important, it is precisely during this sensitive period (six to nine years of age) that children's video game playing (much of it violent) increases, and peaks at an average of 9.5 hours per week. In sum, between television and video games, children are exposed to a tremendous amount of media violence at a time when they are still developing normative beliefs about social behavior. Because of this, younger children are at greater risk for being influenced by violent media than are older children.

Measuring Normative Beliefs about Aggression

Huesmann and Guerra (1997) have defined normative beliefs as an individual's own thoughts about the acceptability or unacceptability of specific behaviors. They propose that these beliefs serve to regulate behavior, regardless of whether they are

backed by internal (self) or external (situational variable) sanctions, although beliefs backed by internalized sanctions should be more stable and resistant to change. For example, a bully might believe it is OK to use physical force to get his/her way with others (internal sanction). Thus, the bully is likely to actually use force in certain situations because of his/her beliefs about the use of aggression. Defined in this way, Huesmann and Guerra suggest that normative beliefs are not difficult to measure, even in young children. To this end, Huesmann and Guerra (1997) have developed a scale that is reliable for use with children across both genders, a range of ages, and across ethnic groups. In the revised version of the Normative Beliefs About Aggression Scale (NOBAGS), children respond to a series of questions and statements about aggressive behavior by choosing one of four answer choices: it's perfectly ok, it's sort of ok, it's sort of wrong, or it's really wrong (see APPENDIX A). The questionnaire is divided into two sections. In the first section, twelve questions about retaliatory behavior are posed. For example, "Suppose a boy says something bad to a girl. Do you think it's wrong for the girl to scream at him?" Children who believe this kind of behavior is acceptable might choose the "it's perfectly OK" answer choice. In the second section, general the child responds to eight general statements about aggressive behavior. For example, "In general, it is wrong to hit other people." The response choices for this section are the same as the previous. Huesmann and Guerra (1997) found that children's normative beliefs about aggression correlated significantly with their actual aggressive behavior. In addition, children's scores on the revised NOBAGS also correlated significantly with Peer-Nominated Aggression. Finally, the measure was found to be sensitive to changes in the stability of children's beliefs about aggression. In sum, the

revised NOBAGS is a measure of normative beliefs about aggression that is appropriate for use with children across a variety of ages and ethnic backgrounds. For these reasons, the revised NOBAGS will be utilized in the present research.

Goals

The present research was designed to contribute to the body of literature on video games and aggression in four important ways. First, I expected to demonstrate that exposure to either violent video game or television content leads to increased aggression as compared to non-aggressive counterparts. Second, I expected to find that any differences in the potential of the two violent media (television and video games) to influence thoughts and behavior will favor an interactive medium (video games). Third, consistent with Bandura's Social learning theory (1965, 1971) and Huesmann's (1986) social developmental theory, I expected to find combined influences for violent television and video games under certain conditions. Specifically, exposure to both violent video games and television programs modeled after one another would lead to greater increases in aggressive thoughts and behaviors than would exposure to either media separately. Finally, I examined how these violent media affect children of different ages. I expected to find young children (8-9 years old) more strongly influenced by violent television and video games than older children (11-12 yr. olds).

Design

The present research examined differential and combined developmental effects of exposure to violent television and video games. To accomplish this, third (8-9 years old) and sixth-grade (11-12 yr. olds) boys were chosen. Third-grade boys were chosen because they are young enough to test Huesmann's (1988) contention that younger

children are more susceptible to media influences while still being old enough to minimize any concerns about reading ability (required for any dependent measures examining priming effects). Sixth-graders were chosen as a comparison group because their beliefs about aggression are stable and thus less susceptible to media influences (Huesmann, 1988). In addition, sixth-grade boys are more comparable to third-grade boys in the amount of time spent playing video games than older children (e.g. 8th or 9th grade boys).

Participants in the present research were exposed to one of four combinations of media and/or video game content: (a) a violent video presentation in combination with a violent video game (both wrestling), (b) a non-violent video presentation and a non-violent video game (both basketball), (c) a violent video presentation only (wrestling), or (d) a violent video game only (wrestling). Following exposure, I measured aggressive behaviors and thoughts in three ways. First, aggressive behavior was measured directly by allowing children to briefly interact (1 min) with a Bobo doll (Bandura, 1965). Second, the priming of aggressive thoughts was measured using a word fragment completion task developed for this study. Finally, participants were asked about their beliefs regarding aggression using Huesmann and Guerra's (1997) revised Normative Beliefs About Aggression Scale (NOBAGS)

Hypotheses

Aggressive Media Content

Participants exposed to violent media (a violent video presentation, a violent video game, or both) were expected to score significantly higher on all dependent measures than participants exposed to non-violent media content. Specifically, those

exposed to a violent video presentation and/or a violent video game content were expected to: (a) act more aggressively toward a Bobo doll, (b) be more likely to endorse aggression on the NOBAGS, and (c) produce a greater number of aggressive words on the word-stem completion task than participants exposed to a non-violent video presentation and video game. There is a significant amount of evidence to support this prediction where television is concerned, and a preponderance of studies indicates that the same relation might exist between violent video games and aggression.

Media Type

As previously stated, video games are an interactive form of media that simultaneously exposes players to modeling, direct reinforcement, and rehearsal of behaviors. In contrast, violent television offers only modeling and vicarious reinforcement. Thus, of the two media (television and video games), video games were expected to have a stronger influence on behavior. Participants exposed to violent video games would show higher levels of aggressive thoughts and behaviors than participants exposed to violent television content. Specifically, participants in the video game condition were expected to interact more aggressively with a Bobo doll and be more likely to endorse aggression on the NOBAGS. Also, children in the video game condition should be more likely to demonstrate priming of aggressive thoughts in the word-stem completion task.

Combined Effects

Consistent with Huesmann's (1986) social developmental theory, participants exposed to both a violent video game and television programs modeled after one another should be the most strongly influenced. Thus, these participants were expected

to demonstrate higher levels of aggressive thoughts and behaviors than participants exposed to only one type of medium (TV or video game). Specifically, of all the participants, those exposed to both violent TV and violent video game content were expected to: (a) act most aggressively toward a Bobo doll, (b) be the most likely to endorse aggression on the NOBAGS, and (c) produce the greatest number of aggressive words in the word-stem completion task.

Age Differences

Before the age of 9 or 10 years, children have limited ability to draw correct inferences. This makes it difficult for them to accurately interpret the violent content to which they are exposed through television and video games. Further, violent media pose a greater risk to younger children because they are still in the process of developing normative beliefs about aggression through their interactions with the environment (Huesmann & Guerra, 1997). Younger children should be more easily influenced by violent media than older children, who have more stable normative beliefs about aggression. Therefore, I expected that younger participants would be more strongly affected by violent content than would older participants, regardless of media type. Specifically, younger participants were expected to score higher than older participants on the behavioral (Bobo) and normative beliefs measure (NOBAGS) across all types of violent media exposure (TV, video game, and TV/video game). Finally, older participants were expected to score higher than the younger participants on the word-stem completion measure. The predicted age difference reflects the effect of experience and the larger vocabulary of the older children.

CHAPTER 2. METHOD

Participants

A total of 144 third-and sixth-grade boys (72 from each grade) from five public schools in the greater Baton Rouge and Denham Springs areas participated in this study. While it was not possible to obtain a completely homogenous sample due to the unique circumstances of the Baton Rouge public school system, efforts were largely successful; eighty two percent of the participants in the present research came from schools with similar socio-economic profiles as determined by participation in reduced rate lunch programs (Source: Louisiana Department of Education, 2000). Sixty percent of the participants came from schools with similar ethnic distributions. Finally, the small number of participants (not more than 15 per age group) coming from schools dissimilar to the rest of the sample were equally distributed across grades and conditions.

Only boys were included in the present research for the following reasons: (a) boys are the vast majority of video game players, and (b) boys are more likely than girls to demonstrate aggression. The experimenter solicited participation by sending a letter home with the student. This letter included a description of the experiment (Appendix B) and a consent form to be signed by a parent (Appendix C). Each child also signed an assent form at the time of testing (Appendix D). Demographic information about TV viewing and video game playing habits was also collected (Appendix E).

Apparatus and Materials

Apparatus

The experiment employed one Nintendo 64 game system, as well as the appropriate game cartridges, including one violent video game (wrestling) and one non-violent video game (basketball). In the wrestling game (WCW vs. NW0 - Revenge), human violence is prevalent. Indeed, it is encouraged and rewarded. The object of the game is to use kicks, punches, blunt weapons, and a variety of wresting moves (e.g., body slams) to subdue one's opponent. In the basketball game (NBA LIVE '99), the objective is the same as in a standard basketball game - score more points than your opponent in a limited amount of time. Comparatively, the game is non-violent in that hurting one's opponent (e.g. pushing, tripping) is discouraged and penalized.

One violent (wrestling) and one non-violent (basketball) video segment were produced (15 min in length). The wrestling video segment was taken from the popular weekly television broadcast of World Championship Wrestling (WCW), while the basketball segment came from a television broadcast of a National Basketball Association (NBA) game. Both the wrestling and basketball video excerpts featured the same characters utilized in their respective video game counterparts. The following additional items were used in this study: one-meter tall inflatable Bobo doll, one 33 cm combination VCR/color television, and one VHS camcorder.

Materials

For the present research, Three measures of aggression were used, one behavioral and two cognitive. For the behavioral measure, as previously described, participant's interactions with a Bobo doll were observed. With regard to the cognitive

measures, one instrument measured primed aggression in children and one measured children's normative beliefs about aggression. The priming measure was a word completion task in which the participant provided a missing letter to form a complete word. The word stems could be completed to form at least one familiar aggressive word and at least three non-aggressive words (Appendix F). Pilot testing was conducted for this instrument as it was developed specifically for this study. Testing was conducted with third-grade boys at two public schools located in the Denham Springs area. In addition to the aforementioned criterion (three non-aggressive words could be formed from the stem), word-stems completed as aggressive words by more than 50% of the children during pilot testing were excluded from the final measure. None of the children had difficulty generating responses for items included in the final measure. Fifteen items were found to meet all of the aforementioned criteria. Finally, the word-stem completion task has been successfully used by another researcher with young children (e.g. Naito, 1990).

The revised-version of the Normative Beliefs About Aggression Scale (NOBAGS) (Huesmann & Guerra, 1997) was used to measure children's endorsement of various aggressive behaviors. Participants responded to a series of statements and questions about everyday situations involving aggression by choosing one of four response choices: It's perfectly OK, It's sort of OK, It's sort of WRONG, It's really WRONG (see Appendix A). Framing of the questions was balanced to prevent biased responding; so half of the questions or statements contained the word <u>OK</u> (e.g. It is OK to insult other people) while the other half contained the word <u>WRONG</u> (e.g. It is

wrong to hit other people) (Appendix A). This measure has been shown to be appropriate for children as young as first-grade (Huesmann & Guerra, 1997).

Design

The present research employed a 2 x 2 x 3 between groups factorial design with grade (third vs. sixth), media content (violent vs. non-violent), and type of media exposure (video segment vs. video game vs. video segment plus video game) as the factors. Twelve participants were randomly assigned to each of the twelve conditions.

Procedure

Testing took place in a quiet room at the participant's school. Participants were individually escorted to and from class by the experimenter. Upon arrival, each participant was seated across from the experimenter, who read the child assent form to him. After completing the assent form, the experimenter verbally presented questions from the demographics questionnaire to the participants (Appendix E).

Next, participants were exposed to one of the three following media exposure conditions for a 15-min period: (a) game (b) video or (c) combined. Note that media exposure condition had two possible forms of media content (i.e. violent or non-violent) for a total of six conditions for each grade level. Participants in the game condition played a wrestling video or basketball game for a 15-min period. They were given instructions on how to play the game, should they have needed them. This was rarely necessary. Participants in the video condition watched a wrestling or basketball video segment for a 15-min period. Finally, participants in the combined condition first watched a wrestling or basketball video segment for 7.5-min and then played a 7.5-min wrestling or basketball video game. For the combined conditions, the games were

arranged such that the characters seen in the video segment were the same ones employed in the games.

Upon completion of the 15-min media exposure period, the experimenter presented the word-stem and normative beliefs tasks in counterbalanced order. In the word-stem completion task, the experimenter told the participant that he would read a series of partial words, and then be asked to complete the words by supplying the missing letter. The experimenter first presented the child with an example item to ensure he understood the task. The experimenter said "Let's try one for practice before we start. Think of a letter to make this (_UN) a real word." The stem can be completed to form either an aggressive (e.g. GUN) or non-aggressive word (e.g. FUN) depending on the letter chosen by the child. If during the task, the participant had difficulty with an item (i.e., the child could not generate a word within a 15-s time period), the experimenter provided two counterbalanced letter choices (e.g., F / G) for that item. This forced-choice presentation was infrequently required (i.e. 1.4 out of 15 items on average). Approximately 5 minutes was required to present the 15 item task.

In the NOBAGS task, the participant was told he would hear 20 statements describing aggressive behaviors and then be asked whether he thought those behaviors were wrong or ok (Appendix A). The participant was told to respond to each statement by choosing one of the following answer choices: It's perfectly OK, It's sort of OK, It's sort of wrong, or It's really wrong: The child was provided with a printed copy of the answer scale. For example, using the above choices the child would respond to statements such as: "Suppose a boy says something bad to another boy, John. Do you think it's OK for John to hit him?" In this task, a response of "It's perfectly OK" would

indicate strong endorsement of a particular aggressive behavior while a response of "It's really wrong" would indicate the opposite. Approximately 6 minutes was required to present the 20 item task.

Next, the experimenter told the participant that he may, if he'd like, either play with the Bobo doll or look through some magazines (National Geographic for Kids) for a minute while the experimenter left the room to "get something." At this point, the experimenter activated a concealed video camera and left the room for one minute before returning. Because this measure was not counterbalanced and was always presented at the end of the experimental session, the data obtained from this measure might have been influenced by the child's responses to the other measures.

Finally, each participant was read a debriefing statement that explained the purpose of the study. A supplemental section that addressed the inappropriateness of aggressive behavior was read to those who participated in the aggressive media conditions (APPENDIX G). The experimenter then thanked the participant for his help and escorted him back to the classroom. The total amount of time required for testing was about 40 minutes.

Data Scoring and Analysis

Scoring

The scoring method employed to score the Bobo interaction was intended to capture intensity of interaction with the Bobo, rather than focusing solely on a frequency. Each videotaped Bobo interaction was scored by a rater using a five-point Likert-type scale (0-4) (APPENDIX H). A child who made no physical contact of any kind with the Bobo received a score of zero. At the opposite extreme, an interaction that

included physical contact that caused the base of the Bobo to slide more than 8 cm, yelling, or throwing the Bobo received a score of four. The complete scoring rubric is presented in Appendix H. Each one-minute interaction was divided into six 10-s segments, and each interval was scored according to this scale. The score for each interval was determined by the highest level of aggression displayed during that 10-second interval. The total aggression score was determined by summing the six interval scores. Thus total aggression scores could have ranged from 0 (no aggression at any point) to 24 (intense aggression during each interval). Inter-rater reliability was calculated on a subset of the participants (n = 40). In the few instances in which raters disagreed, the scores of each rater were averaged together. Inter-rater reliability was calculated by dividing the total number of interval score agreements by the total number of intervals. The overall inter-rater reliability for this dependent measure was 88%. This method of coding has been previously proven to be a reliable measure of aggressive behavior (Meyers, 1997).

For the word-stem completion task, one point was given for each aggressive word formed from the 15 stems presented. For example, a child presented with the stem **_LAP** might have completed it with the letter **S** to form the word **SLAP,** which would warrant one point. In contrast, a child who completed that same stem with the letter **C** to form the word **CLAP** (non-aggressive) would receive no points for such a response. Each child's score was based on the total number of aggressive words formed. Thus, each child's score could range from 0 to15. Instances in which the child failed to generate a word and was then presented with a forced-choice received one half of a point if he subsequently chose the aggressive option. Again, this situation did not occur

with regularity. This method was employed to quantify the difference between participants who spontaneously produced aggressive words and those who did so via prompting.

The revised NOBAGS was scored as follows: a score of 0 to 3 was assigned to each response choice (i.e., It's perfectly OK = 3, It's sort of OK = 2, It's sort of WRONG = 1, It's really WRONG = 0). For example, a child who responded to the statement "It's usually ok to push or shove people when you're mad" with "It's perfectly OK", received a score of 3 for that item. A score of 3 indicated the greatest endorsement of aggressive behavior. The revised NOBAGS contains a total of 20 items, for a maximum potential score of 60 or a minimum score of 0. Separate subtotals were calculated for the each of the two sub-sections sections (12 retaliation and 8 general beliefs questions) of this instrument, as well as an overall total. In Huesmann and Guerra's (1997) use of the instrument, values were assigned to each response choice. However, their analysis focused on item means rather than sum totals. The former method of scoring was utilized in the present research as I was interested in measuring overall beliefs rather than behavior in specific instances (e.g. gender, type of aggressive act, etc.).

Analyses

Separate ANOVAs were conducted for each dependent measure as a function of age and media exposure condition. In post-hoc analyses, t-tests were utilized to pin-point the locus of significant interactions. The purpose of the analyses was to determine the independent and combined influences of violent video games and television on younger and older children. In addition, intercorrelations among the dependent

measures were calculated to determine the degree of relation among those measures. Specifically, one might expect the priming measure (word-stem completion) to correlate with the Bobo and NOBAGS. Post-hoc analyses were conducted on the demographic data to explore the potential influences of prior television and video game exposure. Finally, the data were examined for the presence of order effects.

CHAPTER 3. RESULTS

A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA was conducted for each of the three dependent measures in the present research. However, the discussion of these analyses has been arranged to reflect the organization of the hypotheses as presented in the introduction. Thus, some main effects and interactions for a particular ANOVA may be discussed under separate section headings.

Demographic Information

The demographic information collected about each of the participants served two functions: 1) To provide a profile of the average participants in the study, and 2) to facilitate post-hoc analyses of potentially important pre-existing participant characteristics that might account for observed differences in the dependent measures (e.g. amount of prior television or game exposure). Experience playing video games and familiarity with the Nintendo 64 game system were important requisites for participation in the present research. Ninety-seven percent of the children reported that they owned a home video game system. Moreover, ninety seven percent of the children also reported that they had played video games on a Nintendo 64 game system prior to participating in this study.

The vast majority of children in this study reported playing video games less than two hours (84%), with many playing less than one hour each day (46.5%) Games with violent themes were popular among the children included in this study: 64% of children listed a violence themed game as their favorite. In addition, one-third of the children listed violent games for 2 out of 3 of the titles they played most frequently. Another one-third of the children listed violent games for all three of their most

frequently played titles (See Table 1). Classification of game content (violent or non-violent) was based on guidelines devised by Funk & Buchman (1995). Essentially, in violent games, the main action is a story or game involving a cartoon or real character engaged in fighting or destruction.

Information similar to that above was obtained with respect to children's television exposure. The vast majority of children reported watching at least 1-2 hours of television each day (84.8%), with a sizeable minority (41%) reporting that they watch 3 or more hours of television each day. With regard to violent content, 51% percent of the children listed a violence themed program as their favorite. Among the most frequently watched programs listed by participants in this study (each child gave 3 titles), 50% of the children listed one or no programs that had a violent theme. These results are consistent with the findings of previous research on media violence (e.g. Wilson, Kunkel, Linz, Potter, Donnerstein, Smith, Blumenthal & Gray, 1997).

Aggressive Media Content

I hypothesized that participants exposed to the violent media conditions (game, video, and combined) would behave significantly more aggressively toward the Bobo doll than would participants in the control condition. A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA revealed no significant main effect for media content on the Bobo measure, F (1, 143) = .806, p = .371. Total score Means for the Bobo interactions ranged from 6.96 to 13.96; the range for this dependent measure was 0-24. A non-significant trend in the hypothesized direction was observed among third-graders exposed to violent media content. Specifically, children exposed to video game violence

Table 1

Overall Participant Demographics - Television and Video Game Exposure

Question	Response	Percentage
Game system at home	Yes	97
	No	3
Played Nintendo 64 before	Yes	97
	No	3
Hours of video game play each day	0	2.1
	<1	46.5
	1-2	37.5
	3+	13.9
Play a lot of fighting/shooting games?	Yes	56
	No	44
Three games played most (# of violent titles)	0	9.7
	1	21.5
	2	32.6
	3	36.1
Favorite game (title listed)	Violent	64
	Non-violent	36
Hours of TV watched each day	0	.6
	<1	14.6
	1-2	43.8
	3+	41
Watch a lot shows with fighting/shooting?	Yes	49
	No	51
Three shows watched the most (# of violent shows)	0	26.4
	1	24.3
	2	18.1
	3	31.3
Favorite program (title listed)	Violent	51
	Non-violent	49

were more aggressive toward the Bobo than participants in the TV condition, but less aggressive than children assigned to the combined media condition (TV + video game).

Next, it was hypothesized that participants in the violent media conditions would produce a significantly greater number of aggressive words than controls in the word-stem completion task. A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA revealed no significant main effect for media content on the word-stem completion task, F (1, 143) = .547, p = .461. Total score Means ranged from 2.54 to 5.92; the range for this measure was 0-15. No trends were observed in the word-stem completion scores.

Finally, analyses were expected to show that participants in the violent media conditions would endorse significantly higher rates of aggressive behavior of the Normative Beliefs about Aggression (NOBAGS) measure compared to controls (See Table 2). A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA revealed a significant main effect for media content on the Normative Beliefs task, F (1, 143) = 4.785, p = .03. Participants in the aggressive media content conditions (M = 10.76, SD = 6.89) were more likely to endorse aggressive behavior than participants exposed to non-aggressive media content (M = 8.50, SD = 6.06). Additional analyses revealed that questions from retaliation subsection of the NOBAGS (e.g. “Suppose a boy says something bad to girl. Do you think it’s wrong for the girl to scream at him?”) were the primary source of the effect of media content on the NOBAGS task, F (1, 143) = 4.902, p = .029. Scores for questions from the general beliefs subsection of the NOBAGS (e.g. “In general, it is wrong to hit other people.”) did not significantly differ.

Table 2

Endorsement of Aggression by Third- and Sixth-Grade Children as a Function of Content and Type of Media Exposure

	Media Exposure Condition		
Age	TV	Game	TV/Game
	Non-Violent		
Third-Grade			
M	5.75	6.92	6.17
SD	3.70	5.20	6.53
Sixth-Grade			
M	11.83	11.58	8.75
SD	6.18	4.66	7.39
	Violent		
Third-Grade			
M	8.23	9.92	11.00
SD	6.08	5.66	6.93
Sixth-Grade			
M	14.08	6.91	14.33
SD	8.75	5.87	5.33

Media Type

As previously stated, video games are a more interactive form of media than television. Thus, of the two media types, video games might have a more significant influence on behavior. Therefore, it was predicted that participants in the aggressive video game condition would show higher levels of aggressive thoughts and behaviors than participants in the aggressive TV condition. With respect to behavior, analyses were expected to show that participants in the aggressive video game condition interact more aggressively with a Bobo doll than participants in the aggressive TV condition. A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA did not reveal an interaction between media type and media content on the Bobo task, F (2, 143) = .585, p = .559.

It was also predicted that children in the aggressive video game condition were expected to demonstrate more priming of aggressive thoughts on the word-stem completion task compared to participants in the aggressive TV condition. However, a 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA did not reveal an interaction between media type and media content on the word-stem completion task, F (2, 143) = .585, p = .559.

Finally, I expected endorsement of aggression on the NOBAGS to be greater for participants exposed to the aggressive game when compared to those exposed to the aggressive video. A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA revealed a marginally significant interaction between media type and media content on the NOBAGS, F (1, 143) = 2.864, p = .061. A series of t-tests were conducted to pinpoint the locus of this interaction. No significant differences between the aggressive and non-aggressive content were found in the TV and video game conditions. However, significant differences were found in the combined media type condition and will be discussed in the next section (See Figure 1).

Combined Effects

Consistent with Huesmann's (1986) social developmental theory, participants exposed to both a violent video game and television modeled after one another should be the most strongly influenced by exposure to violent media. Thus, I predicted that participants exposed to aggressive content in the combined media condition would show the highest levels of aggressive thoughts and behaviors. Specifically, participants in the combined media condition should act the most aggressively toward a Bobo doll, more strongly endorse aggression on the NOBAGS, and produce the greatest number of

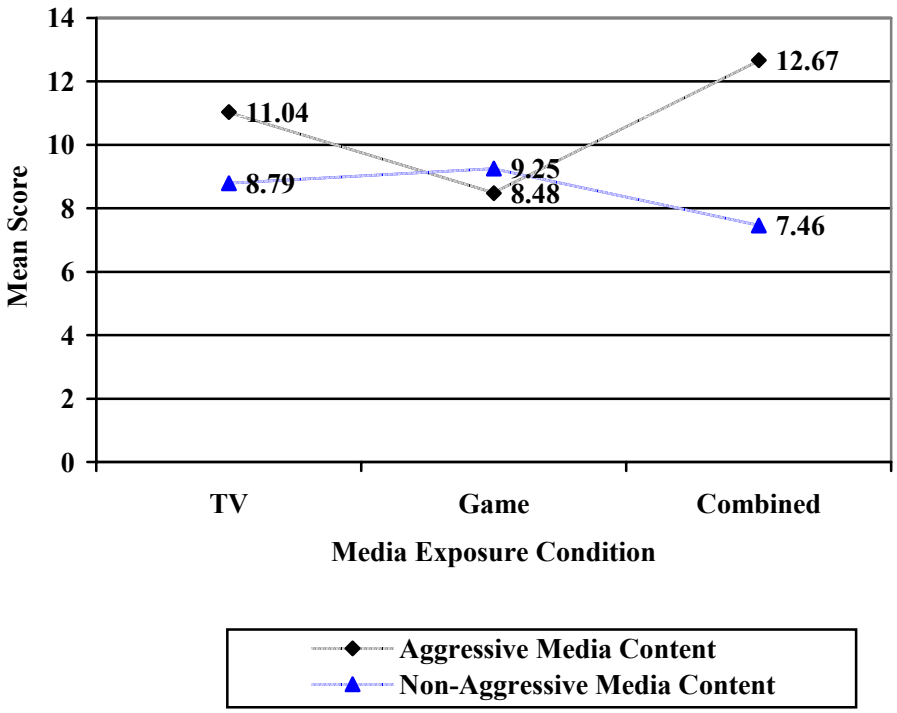

Figure 1. Endorsement of aggression on the NOBAGS (total for retaliation and general beliefs questions).

aggressive words in the word-stem completion task. As previously mentioned, no significant interactions for media type and content were found for the Bobo and word-stem completion tasks. However, a marginally significant interaction for media type and content was found on the NOBAGS. A series of t-tests were used to pinpoint the locus of the interaction: Participants exposed to aggressive media content in the combined media condition were more likely to endorse aggression than their counterparts in the non-aggressive media conditions, t (46) = -2.724 , p = .009. Finally, post-hoc analyses revealed that, when considering the independent contributions of each of the two subscales composing the NOBAGS measure (retaliation vs. general beliefs), the

retaliation subscale scores were responsible for all main effects and interactions observed in the analysis of the NOBAGS total score (See Table 3 and Figure 2).

Age Differences

Younger children were expected to be more influenced by violent media than older children, who are better at drawing inferences and have more stable normative beliefs about aggression. Therefore, I hypothesized that third-grade children should be more strongly affected by violent content than sixth-graders, regardless of media type. Specifically, it was predicted that third-grade children exposed to violent media content would score higher than sixth-graders on the Bobo task. A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA revealed a significant main effect for age on the Bobo task, F (1, 143) = 4.74, p = .031. Third-graders (M = 11.77, SD = 8.00) behaved more aggressively toward the Bobo doll than sixth-graders (M = 8.70, SD = 8.96) (See Table 4). No significant interaction for age and media content was found.

It was also predicted that third-graders exposed to violent media content would score higher than sixth-graders on the NOBAGS measure. A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA revealed a significant main effect for age on the NOBAGS measure, F (1, 143) = 10.036, p = .002. Sixth-graders (M = 11.31, SD = 6.82) were more likely than the third-graders (M = 8.00, SD = 5.90) to endorse aggressive behavior. The foregoing is counter to predicted results for the present research but is consistent with Huesmann and Guerra's (1997) finding that children's endorsement of aggression increases with age.

Finally, sixth-graders exposed to violent media were expected to demonstrate greater priming than third-graders on the word-stem completion task. A 2 x 2 x 3 (Age x Media Type x Media Condition) ANOVA revealed a significant main effect for age

Table 3

Endorsement of Retaliatory Behavior by Third- and Sixth-Grade Children as a Function of Content and Type of Media Exposure

	Media Exposure Condition		
Age	TV	Game	TV/Game
	Non-Violent		
Third-Grade			
M	4.17	5.67	4.00
SD	3.10	5.25	4.51
Sixth-Grade			
M	10.25	9.25	7.58
SD	5.22	4.33	6.26
	Violent		
Third-Grade			
M	6.31	7.25	8.17
SD	4.79	4.61	5.73
Sixth-Grade			
M	11.75	6.36	12.58
SD	7.06	5.59	11.52

on the word-stem completion task measure, F (1, 143) = 11.170, p = .001. Sixth-grade boys (M = 4.81, SD = 3.09) produced more aggressive word stems than did third-grade boys (M = 3.40, SD = 1.72) (See Table 5). No significant interaction for age and media content was found on the word-stem completion measure.

Additional Analyses

There were two major concerns with respect to the findings presented above: (a) the possibility that the amount and kind of children's prior exposure might influence

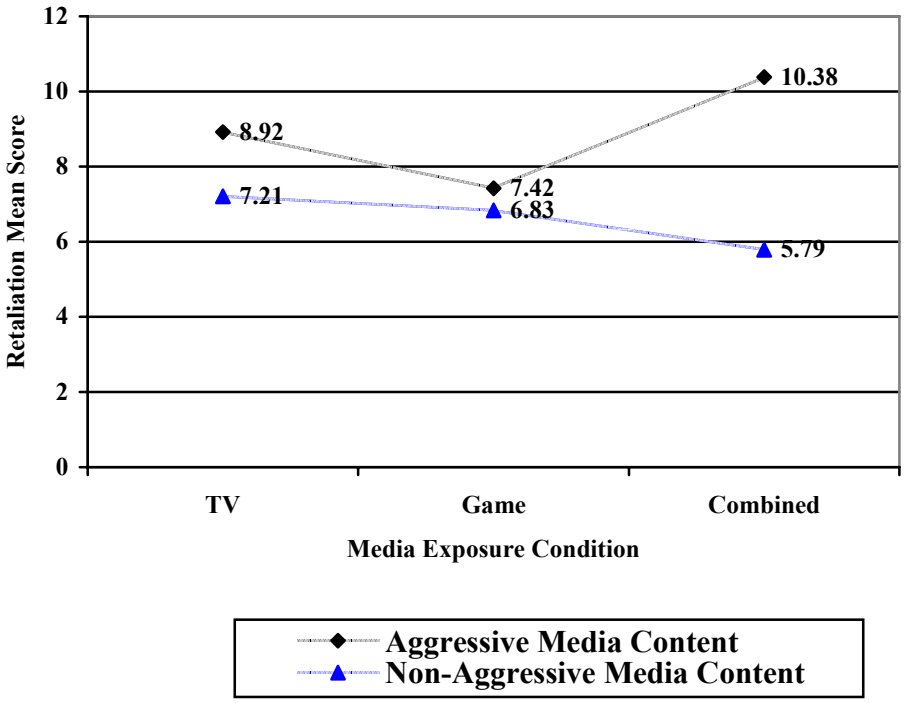

Figure 2. Endorsement of Retaliatory Behavior on the NOBAGS (total for retaliation questions).

experimental results and (b) that the presentation order of the dependent measures might have influenced the children's performance. The concerns about prior exposure were addressed by using demographic information about kind and amount of media exposure to create a factor that was used as a covariate. The results of ANCOVAs conducted for each of the three dependent measures showed that no systematic effects of prior exposure were present on any of the dependent measures. Concerns about order of presentation effects were addressed by conducting 2 x 2 ANOVAs (age x order of presentation) for each dependent measure. No significant effect of order was found for any of the dependent measures.

Table 4

Aggression Towards Bobo Doll by Third and Sixth-Grade Children as a Function of Content and Type of Media Exposure

	Media Exposure Condition		
Age	TV	Game	TV/Game
	Non-Violent		
Third-Grade			
M	13.38	14.25	12.58
SD	8.07	8.18	8.19
Sixth-Grade			
M	8.08	6.96	10.20
SD	7.47	9.71	9.44
	Violent		
Third-Grade			
M	7.96	8.79	13.96
SD	8.43	8.67	4.97
Sixth-Grade			
M	6.92	10.50	9.67
SD	8.68	10.89	8.64

Correlational analyses were used to determine the degree of relationship among the three dependent measures (Bobo, word-stem completion, NOBAGS). The analyses revealed only one marginally significant relationship: Scores for the retaliation portion of the NOBAGS showed a slight positive correlation with Bobo scores, $r = .159$, $p = .058$. Participants who endorsed retaliation on the NOBAGS also tended to act aggressively toward the Bobo.

Correlations among the demographic questions were also examined for significant relationships (See Table 6). There was a significant positive correlation between the number of violent TV programs watched by participants and the number of violent video games they played, $r = .25$, $p = .003$. Participants who listed more violent

Table 5

Number of Aggressive Words-Stems Generated by Third and Sixth-Grade Children as a Function of Content and Type of Media Exposure

	Media Exposure Condition		
Age	TV	Game	TV/Game
		Non-Violent	
Third-Grade			
M	4.08	2.54	3.46
SD	2.13	.96	2.07
Sixth-Grade			
M	4.46	4.54	4.58
SD	1.84	3.53	3.76
		Violent	
Third-Grade			
M	3.54	2.92	3.83
SD	1.61	.973	2.02
Sixth-Grade			
M	4.83	4.50	5.92
SD	3.10	2.50	3.74

TV shows among their most frequently watched programs also listed a greater number of violent games among those they frequently played. Finally, a significant positive correlation between the number of hours participants watched TV and the number of hours the participants played video games was found, $r = .249$, $p = .003$. Participants who watched a lot of TV were also likely to play video games more frequently than their peers.

Table 6

Intercorrelations Among Demographic Questions

Question	3	5	7	9
	(N=144)			
3. Hours of video game play	--	.071	.249**	-.10
5. Games played most often (# of violent titles)		--	.027	.25**
7. Hours of TV watching			--	.069
9. TV shows watched most often (# of violent titles)				--

**. Correlation is significant at the 0.01 level (2-tailed).

CHAPTER 4. DISCUSSION

The present study examined the short-term effects of violent media on children. Results of the current study support and extend current research in this important area of inquiry. Key findings in the current study are as follows: 1) Children exposed to violent media content endorsed higher levels of aggressive behavior than did children exposed to non-violent content. 2) Children exposed violence in the combined media condition endorsed significantly higher levels of aggressive behavior than did those in the non-violent media condition. 3) Sixth-grade boys endorsed higher levels of aggressive behavior and produced more aggressive words on the word-stem completion task than did third-grade boys. 4) Third-grade boys were more aggressive toward the Bobo doll than were sixth-grade boys. A detailed discussion of these results follows beginning with the effects of media content (violence).

Media Content

Extensive television research (see Paik and Comstock, 1994) and a growing body of studies on video games (see Dill and Dill, 1998) suggest a link between media violence and aggressive behavior. Based on this, I hypothesized that participants exposed to aggressive media content would show greater levels of aggression relative to participants exposed to non-aggressive media content. The behavioral (Bobo) and priming (word-stem completion) measures did not reveal any significant differences between participants based on media content exposure. However, a difference was found in the NOBAGS.

With regard to the Bobo task, this measure might have been contaminated by the fact that its presentation was not counterbalanced. It was found that physical activity

associated with this task might influence the other dependent measures, regardless of counterbalancing. For this reason, the measure was always administered as the last dependent measure. Given this complication, it is not surprising that this measure did not detect any group differences. Specifically, the combination of answering questions related to retaliation followed by an opportunity to aggress against a Bobo might have suppressed group differences. Finally, characteristics of the Bobo itself (Wolverine, an aggressive cartoon/movie character) might also have encouraged higher levels of aggression from participants in non-aggressive content conditions.

Research has demonstrated that exposure to violent media increases the accessibility of aggressive constructs (Berkowitz, 1970; Berkowitz & Rogers, 1986; Bushman & Geen, 1990; Bushman, 1996; Carver, Ganellen, Froming, and Chambers, 1983; Worchel, 1972). Based on this, I also predicted that participants exposed to aggressive media would demonstrate priming effects on the word-stem completion task, by completing a greater number of the word-stems to form aggressive words. No group differences were obtained. There might be several factors responsible for this finding. First, although past research suggests merely seeing a picture of a weapon can increase the accessibility of aggressive thoughts (Anderson, Anderson & Deuser, 1996; Anderson, Benjamin & Barlow, 1998), only one study has examined the potential for violent video games to act as a semantic prime for aggressive thoughts (Anderson & Dill, 2000). Second, while Dill and Dill (1998) did find evidence suggesting that violent video games do prime aggressive thoughts, some differences between that study and the current one exist. Specifically, the age of the participants (college students) and form testing (word reading reaction times vs. word completion) differ from the present

research. Finally, with regard to the current method of testing, presentation might have been a factor. All test items were presented on a single page, rather than one at a time. It is possible that participants' responses were biased by seeing multiple items as well as their answers to previous items.

Finally, Huesmann (1998) suggested that exposure to violent media can trigger or strengthen aggressive scripts which in turn guide behavior in problem solving situations. Thus, I predicted that participants exposed to violent media content would be more likely to endorse aggressive behavior on the NOBAGS. This prediction was supported. Participants exposed to aggressive media content were more likely to endorse aggressive behavior on the NOBAGS. This pattern of results is consistent with a large body of research on the effects of television violence (see Paik & Comstock, 1994). More importantly, however, these findings provide additional support for a growing body of research pointing to a connection between playing violent video games and aggressive thoughts and behaviors (e.g., Anderson & Marrow, 1995; Anderson & Dill, 2000; Ballard & Weist, 1996; Calvert & Tan, 1994 Cooper & Mackie, 1986; Irwin & Gross, 1995; Schutte et al., 1988).

Media Type

Dill and Dill (1998) have suggested that stronger character identification occurs with video game characters than with television characters because video games allow the player to choose and act as his or her favorite character. Furthermore, violent video games contain all of the contextual factors found to induce children to imitate aggression (Kunkel, 1995b). Specifically, the interactive nature of violent video games provides an opportunity to rehearse and to be directly reinforced for that aggressive

behavior. Thus, this pattern of outcomes is consistent with social learning theory (Bandura, 1986), and lends important support to the proposal that video game violence might be more detrimental than television violence.

Analyses did not reveal any significant differences in aggression based on the delivery medium (TV vs. video game). At this point it should be noted that only one previous study (Silvern & Williamson, 1987) compared the effects of television violence to video game violence. That study found that exposure to violence from both types of media lead to increased aggression. However, no difference between the two mediums was found. The present research's findings are consistent with the pattern of results observed by Silvern and Williamson; no differences based on media type were found.

This result is counter to Dill and Dill's (1998) prediction that video games should have a greater influence than TV on aggression via simultaneous exposure to modeling and reinforcement as well as stronger character identification. In the present research it is possible that characteristics of the experimental stimuli muted the aforementioned differences between the types of media. Specifically, the aggressive video segment employed in the present research was a particularly exciting championship match containing fireworks and a cheering crowd. The video game lacked these elements. In addition, the participants were not allowed to choose the character they played. In order to examine combined expects, it was important to use the same characters in both types of media. Thus, character identification in the video game condition might have been suppressed.

Combined Effects

Based on Huesmann's (1986) social developmental theory, I hypothesized that participants exposed to a combination of both passive and interactive violent media would be more strongly affected than those exposed only to one type of violent media (e.g. TV or video games). Analyses of participant total scores on the NOBAGS supported this prediction; Participants in the combined violent media condition showed significantly higher levels of endorsement of aggressive behavior than children in the non-violent combined media condition. This result provides support for Huesmann's (1986) social developmental theory regarding script development in children. Specifically, Huesmann suggests that fantasizing or cognitive rumination increases the probability that an aggressive script will be stored in memory. Violent video games that mirror the content of a violent television program make cognitive rumination both likely and very specific. In other words, these types of games give children an opportunity to enact what they have just seen.

To examine the precise nature of children's endorsement of aggression, analyses of each subscale of the NOBAGS were conducted. It was reasoned that questions dealing with general beliefs about aggression addressed the question of aggressive script activation less directly than questions pertaining to retaliation. Unlike the general beliefs questions, the retaliation questions ask the participants to rate their endorsement of certain aggressive behaviors in the context of provocation. As suggested by previous researchers (e.g. Anderson & Dill, 2000), provocation is one situational element that plays a key role in activating aggressive scripts. Separate analysis for each subscale supported this contention. Children were more likely to endorse the retaliation questions

than the general beliefs questions. Specifically, no significant group differences were found when the general beliefs questions were considered by themselves. Alternatively, statistical significance was improved (compared to the analysis of NOBAGS total scores) when just the retaliation questions were analyzed.

Age Differences

Previous research (Collins, 1983) suggests children have a limited ability to draw inferences and understand the motivations of television characters before ten years of age. Further, research suggests that children between the ages of 6 and 9 are still developing schemas about aggression (Huesmann & Guerra, 1997). Thus, these children should be at greater risk from exposure to violent media. In the present research then, I hypothesized that the younger participants would show higher levels of aggression than the older participants on the Bobo and normative beliefs measures.

Analysis of the Bobo data did reveal a main effect of age (third-graders more aggressive); however, the predicted interaction of age and violent media content was not obtained. In fact, no other significant group differences were found for this dependent measure. In light of the previously mentioned problem with potential contamination of this measure, the most plausible explanation for the observed difference might be related to the older participants' reluctance play with the Bobo. More than one third of the sixth-grade participants (35%) chose not to interact with the Bobo, while only 18% of the third-grade participants chose not to interact with it. There are at least two reasonable explanations for the reluctance of the older children. First, the sixth-graders might have been more interested in the reading material (a kid's magazine) offered as an alternative activity. Perhaps third-graders are less interested in

reading and subsequently chose the Bobo over the magazine. A second possibility is that the sixth-graders were simply more likely than their younger counterparts to see themselves as "too old" play with an inflatable punching bag. In other words, the group difference might only reflect the older child's changing perception of which kinds of toys are appropriate. Unfortunately, these issues were not addressed during debriefing so there was no way to know definitively which factors are responsible for the observed age differences on this task.

Examination of the normative beliefs data revealed a main effect of age which favored the sixth-grade boys. These participants were more likely to endorse aggression than the third-grade boys. The predicted interaction between age and content was not found. Generally speaking, the finding suggests that the sixth-grade boys are more aggressive than third-grade boys in this sample. As previously mentioned, this result is consistent with Huesmann and Guerra's (1997) finding that endorsement of aggression increases with age. They emphasize the role of observational learning opportunities that are provided by peers and parents in the formation of normative beliefs. However, the media represents another well documented source of influence on the cognitions of children and adults. Thus, we can assume that sixth-graders have been exposed to more violent media content in their lives than have third-graders. The above finding fits with the predictions of theoretical models of aggression (e.g. Huesmann's social cognitive model [1986] and Anderson & Dill's general affective aggression model [2000]) which see the enactment of aggression as based largely on scripts or schemas.

The lack of an interaction between age and content on the NOBAGS task appears to be contrary to the specific predictions of Huesmann's social-cognitive model

(1986). Huesmann's model predicts that younger children, whose beliefs about aggression are still forming, should be more vulnerable to the influences of violent media. Specifically, Huesmann stated that these beliefs form between the ages of 6 and 9 years old. Unfortunately, due to concerns about the reading skills necessary for the word-stem completion task, it was necessary to use third-grade boys who averaged 8.5 years old. Children's beliefs might already be stabilized by third-grade. Thus, it is quite possible that younger children would have provided a better test of Huesmann's theory.

Finally, as predicted, an age difference favoring the sixth-grade boys was found on the word-stem completion task. Specifically, the sixth-grade boys produced more aggressive words than the third-grade boys. This result is consistent with Collins and Loftus' (1975) spreading activation theory, as sixth-grade boys have generally larger vocabularies and more language experience than third-grade boys. Since no main effect for media content was found, age differences related to language experience is the most viable explanation. Sixth-graders could be expected to produce more aggressive words because these have had greater exposure to aggression. However, it should be noted that this age difference is not simply represented by the total scores.

The difference in scores for the two groups is small (1.5 aggressive words); but significant. Unfortunately, this small difference between the two groups might be the result of differences in the amount of prompting required during testing. Third-grade boys required prompting on average for 1.8 of the 15 word-stems, while the sixth-graders required an average of one prompt for the 15 items. These prompts, which were more frequent among the third-graders, were scored differently than unprompted responses (scored as .5 instead of 1). The conclusion remains unchanged; the observed

group differences are due to language experiences. However, language proficiency rather than specific experiences (i.e. exposure to aggression) seems to be driving the group difference.

Conclusions

There are many challenges associated with conducted research involving the effects of violent video games. Most prominent is the fact that the body of research in this area is still relatively scant. However, research in this area is beginning to confirm the contention that violent video games do adversely affect the user on a short-term and long-term basis. Results of the present research not only provide additional support for the existence of short-term adverse effects (i.e. exposure to violent media content led to greater endorsement of aggressive behavior), but also extend this body of research by examining the individual and combined contributions of different forms of violent media (i.e. TV and video games based on one another).

It has been argued that violent video games have an even greater potential to adversely affect the consumer than the already well documented effects of television violence. Anderson and Dill (2000) describe three characteristics inherent to video games which might account for this: stronger character identification (one is the character in the video game), active participation, and reinforcement (e.g. players are rewarded for aggression). The results of the present research and the only other direct comparison of television and video games (Silvern &Williamson, 1987) do not support this contention. However, as previously mentioned, video game participants could not choose their character due to procedural constraints; potentially muting the influence of

character identification. Further examination of how and under what conditions character identification in video games might influence the player is needed.

Anderson and Dill (2000) also suggest that active participation might lead to "a more complete aggressive script than would occur in the more passive role assumed in watching violent movies or TV shows." It is reasonable to argue that participants learn aggressive scripts just as effectively via passive observation, thus active participation holds no such advantage in the formation of aggressive scripts. Finally, Anderson and Dill (2000) suggest that the reinforcement characteristics of video games might enhance acquisition of aggressive scripts. Players act aggressively and are rewarded for that behavior. However, it could be argued that the aggression in video games is less realistic and therefore less likely to directly influence script formation than TV.

The question of television's and video games' respective influences is further complicated by the present research's finding of a combined effect of television and video games. In the present research, exposure to a violent TV segment followed by exposure to a violent video game of identical content led to greater levels of aggression than in either the violent game or violent TV segment conditions alone. Violent television and video games modeled after one another have a uniquely greater potential to influence the consumer. In combination, they might exert greater influence in two ways. First, the matched content might encourage stronger character identification than either media on its own. Second, TV and games with matched content not only make cognitive rumination more likely, but also very specific. The consumer has the opportunity to re-enact the very scenarios he or she has witnessed in a TV segment. By

increasing character identification and cognitive rumination, the formation and/or activation of aggressive scripts becomes more likely.

Another important issue addressed by the present research concerns how younger and older children are differentially affected by violent media. According to Huesmann's social-cognitive model (1986), younger children are thought to be more vulnerable to the effects of violent media. Unfortunately, in retrospect, the younger age group in the present research was probably too old to allow a proper test of this prediction. If, in fact, the two age groups were not different in terms of vulnerabilities due to social-cognitive differences (i.e. less stable beliefs about aggression and ability to draw inferences), then one might expect sixth-graders to be more aggressive due to an extra three years of exposure to violent media. This is a reasonable assumption given the fact that roughly two-thirds of the children in each age group listed a violent game as their favorite video game and about half the children in both age groups listed a violent program as their favorite television show. Further, while previous research (e.g. Funk, Germann & Buchman, 1997) has found that time spent playing video games does decrease with age (and peaks in third to fourth grade), even by eighth grade, boys are still spending five hours a week playing video games. With regard to TV exposure, both age groups (third and sixth-grade children) spend roughly 20 hours per week watching television (Nielson Media Research, 1997). Thus, as children age they continue to be exposed to a significant amount of violent media which must be considered a possible factor in the present research's observed age differences.

Future Directions

The present research makes some important contributions to our understanding of the effects of violent media on children. First, the finding of combined effects from exposure to two different forms of violent media modeled after one another is significant and warrants further examination. Second, the present research also failed to find a significant difference between exposure to violent television and violent video games. The idea that video games should exert a greater influence than television is theoretically important. However, given the fact that the present research along with a previous study (Silvern &Williamson, 1987) has failed to find a difference between the two media raises an interesting question. How do we as researchers construct a fair test of these two media? Television, although a passive medium, holds a distinct advantage over video games in terms of realism. On the other hand, video games offer an interactive albeit less realistic portrayal of violence. The difference in realism might be at least partially responsible for the lack of difference between the two media in question. From a research standpoint, as video games continue to become more and more refined each year, this inconsistency might quickly resolve itself. Furthermore, video games will be just as realistic as television. Future studies addressing this issue need to control for differences in realism. It is possible that television's realism increases character identification which in turn increases viewers' aggression.

The present research also sought to demonstrate younger children's greater vulnerability to violent media. In retrospect, the younger participants in this study might have been too old to provide an adequate test of Huesmann's social-cognitive model

(1986). Finally, I am confident that future studies utilizing first or second grade children will yield important evidence of younger children's vulnerability to violent media.

REFERENCES

American Psychological Association (1993). Violence and youth: Psychology's response. Washington, DC: Author.

Anderson, C., & Ford, C. (1986). Short-term effects of highly and mildly aggressive video games. Personality and Social Psychology Bulletin, 12, 390-402.

Anderson, C.A. & Morrow, M. (1995). Competitive aggression without interaction: Effects of competitive versus cooperative instructions on aggressive behavior in video games. Personality and Social Psychology Bulletin, 21, 1020-1030.

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.

Atkin, C. (1983). Effects of realistic TV violence vs. fictional violence on aggression. Journalism Quarterly, 60, 615-621.

Ballard, M.E., & Weist, J.R. (1996). The effects of violent video game play on males' hostility and cardiovascular responding. Journal of Applied Social Psychology, 26, 717-730.

Bandura, A. (1994). Social cognitive theory of mass communication. In J. Bryant & D. Zillmann (Eds.), Media effects. (pp 61-90). Hillsdale, NJ: Erlbaum.

Bandura, A. (1971). Social learning theory. New York: General Learning Press.

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A., Ross, D., & Ross, S.A. (1961). Transmission of aggression through aggressive models. Journal of Abnormal and Social Psychology, 63, 575-582.

Bandura, A., Ross, D., & Ross, S.A. (1963a). Imitation of film-mediated aggressive models. Journal of Abnormal and Social Psychology, 66, 3-11.

Bandura, A. (1965). Influence of model's reinforcement contingencies on the acquisition of imitative responses. Journal of Personality and Social Psychology, 1, 589-595.

Berkowitz, L., & Geen, R.G. (1967). Stimulus qualities of the target of aggression: a further study. Journal of Personality and Social Psychology, 5, 364-368.

Berkowitz, L., & Rogers, K.H. (1986). A priming effect analysis of media influences. In J. Bryant & D. Zillman (Eds.), Perspectives on media effects (pp. 57-82). Hilsdale, NJ: Lawrence Erlbuam Associates.

Berkowitz, L. (1970). Aggressive humor as a stimulus to aggressive responses. Journal of Personality and Social Psychology, 16, 710-717.

Berkowitz, L. (1973). Words and symbols as stimuli to aggressive responses, In J. Knutson (Ed.), Control of aggression: Implications from basic research. Chicago, IL: Aldine-Atherton.

Berkowitz, L. (1984). Some effects of thoughts on anti- and prosocial influences of media events: A cognitive-neoassociation analysis. Psychological Bulletin, 95, 410-427.

Berkowitz, L. (1990). On the formation and regulation of anger and aggression: A cognitive neoassociationistic analysis. American Psychologist, 45, 494-503.

Berkowitz, L. (1993). Pain and aggression: Some findings and implications. Special issue: The pain system: A multilevel model for the study of motivation and emotion. Motivation and Emotion, 17, 277-293.

Braun, C., & Giroux, J. (1989). Arcade video games: Proxemic, cognitive, and content analyses. Journal of Leisure Research, 21, 92-105.

Bushman, B. (1996). Priming effects of violent media on aggressive thoughts. Unpublished manuscript.

Bushman, B., & Geen, R. (1990). Role of cognitive-emotional mediators and individual differences in the effects of media violence on aggression. Journal of Personality and Social Psychology, 58, 156-163.

Buss, A.H., & Durkee, A. (1957). An inventory for assessing different kinds of hostility. Journal of Consulting Psychology, 21, 343-349.

Calvert, S.L. (1999). Children's journey through the information age. Boston, MA: McGraw-Hill College.

Calvert, S.L., & Tan, S. (1994). Impact of virtual reality on young adults' physiological arousal and aggressive thoughts: Interaction versus observation. Journal of Applied Developmental Psychology, 15, 125-139.

Carver, C.S., Ganellen, R.J., Froming, W.J., & Chambers, W. (1983). Modeling: An analysis in terms of category accessibility. Journal of Experimental Social Psychology, 19, 403-421.

Centerwall, B.S. (1989). Exposure to television as a risk factor for violence. American Journal of Epidemiology, 129, 643-652.

Centerwall, B.S. (1992). Television and violence: The scale of the problem and where we go from here. Journal of the American Medical Association, 267, 3059-3063.

Chambers, J.H., & Ascione, F.R. (1986). The effects of prosocial and aggressive video games on children's donating and helping. Journal of Genetic Psychology, 148, 499-505.

Collins, W.A. (1983). Interpretation and inference in children's television viewing. In J. Bryant & R. Anderson (Eds.), Children's understanding of television (pp.125-150). New York: Academic Press.

Collins, W.A. (1979). Children's comprehension of television content. In E. Wartella (Ed.), Children communicating: Media and development of thought, speech, understanding (pp.21-52). Beverly Hills, CA: Sage.

Collins, W.A. (1973). Effect of temporal separation motivation, aggression, and consequences: A developmental study. Developmental Psychology, 8, 215-221.

Collins, A., & Loftus, E. (1975). A spreading activation theory of semantic memory. Psychological Review, 82, 407-428.

Cooper, J., & Mackie, D. (1986). Video games and aggression in children. Journal of Applied Social Psychology, 16, 726-744.

Dill, K.E., & Dill, J.C. (1998). Video game violence: A review of the empirical literature. Aggression and Violent Behavior, 3, 407-428.

Dodge, K.A. (1980). Social cognition and children's aggressive behavior. Child Development, 51, 162-170.

Dodge, K.A., & Frame, C.L. (1982). Social cognitive biases and deficits in aggressive boys. Child Development, 53, 620-635.

Dodge, K.A. (1985). A social information processing model of social competence in children. In M. Perlmutter (Ed.), Minnesota symposia on child psychology. Hillsdale, NJ: Erlbaum.

Dominick, J.R., (1984). Video games, television violence, and aggression in teenagers. Journal of Communication, 34, 136-147.

Donnerstein, E., & Berkowitz, L. (1983). Effects of film content and victim association on aggression behavior and attitudes. Unpublished study, University of Wisconsin, Madison.

Eysenck, H.J., & Eysenck, S.B.G. (1975). Manual of the Eysenck Personality Questionnaire. London: Hodder & Stoughton.

Fling, S., Smith, L., Rodriguez, T., Thornton, D. Atkins, E., & Nixon K. (1992). Video games, aggression, and self-esteem: A survey. Social Behavior and Personality, 20, 39-46.

Funk, J.B. (1993). Re-evaluating the impact of video games. Clinical Pediatrics, 32, 86-90.

Funk, J.B., & Buchman, D.D. (1995). Video game controversies. Pediatric Annals, 24, 91-94.

Funk, J.B., & Buchman, D.D. (1996). Playing violent video and computer games and adolescent self-concept. Journal of Communication, 46, 19-32.

Funk, J.B., Germann, J.N. & Buchman, D.D. (1997). Children and electronic games in the united states. Trends in communication, 2, 111-126.

Gerbner, G., Gross, L., Morgan, M. & Signorielli, N. (1994). Growing up with television: The cultivation perspective. In J. Bryant & D. Zillmann (Eds.), Media effects, 17-41, Hillsdale, NJ: Lawrence Erlbaum.

Graybill, D., Strawniak, M., Hunter, T., & O'Leary, M. (1987). Effects of playing versus observing violent versus nonviolent video games on children's aggression. Psychology A Quarterly Journal of Human Behavior, 24, 1-8.

Griffiths, M.D., & Hunt, N. (1993, December). The acquisition, development and maintenance of computer game playing in adolescence. Paper presented at the British Psychological Society London Conference. City University.

Hartly, R. (1964). A review and evaluation of recent studies on the impact of violence. New York: Central Broadcasting System (CBS).

Hayes, S.C., Rincover, A., & Volosin, D. (1980). Variables influencing the acquisition and maintenance of aggressive behavior: Modeling versus sensory reinforcement. Journal of Abnormal Psychology, 89, 254-262.

Huesmann, L.R. (1982b). Television violence and aggressive behavior. In D. Pearl, L. Bouthilet, & J. Lazar (Eds.), Television and behavior; Ten ears of scientific programs and implications for the 80's. Washington, DC: U.S. Government Printing Office.

Huesmann, L.R. (1986). Psychological processes promoting the relation between exposure to media violence and aggressive behavior by the viewer. Journal Of Social Issues, 42, 125-149.

Huesmann, L.R. (1988). An information processing model for the development of aggression. Aggressive Behavior, 14, 13-24.

Huesmann, L.R., & Guerra, N.G. (1997). Children's normative beliefs about aggression and aggressive behavior. Journal of Personality and Social Psychology, 72, 408-419.

Huesmann, L.R. (1998). The role of information processing and cognitive schema in the acquisition and maintenance of habitual aggressive behavior. In R. Geen & E. Donnerstein (Eds.), Human aggression: Theories, research, and implications for social policy (pp. 73-109). San Diego, CA: Academic Press.

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.

Jo, E., & Berkowitz, L. (1994). A priming effect analysis of media influences: An update. In J. Bryant & D. Zillmann (Eds.), Media effects (pp. 43-60). Hillsdale, NJ: Lawrence Erlbaum Associates.

Johnston, A., DeLuca, D., Murtaugh, K., & Diener, E. (1977). Validation of a laboratory play measure of aggression. Child Development, 48, 324-327.

Josephson, W. (1987). Television violence and children's aggression: Testing the priming, social script, and disinhibition predictions. Journal of Personality and Social Psychology, 53, 882-890.

Kestenbaum, G.I. & Weinstein, L. (1985). Personality, psychopathology, and developmental issues in male adolescent video game use. Journal of the American Academy of Child Psychiatry, 24, 325-337.

Kunkel, D., Wilson, B., Linz, D., Potter, W.J., Donnerstein, E., Smith, S., Blumenthal, E., & Gray, T. (1995b). The effects of exposure to media violence. In National Television Violence Study. Mediascope, Inc.

Liebert, R.M., & Baron, R.M. (1972). Short-term effects of televised aggression on children's aggressive behavior. In J.P. Murray, E.A. Rubenstein, & G.A. Comstock (Eds.), Television and social behavior: Television and social learning. (Vol. 2, pp. 181-201). Washington, DC: Government Printing Office.

Lin, S., & Lepper, M. (1987). Correlates of children's usage of video games and computers. Journal of Applied Social Psychology, 17, 72-93.

Lorsbach, T.C., & Reimer, J.F. (1997). Developmental changes in the inhibition of previously relevant information. Journal of Experimental Child Psychology, 64, 317-342.

Matthews, K. A., & Angulo, J. (1980). Measurement of the Type A behavior pattern in children: Assessment of children's competitiveness, impatience-anger, and aggression. Child Development, 51, 466-475.

Mehrabian, A., & Wixen, W. (1986). Preference for individual video games as a function of their emotional effects on players. Journal of Applied Social Psychology, 16, 3-15.

Meyers, K.S. (1997). Video games, violence, and the new ESRB rating system. (Masters thesis, University of the Pacific, 1997). Dissertation Abstracts International, 36, (01), 270.

Naito, M. (1990). Repetition priming in children and adults: Age-related dissociation between implicit and explicit memory. Journal of Experimental Child Psychology, 50, 462-484.

National Institute of Mental Health (1982). Television and behavior: Ten years of scientific progress and implications for the eighties (Vol. 1). Summary Report. Washington DC: U.S. Government Printing Office.

Nielson Media Research (1997). Television audience 1996. New York, author.

Paik, H., & Comstock, G. (1994). The effects of television violence on antisocial behavior: A meta-analysis. Communication Research, 21, 516-446.

Plomin, R., Foch, T. T., & Rowe, D. C. (1981). Bobo clown aggression in childhood: Environment, not genes. Journal of Research in Personality, 15, 331-342.

Provenzo, E.F. (1991). Video kids: Making sense of Nintendo. Cambridge, MA: Harvard.

Roediger, H.L., & McDermott, K.B. (1993). Implicit memory in normal human subjects. In F. Boiler & J. Grafman (Eds.), Handbook of Neuropsychology (Vol. 8, pp. 63-69). New York: Elsevier Science Publishers B.V.

Rushbrook, S. (1986). "Messages" of video games: Social implications. Dissertation Abstracts International, 47, 6.

Schutte, N.S., Malouff, J.M., Post-Gorden, J.C. & Rodasta, A.L. (1988). Effects of playing video games on children's aggressive and other behaviors. Journal of Applied Social Psychology, 18, 454-460.

Scott, D. (1995). The effect of video games on feelings of aggression. Journal of Psychology, 2, 121-132.

Schmidt, C.R., Schmidt, S.R. & Tomalis, S.M. (1984). Children's constructive processing and monitoring of stories containing anomalous information. Child Development, 53, 2056-2071.

Silvern, S.B., & Williamson, P.A. (1987). The effects of video game play on young children's aggression, fantasy, and prosocial behavior. Journal of Applied Developmental Psychology, 8, 453-462.

Surgeon General's Scientific Advisory Committee on Television and Social Behavior. (1972). Television and growing up: The impact of televised violence.

Thomas, M.H., & Drabman, R.S. (1977, August). Effects of television violence on expectations of others' aggression. Paper presented at the annual meeting of the American Psychological Association, San Francisco, CA.

Thompson, J.G. & Myers, N.A. (1985). Inferences and recall at ages four and seven. Child Development, 56, 1134-1144.

Wann, D., & Branscombe, N. (1990). Person perception when aggressive or non-aggressive sports are primed. Aggressive Behavior, 16, 27-32.

Wilson, B.J., Kunkel, D., Linz, D., Potter, W.J., Donnerstein, E., Smith, S.L., Blumenthal, E. & Gray, T.E. (1997). Violence in television programming overall: University of California, Santa Barbara. National Television Violence Study: Scientific Papers, 1-172. Newbury Park, CA: Sage.

Winkel, M., Novak, D.M., & Hopson, H. (1987). Personality factors, subject gender, and the effects of aggressive video games on aggression in adolescents. Journal of Research in Personality, 21, 211-223.

Worchel, S. (1972). The effect of films on the importance of behavioral freedom. Journal of Personality, 40, 417-435.

APPENDIX A

NORMATIVE BELIEFS ABOUT AGGRESSION SCALE

ID# _____ **Beliefs Game**

Instructions:
The following questions ask you about whether you think certain behaviors are WRONG or are OK. Circle the answer that best describes what you think. Circle ONE and only one answer.

Response Choices

3 - IT'S PERFECTLY OK
2 - IT'S SORT OF OK
1 - IT'S SORT OF WRONG
0 - IT'S REALLY WRONG

The choices are ordered to agree with the framing of the question; so "REALLY WRONG" is the first alternative for WRONG questions and "PERFECTLY OK" is the first alternative for OK questions.

Retaliation Belief Questions

Suppose a boy says something bad to another boy, John.
1) Do you think it's OK for John to scream at him? ____
2) Do you think it's OK for John to hit him? ____
Suppose a boy says something bad to girl.
3) Do you think it's wrong for the girl to scream at him? ____
4) Do you think it's wrong for the girl to hit him? ____
Suppose a girl says something bad to another girl, Mary
5) Do you think it's OK for Mary to scream at her? ____
6) Do you think it's OK for Mary to hit her? ____
Suppose a girl says something bad to a boy.
7) Do you think it's wrong for the boy to scream at her? ____
8) Do you think it's wrong for the boy to hit her? ____
Suppose a boy hits another boy, John.
9) Do you think wrong for John to hit him back? ____
Suppose a boy hits a girl.
10) Do you think it's OK for the girls to hit him back? ____
Suppose a girl hits another girl, Mary.
11) Do you think it's wrong for Mary to hit her back? ____
Suppose a girl hits a boy.
12) Do you think it's wrong for the boy to hit her back? ____

General Belief Questions

13. In general, it is wrong to hit other people. ____
14. If you're angry, it is OK to say mean things to other people. ____
15. In general, it is OK to yell at others and say bad things. ____
16. It is usually OK to push or shove other people around if you're mad. ____
17. It is wrong to insult other people. ____

18. It is wrong to take it out on others by saying mean things when you're mad. ____
19. It is generally wrong to get into physical fights with others. ____
20. In general, it is OK to take your anger out on others by using physical force. ____

APPENDIX B

LETTER TO PARENTS

Spring 2001

Dear Parents:

My name is Don Marzolf, and I am a professor of Developmental Psychology at Louisiana State University. My graduate student, Kelly Meyers, and I are conducting a research study that examines whether exposure to aggressive media (i.e., television and video games) has short-term effects on children's thoughts and behaviors. The purpose of this letter is to inform you about our study, and to ask your permission to allow your child to participate.

There has been a long-standing debate about whether children are influenced by aggression that they see in television and movies. While most researchers agree that there might be some negative consequences to long-term exposure to media violence, there is little agreement about how strongly children are influenced, as well as precisely how they are influenced. The issue has become a bit more complex in the past several years with the introduction of a new form of aggressive media - video games.

The purpose of the current study is to examine whether brief exposure to aggressive video content (i.e., professional wrestling) or to an aggressive video game (i.e., professional wrestling on Nintendo) has a short-term effect on children's thoughts or attitudes about aggression. We intend to allow 3rd- and 6th-grade boys to watch a video or play a video game (or both) for a 15-minute period. Some children will be exposed to aggressive content (i.e., wrestling) and others will be exposed to similar, but non-aggressive content (i.e., basketball). We will then ask the children to complete a brief word game. The child will be presented with 15 words, each with a letter missing (e.g., _ight). They will be asked to come up with a letter to make a word. Next, the children will be presented with several hypothetical stories in which a character acts aggressively, and asked whether it was okay for the character to act that way. The purpose of these tasks is to examine whether children who are exposed to aggressive media produce more aggressive words, and believe that aggressive behavior is sometimes justified compared to children who are exposed to non-aggressive media. Finally, we will observe whether the children display any aggressive behavior toward an inflatable bop bag toy. This one-minute episode will be video taped by a concealed camera for later analysis. The study will be conducted at your child's school, and the procedure will be administered to your child in a single 45-minute session.

Given the nature of the study, many are likely to have concerns about exposing their child to media aggression. We want to assure you that the wrestling video and wrestling game that we use are not extremely aggressive. The video is taken directly from television, and the game is rated by the industry as being appropriate for children

ages 7 and up. Therefore, the content is no more extreme than that to which many children are exposed on a daily basis. Further, after participating, your child will be reminded about the negative consequences of behaving aggressively, as well as his school's rules about aggression.

This study has been reviewed and approved by Louisiana State University and by your child's school. Enclosed are two copies of a permission form for our study. If you would like your child to participate, please sign and date one copy of the permission form, place it in the envelope provided, and have your child return it to his teacher. The other copy of the consent form is for you to keep. Upon completion of the study, two $50 Wal-Mart gift certificates will be awarded on a lottery basis.

Thank you very much for your participation. If you have any questions about this study, please feel free to contact me at (225) 388-4098 or *dmarzol@lsu.edu*. You may also contact Kelly Meyers at (225) 388-4664 or *kmeyers@lsu.edu*.

Sincerely,

_____ _____

Donald P. Marzolf, Ph.D. Kelly Meyers, M.A.

APPENDIX C

PARENTAL CONSENT FORM

Project Title:	Television and Video Game Violence: Age Differences and the Combined Effects of Passive and Interactive Violent Media
Performance Site:	East Baton Rouge Parish Elementary and Middle Schools
Investigators:	Donald Marzolf, Ph.D. M-F, 8:00 a.m.-4:30 p.m. Psychology Dept., LSU (225) 388-4098 Kelly Meyers, M.A. Psychology Dept., LSU (225) 388-4664
Purpose of the Study:	This research study is intended to inform the scientific community about the potential effects of aggressive television and video games on third and sixth-grade children.
Inclusion Criteria:	Third and sixth-grade boys will be included in this study.
Exclusion Criteria:	Children in special educational classroom settings (e.g. gifted, etc.) will not be recruited for this study.
Description of the Study:	In a 45-minute individual session (at school), your child will first be asked about the kinds of TV shows and video games he likes. Next, he will participate in one of three following activities: watch a video segment, play a video game or both. The video game and video segment content might be either aggressive (wrestling) or non-aggressive (basketball). Your child will then play a brief word game. He will be asked to come up with a letter to complete fifteen incomplete words. Your child will also be asked about his attitudes toward hypothetical aggressive behavior. Finally, your child will have an opportunity to play with an inflatable Bop Bag for one minute. This one-minute interaction will be video taped by a concealed camera for later analysis. Finally, your child will be returned to class.
Benefits:	Participation is not intended to benefit your child directly. It may benefit society in general by helping us to understand how video games and television act

individually or in combination to affect children of different ages.

Risks: There are only minimal risks associated with your child's participation in this study. Some children will be asked to play an aggressive video game, watch an aggressive video segment, or both for a short period. This might lead to a temporary increase in aggressive thoughts, which will be addressed before your child is returned to class. Note: The video games used in this study are rated appropriate for kids ages 7 and older by the Entertainment Software Rating Board (ESRB). The video segments are derived from regular television and are typical of content to which many children are regularly exposed.

Measures to reduce risk: The investigator will talk with your child about why he should not imitate any aggressive behavior he may have seen in the video game and/or television segment played/watched during the experiment. The negative consequences of imitating such aggressive behavior will be fully explained to your child before he returns to class.

Right to Refuse: Participation is voluntary, and a child will become part of the study only if both child and parent agree to participate. At any time, either the child or the child's parent may withdraw from the study without penalty.

Privacy: Your child's identity will remain confidential. Your child will be assigned a number, and only this number will appear on his data sheets. A key linking your child to a specific number will be available only to those closely associated with the project. Your child's identity will never be revealed in published articles or research reports. Data will be kept confidential unless legally compelled.

Financial Information: There is no cost for participation in the study, nor is there any guaranteed compensation. However, all participants will be entered into a raffle to win one of two $50 gift certificates.

Signatures: The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigator. If I have questions about subjects' rights or other concerns, I can contact Robert Mathews, Chairman, Institutional Review Board, (225) 578-8692. I will allow my child to

participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of this consent form.

_____ _____

Child's Name Principal Investigator

_____

Parent's Signature Date

_____ _____

Address Phone

APPENDIX D

CHILD ASSENT FORM

Child's Name: _____

If you agree participate in my project, this is what we'll be doing today. First, I'll ask you some questions about what kind of TV shows you like to watch and video games you like to play. Then, you'll spend about 15 minutes watching a short video, playing a video game or doing both of those things. Next, we'll play a word game in which I'll ask you to complete some words. I'll also ask you what you think about some different kinds of situations in which kids are mean.

Your parent(s) have already told us that it is O.K. with them if you want to participate, but you don't have to participate if you don't want to. You can also stop at any time and return to class if you don't want to play. The games will take about 45 minutes. Do you have any questions? If you would like to stay and play the games I talked about, please sign your name on the line below.

Child's Signature _____ Age _____ Date _____

Witness _____ Date _____

APPENDIX E

DEMOGRAPHICS QUESTIONNAIRE

Description:
In this questionnaire, I'm going to ask you about some of video games and TV shows you like. **Remember your answers are anonymous, so please answer honestly.**

Age _____
Grade _____
ID # _____

1. I have a Playstation, Nintendo 64 or other game system at home **Yes / No**

2. I have played games on the Nintendo 64 game system **Yes / No**

3. I play video games about _____ hours each day.
   A. less than 1 B. 1-2 C. 3+

4. I play a lot of games that have fighting/shooting. **Yes / No**

5. The three video games I play the most are

   _____ _____ _____

6. My favorite video game is _____.

7. I watch TV about _____ hours each day.
   A. less than 1 B. 1-2 C. 3+

8. I watch a lot of TV shows that have fighting/shooting. **Yes / No**

9. The three television programs I watch the most are

   _____ _____ _____

10. My favorite television program is _____.

APPENDIX F

WORD-STEM COMPLETION TASK

ID#_____

Word Completion Game

Example: _ un → f un

_ unch	_ ick	_ ang
_ lap	b _ sh	b _ lly
_ eat	_ ight	_ attle
_ ush	_ ill	_ arm
h _ t	_ ut	p _ ddle

APPENDIX G

DEBRIEFING STATEMENT

All Participants

- **Purpose of study** – "Remember I told you that I'm a student at LSU and I'm interested in kids. One thing I want to know is how TV and video games affect kids. I also want to know how different kids of different ages handle tough problems, like the ones I read you a little while ago."

Kids in the Aggressive Game/Video Condition – "Since the game/video you just played/watched had a lot of fighting in it, I need to talk with you about what you saw for a second. I want to make sure that you understand why it's NOT ok for you to do the things you saw in the game/video you played/watched."

- **Violence and solving problems**-"One thing you probably already know is that the fighting/wrestling you saw in the game/video doesn't help you solve your problems in real life. What are two bad things that happen when kids fight or use wrestling moves on each other?" - (listen to child's response – reinforce correct answer and cover the next two points)
- **Real injury/accidents**- "One thing that can happen when you fight or use wrestling moves like the ones you saw, is that you and your friend/brother/sister can get hurt, sometimes very badly. The wrestlers you saw are actors and only pretend to hurt each other or get hurt. In real life, kids have sometimes ended up in the hospital hurt badly by other kids who used wrestling on them."
- **School rules** – "One other thing to remember is that using words (e.g., saying mean things) or your body (e.g., hitting /kicking) to hurt other kids is not only wrong but also against school rules. What would happen if two kids were caught using wrestling moves (e.g., choking, kicking or punching) on each other at school?" (Listen to child's response – reinforce correct answer or give corrects answer - you'll get in trouble with the teacher, the principle and probably your parents, too).
- Final Reminder – Remember, the things wrestlers do on TV or that you make them do in video games, are not like what happens when you do those same things for real. People get hurt.

All Participants

"One other thing I wanted to tell you is, thank you. I'm glad you and your parents could help me with my project.

The above statement has been read and explained to me: _____ Date _____
(Child's Initials)

APPENDIX H

BOBO SCORING CRITERIA

Likert rating criteria are as follows:

0. No physical contact with the Bobo during an interval.

1. Subject sitting or standing, physical contact without hitting or kicking (holds, picks up, rocks Bobo back and forth).

2. Subject sitting or standing, hitting and kicking of mild intensity (Bobo head moves up to 45 degrees from axis).

3. Subject standing and fully engaged (not looking around the room), hitting or kicking of medium intensity (head of Bobo moves more than 45 degrees from axis but does not contact the floor).

4. Subject standing and fully engaged (not looking around the room), hitting or kicking of high intensity (head of Bobo contacts the floor), and/or other aggressive acts such as picking up the Bobo and throwing it or yelling at it.

*The highest rated single occurrence of aggression during an interval determines the overall score for that interval.

VITA

Kelly Meyers received his bachelor's degree in psychology from the University of Nevada, Reno. He went on to attend the University of the Pacific in Stockton, California, where he earned a master's degree in behavior analysis. Recently, Kelly finished his doctoral degree in developmental psychology at Louisiana State University.