

The Effects of Profanity in Violent Video Game Content on Players' Hostile Expectations, Accessibility of Aggressive Thoughts, Aggressive Feelings, and Other Responses

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## ABSTRACT

Although the effects of violent video games on aggression in users have been researched extensively and the resulting body of research shows that violent video games can increase aggressive behaviors, aggression-related feelings and thoughts, and physiological arousal, no empirical studies to date have examined whether there are similar and parallel effects of verbal aggression (e.g., profanity) in video game content. A 2 X 2 between-subjects factorial experiment ( $N = 321$ ) tested the effects of profanity used by protagonists (protagonist profanity present versus absent) and antagonists (antagonist profanity present versus absent) on users' hostile expectations, accessibility of aggressive thoughts, aggressive feelings, perceived arousal, use of profanity, enjoyment, presence, and perceived performance while taking into account the potential moderating role of gender and controlling for several individual difference variables. The study's factors were manipulated via the creation of four versions of an original three-dimensional "first-person shooter" video game.

Profanity used by both protagonist and antagonist characters was found to have significant effects on players' hostile expectations, an important higher-order aggressive outcome that is the most direct precursor to aggressive behaviors in the process described by the general aggression model. There was limited evidence for effects of profanity in game content on players' accessibility of aggressive thoughts, aggressive feelings, and perceived arousal. Additionally, profanity had little impact on how much players used profanity themselves, how much they enjoyed the game, feelings of presence, and how they rated their performance in the

game. These trends were consistent across a range of demographic, personality, and video game experience dimensions that were measured, even though several of these individual difference variables were found to be related to some outcome variables and to each other. Therefore, while this study's findings did not necessarily indicate imitative modeling of profanity, they point to the possibility of more general effects regarding aggressive outcomes. This study's findings emphasize the need for future research investigating the effects of profanity in video games and other media.

## DEDICATION

To Adaia: I love you, my baby girl.

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## CHAPTER ONE

### INTRODUCTION

Video game play is a large part of the lives of many U.S. youth. In fact, 8- to 18-year olds in the U.S. average nearly one hour of video game play per day, and around 83% of these youth have at least one game console in their homes (Rideout, Roberts, & Foehr, 2005). Video game play continues to be popular among college students, as 68% of male college students play two or more hours per week and 21% of female students play two or more hours per week (Ogletree & Drake, 2007).

Video games' popularity has been accompanied by concern about their effects on users, particularly considering the high prevalence of violence in video game content. Based on research connecting media violence to both short-term and long-term increases in violence and aggression, researchers argue that media violence is a public health threat (American Academy of Pediatrics, 2000). As media play a significant role in adolescent development, further investigation of the role of violent media on adolescents and young adults, particularly the influence of video games, is essential to identify causes of aggression to help prevent its consequences. Adolescents commit a large proportion of violence each year (over 10% of murders are committed by youth under 18), and murder is the second leading cause of death for adolescents (Levesque, 2007). Moreover, homicide is the second leading cause of death among adolescents and young adults. Homicides peak in young adulthood and then decrease throughout the remainder of the lifespan (NAHIC, 2007).

Entertainment media geared toward youth are particularly violent and graphic. Moreover, children tend to favor violent media. Buchman and Funk (1996) found that among students in

grades four through eight, approximately half of the favorite games were classified in the violent category. Younger children, whose schemas and beliefs are less developed, are especially sensitive to violent media and may identify with media characters. Although research finds that the media-violence effect is largest for children under five and effect sizes decrease between preschool and adult years, experimental meta-analyses show that effect sizes increase among college-aged youth. Therefore, these findings underscore the importance of considering the important developmental states of adolescents and young adults (Levesque, 2007).

The effects of violent video games on aggressive behavior in users have been researched extensively (Anderson, Gentile, & Buckley, 2007; Anderson et al., 2010; Carnagey & Anderson, 2004). A large body of research shows that violent video games can increase aggressive behaviors among children and young adults, increase aggression-related feelings and thoughts, increase physiological arousal, and decrease prosocial behaviors (Anderson, Berkowitz, Donnerstein, et al., 2003; Anderson & Bushman, 2001; Anderson, Shibuya, Ichori, et al., 2010). This research has been useful in exploring the link between portrayals of aggression in video games and aggression in video game users, but it has also been limited in scope to only the effects of physical aggression.

While empirical research has addressed thoroughly the potential effects of physical aggression (e.g., shooting, punching, kicking) in video game content on players, no empirical studies to date have examined whether there are similar and parallel effects of verbal aggression (e.g., profanity) in video game content. In fact, research on the effects of verbal aggression in media is lacking (Bushman & Cantor, 2003). Profanity is one prominent form of verbal aggression (Infante & Wigley, 1986; Kaye & Sapolsky, 2004a; 2004b; 2004c; Meyer, Roberto, Boster, Franklin, & Roberto, 2004; Roberto, Meyer, Boster, & Roberto, 2003) that has also

received attention as a potentially problematic presence in some video game content (Bushman & Cantor, 2003; Haninger & Thompson, 2004; Ivory, Williams, Martins, & Consalvo, 2009; Thompson & Haninger, 2001; Thompson, Tepichin, & Haninger, 2006), but the effects of its presence in video game content has yet to be examined. Therefore, an investigation into the effects of profanity in video game content is a useful starting point for a line of research on the effects of verbal aggression in video games and other media content.

Although empirical research has yet to investigate the effects of verbal aggression in media on viewer aggression and other outcomes, it is well documented that adolescents and young adults are frequently exposed to verbal aggression in the form of profanity and offensive language via media exposure. For instance, offensive language on prime time networks has increased between 1997 and 2001 to the rate of one profane word per eight minutes of programming (Kaye & Sapolsky, 2004a). Although the majority of commercially popular video games do not contain profanity, it is present in many popular games, and many of the games that do contain profanity contain much of it (Ivory et al., 2009). Although we do not yet know the effects of such profanity on young viewers, it is possible that its verbal aggression may elicit similar effects as those elicited by physical aggression (e.g., increases in aggressive behaviors, increases in aggression-related feelings and thoughts, and increases in physiological arousal).

Therefore, it is essential for research to address the potential effects of verbal aggression in video games on users. The purpose of this dissertation is to extend our understanding of the effects of aggression in violent video games, as well as our more general understanding of the effects of aggression in media content, by examining the effects of profanity in a video game on a number of user responses. This investigation is intended to serve as an initial foray to lead

future research exploring not only the effects of profanity in video games, but also the effects of verbal aggression in media content in general.

Chapter Two provides a review of relevant literature and theoretical frameworks and identifies a series of research questions for study. Chapter Three describes the design, materials, measures, and procedures of a laboratory experiment examining the effects of profanity uttered by protagonist and antagonist characters in a video game on a number of user responses pertaining to aggression and other response dimensions. Chapter Four describes the analyses conducted on data collected in the laboratory experiment and presents the results of these analyses. Chapter Five concludes this dissertation by discussing the theoretical and practical implications of the study, acknowledging limitations, and suggesting directions for future research.

## CHAPTER TWO

### LITERATURE REVIEW

#### Media and Aggression

##### *Aggression Defined*

Aggression has been defined in various ways in the literature. Aggression is often defined as behavior meant to harm another person (Anderson et al., 2003) or behavior intended to harm another person who has motivation to avoid the harm (Anderson & Bushman, 2001). Anderson, Gentile, and Buckley (2007) define human aggression as “A behavior that is intended to harm another individual, the behavior is expected by the perpetrator to have some chance of actually harming that individual, and the perpetrator believes that the target individual is motivated to avoid the harm” (p. 13). This definition does not include accidental harm as aggression because it is not intentional.

There are several subtypes or forms of aggression. The first subtype of aggression is physical aggression, which encompasses harm by direct physical means (e.g., hitting or shooting) and ranges in severity from less serious acts to those that encompass serious injury. Another subtype of aggression is verbal, which is the cause of harm by verbal means (e.g., calling a person names) or saying hurtful things. A final aggression subtype is relational aggression, which includes behaviors that cause harm through damage or the threat of damage to friendships or relationships (Anderson et al., 2003; Anderson et al., 2007).

### *Effects of Media on Aggression*

Major reviews of the literature have found significant effects of media violence on aggression (Anderson et al., 2003; Anderson & Bushman, 2001; Anderson et al., 2007). Accumulated research spurred the issuing of the Joint Statement on the Impact of Entertainment Violence on Children (signed by six professional health organizations) regarding the effects of media violence on children. This statement refers to over 1,000 studies that point to a causal connection between media violence and aggressive behavior in children and concludes that viewing violence can trigger increases in aggressive behaviors and values (American Academy of Pediatrics, 2000).

The vast majority of empirical studies examining the effects of media violence have focused on visual media (e.g., movies and television), although research is also increasingly being conducted on more interactive visual media (e.g., video games and the Internet) (Anderson et al., 2003). It is well known that violent media use can cause increases in aggressive behavior, aggressive thoughts, aggressive feelings, and desensitization to violence and decreases in prosocial behavior (Anderson et al., 2003; Anderson & Bushman, 2001; Carnagey & Anderson, 2004; Anderson et al., 2010). Television and film violence contributes to both short and long-term increases in aggression and violence in youth (Huesmann & Taylor, 2006). Anderson and Bushman (2001) affirm the importance of considering the literature on television and movie violence in discussing video game violent effects because of the analogous underlying psychological processes and the greater extent of knowledge regarding visual media violent effects.

Meta-analyses of television and movie violence indicate that media violence increases the probability of aggressive behaviors in both the short- and long-term (Anderson et al., 2003). In a

meta-analysis assessing effects of television violence on aggression, Paik and Comstock (1994) found a positive correlation between television violence and aggressive behavior, with an effect size of  $r = .31$ . Bushman and Anderson (2001) noted that this correlation was greater than several health-related meta-analyses' reported correlations such as those between asbestos exposure and lung cancer, condom use and sexually transmitted HIV, exposure to lead and IQ scores in children, and calcium intake and bone mass.

Randomized experiments examining exposure to violent television, film, and aggression among youth find that exposure to violent television or film causes short-term increases in aggressive behaviors, thoughts, and feelings among youth. On average, these effects sizes are moderate and are larger for less serious outcomes and smaller for serious outcomes (Anderson et al., 2003). In addition, cross-sectional surveys show that exposure to violence on television and film is correlated with physical aggression, verbal aggression, and aggressive thoughts among youth, and longitudinal studies show correlations of viewing violent media during childhood and aggressive behaviors during adulthood (Anderson et al., 2003).

## Theoretical Approaches Regarding the Effects of Video Games

### *Theories of Play and Development*

Play is thought to contribute greatly to cognitive development among children. Today, video games are an extremely prevalent form of play from childhood through adulthood. Several empirical studies have investigated the potential for learning and educational video games among children (Blumberg & Sokol, 2004; Din & Calao, 2001; Mayer, Mautone, & Prothero, 2002). However, video games played for entertainment purposes also affect learning, albeit learning of

perceptions and behaviors that may be undesirable. For example, violent games may have deleterious effects on users by teaching unhealthy perceptions and behaviors related to aggression. Two predominant theoretical frameworks describing the role of play in cognition and learning are those of Piaget and Vygotsky.

Piaget described intelligent acts as characterized by the equilibrium between assimilation and accommodation. With assimilation, children incorporate objects and events into existing thinking, whereas with accommodation, mental structures are reorganized to incorporate novel events (Nicolopoulou, 1993). Specifically, he described play as “primarily mere functional or reproductive assimilation” (Piaget, 1962, p. 87). That is, unlike objective thoughts, where adaptations are made based on requirements of external reality, “imaginative play is a symbolic transposition which subjects things to the child’s activity, without rules or limitations” (p. 87).

Nicolopoulou (1993) explains that “Piaget asserts that the development of play progresses from purely individual process and idiosyncratic private symbols to social play and collective symbolism” (p. 4). Piaget identified three types of play: practice play, symbolic play, and play with rules, the counterparts of sensorimotor, preoperational, and concrete operational intelligence. Piaget described that play begins with dissociation between assimilation and accommodation. Children learn behaviors such as grasping and throwing in accommodating to new situations and learn to repeat, reproduce, and generalize these behaviors through elements of assimilation until the child eventually performs these behaviors for purposes of pleasure. Therefore, practice play and practice games occur during the first 18 months, and include repetition of sequences of actions for purposes of pleasure. In these mere “exercises,” children enact a varied range of behaviors for no other purpose than the pleasure of functioning (Piaget, 1962).

Beginning during the child's second year, these repetitious behaviors and practice games become symbolic. This symbolic, pretend play first begins with solitary activity using idiosyncratic ludic symbols and then evolves to sociodramatic play using collective symbols by the end of the third year (Nicolopoulou, 1993). As distinguished from practice play, which does not involve thought nor representational structures, symbolic games allow for representation of nonexistent objects (Piaget, 1962). Specifically, this make-believe, imaginary, pretense play involves the following: (1) decontextualizing of behavior, or enacting familiar behaviors (e.g., eating), (2) shifts from self- to other-referencing (e.g., instead of oneself eating, making a doll eat), (3) substitution of one object for another object (e.g., making a pillow stand for a bear), and (4) sequential combination of behaviors (enacting an entire pretend scene rather than a mere behavior) (Nicolopoulou, 1993; Fein, 1981). Moreover, Piaget even suggested that language development is dependent on the symbolic component of play—"First comes the actual sensory-motor experience with an object or action; then comes the make-believe reliving of that experience; and finally comes a word which represents the whole schema verbally" (Pulaski, 1971, p. 97).

Finally, play becomes characterized by the acquisition of rules (play with rules). This type of play rarely begins before the ages of 4 to 7, and primarily occurs during ages 7-11. The existence of rules implies social relationships. Here, multiple individuals can interact, and rules are used to regulate social groups. These rules may be constructed either spontaneously (based on temporary agreement) or may be handed down from others (institutional rules) (Nicolopoulou, 1993; Piaget, 1962). While games with rules allow for intellectual satisfaction and victory over others, satisfactions are legitimized by the rules of the game, with "a code of honour and fair play" (Piaget, 1962, p. 168). Therefore, games with rules consist of games with

sensory-motor combinations (e.g., marbles) or intellectual combinations (e.g., chess), characterized by competition between individuals and regulated by institutional or spontaneous rules (Piaget, 1962).

Vygotsky believed that true play begins around age 3. For Vygotsky, play is a social symbolic activity. It generally includes more than one child, and the themes of play are based on children's understanding of the sociocultural ideas and elements of society. Vygotsky believed that children's capacities are greatly shaped by the cultures they live in and ideas transmitted by parents, peers, and other adults. This transmission occurs largely through language and communication as well as cultural artifacts (e.g., documents, symbols). He felt that play contributes greatly to cognitive development, but the capacity for play and symbolism "involves a social process mediated by the collectively elaborated symbolic and normative systems of social groups" (Nicolopoulou, 1993, p. 9). Therefore, in contrast to Piaget, Vygotsky believed that symbolic play is social and that idiosyncratic symbols are comprised of sociocultural elements.

Vygotsky maintained that play consists of "realization of unrealizable desires through the use of fantasy" (Nicolopoulou, 1993, p. 10), allowing children to satisfy both apparent and more unconscious desires. These processes additionally allow children to enact some degree of self-control in following these rules. Therefore, through play, children learn that satisfying their desires also requires obedience to self-chosen rules. Furthermore, in childhood, play allows children a chance to expand their world—through imaginary play, children can open their thinking to go beyond merely the external environment to engage in organized thought. Hence, pretense play enables the child to create an imaginary situation where meanings are dissociated

from referents and encourages the development of abstract, internalized thought (Nicolopoulou, 1993).

Vygotsky stressed the importance of the imaginary situation and the presence of rules in play. Through play, a child creates an imaginary situation and here, children can tackle their unrealizable desires. Vygotsky explained that whenever there is an imaginary situation in play, there are also rules—“Just as the imaginary situation has to contain rules of behavior, so every game with rules contains an imaginary situation” (Vygotsky, 1978, p. 95). The presence of rules is a primary element of both games with rules as well as imaginary, pretense play. For example, regarding games with rules, chess is structured by an imaginary world with actors who can move in specific, rule-defined ways. These rules constitute the play situation, but these rules also derive their meanings from the play situation. Likewise, the presence of rules is also a defining characteristic of pretense play. For instance, when a child plays dolls and imagines themselves the mother and the doll the child, implicit rules are present with regard to role restrictions (e.g., children act in accord with their understanding of maternal and paternal rules of behavior). Nicolopoulou (1993) explains, “In short, pretense play and games with rules are two poles of a single continuum, and Vygotsky sees the long-term development of play as a gradual movement between them – from an explicit imaginary situation with implicit rules (pretense play) to an implicit imaginary situation with explicit rules (games with rules)” (p. 9).

In sum, then, Piaget believed that three main categories of play, practice games, symbolic games, and games with rules, describe the evolution of play during childhood and that play is a crucial component of a child’s development. In fact, he considered that play “bridges the gap between sensory-motor experience and the emergence of representative or symbolic thought” (Pulaski, 1971, p. 96). Vygotsky also viewed play as an important factor in childhood

development. Children begin with an imaginary situation very similar to one recently enacted in real life and move toward a realization of its purpose, or goal (e.g., winning). At the end of this development, the activity becomes more regulated with the emergence of rules (Vygotsky, 1978). Importantly, Vygotsky's discussion of play acknowledges the role of play in encouraging cognitive development through expansion of the child's world and adherence to the implicit rules inherent in the imaginary situation (Nicolopoulou, 1993).

Video game play continues to affect cognitive development during adolescence and young adulthood. Although there is evidence that video games can cause people to have increased aggression, thoughts, feelings, and behaviors, video games may also be excellent teachers (Gentile & Gentile, 2008). Some of the characteristics of violent video games that adolescents and young adults often play also contain valuable cues for learning. For instance, video games commonly contain various difficulty levels which adapt to the learner's prior knowledge and pace, they allow for abundant practice up to the point of mastery and automatization, and they provide both extrinsic (e.g., points, health) and intrinsic (self-esteem and confidence) reinforcement of mastery. Additionally, knowledge and skills are learned and mastered in a variety of contexts and multiple ways of solving problems are encouraged, allowing game players to develop a more flexible representation of knowledge (Gentile & Gentile, 2008). Therefore, video games are an important medium to the study of media effects, including problematic effects such as learned aggression.

### *Social Cognitive Theory*

The most commonly cited theoretical explanation of how video games affect behavior is social cognitive theory, along with its conceptual predecessor social learning theory (Sherry,

2001). A major tenet of social cognitive theory is that in addition to direct experience, people learn vicariously through observing the environment, others' behaviors, and the consequences of their actions (Bandura, 1986; 2002). Observing others provides people with symbols and rules to guide their behaviors in a number of situations without having to experience them firsthand. Bandura (1986) explains that "most behavior is learned by observation through modeling. By observing others, one forms rules of behavior, and on future occasions this coded information serves as a guide for action" (p. 47). Therefore, observational learning occurs when a person watches the actions of another person and the reinforcements that the person receives (Baranowski, Perry, & Parcel 2002). Social cognitive theory assumes that whether or not people perform what they have learned is influenced by the consequences of these actions (e.g., external, vicarious consequences) (Bandura, 1986). However, behaviors can be modeled even without immediate rewards, as humans have the ability to anticipate future consequences of actions. Thus, children, adolescents, and adults may learn behaviors through the modeling of video game characters, especially if models are rewarded or attractive in appearance.

Observational learning is controlled by four subfunctions. First, attentional processes help determine what information is observed and what information is extracted. Several characteristics influence attention (e.g., attractiveness, salience, value preferences, and cognitive skills). Another subfunction, retention, explains that people cannot be influenced by events unless they remember them. A further subfunction is the behavioral production process wherein symbolic conceptions are translated into courses of action (conceptions guide behavioral patterns) and mental images are translated into behaviors. Finally, motivational processes describe that people do not perform every behavior they learn and are motivated by a variety of

forces. For instance, people are more likely to model behaviors if they result in valued outcomes (Bandura, 2002; 2009).

Social cognitive theory describes human functioning in terms of triadic reciprocal causation. Thus, in this transactional view of society and self, “Personal factors in the form of cognitive, affective, and biological events; behavioral patterns; and environmental events all operate as interacting determinants that influence each other bidirectionally” (Bandura, 2009, p. 94). Thus, environmental experiences can affect human behaviors, which are further influenced by personal factors (Baran & Davis, 2003). The amount of influence of these factors depends on the situation and the individual, and although they are interdependent, the influence of one factor can override another. Moreover, social cognitive theory is founded in an agentic perspective. Bandura (2009) explains that “People are self-developing, proactive, self-regulating, and self-reflecting, not just reactive organisms shaped and shepherded by environmental events or inner forces” (p. 94). Thus, people are not driven by solely inner forces or controlled by external stimuli. Humans have endowed plasticity, and the majority of human behavior is organized through individual experiences rather than merely inborn programming (Bandura, 1986).

Social cognitive theory explains that humans have several capacities. First, people have a symbolizing capacity—this capacity for symbolization allows people to comprehend words, communicate with each other, and alter and adapt to their environments (Bandura, 1986; 2009). Using symbols, people are able to understand causal relationships and can construct solutions to problems and evaluate their outcomes without enduring trial and error processes (Bandura, 2009). People also have a self-regulatory capability. Human behavior is guided by foresight and anticipation toward future events and outcomes, people set goals for themselves, anticipate the outcomes of their actions, and plan courses of action likely to produce desired outcomes. People

gain satisfaction from fulfilling standards, and this serves as a motivator for their actions (Bandura, 1986; 2009). People also have a self-reflective capability, or the capacity to reflect on themselves and the adequacy of their actions and thoughts (Bandura, 2009). Humans self-examine their functioning in the world, can distinguish between faulty and accurate thinking, and analyze how well their thoughts serve in managing daily tasks. Finally, people have a vicarious capability where they learn vicariously by observing the behaviors of others and its consequences (Bandura, 1986). This capacity allows people to gain rules for regulating their behaviors by observing other people's actions and their consequences without having to learn by trial and error.

Importantly, social cognitive theory describes that adolescents and adults may learn a range of behaviors through modeling media characters, particularly if models are rewarded or attractive in appearance. Additionally, this learning does not merely take the form of direct mimicry, but can instead incorporate higher-order abstract modeling wherein general rules and patterns can be learned and applied to a variety of contexts and situations (Bandura, 2009). Regarding the present study, profanity in video games therefore provides a potential source for the learning of both profanity and aggressive behavior in general. Video game users may hear profane words during video game play and repeat them while playing the game or later during unrelated real-life circumstances, but the abstract modeling predicted by social cognitive theory also predicts that profanity in video game content may also lead to more abstract modeling of aggression in video game players beyond simple imitation of profanity.

### *Cultivation Theory*

The guiding hypothesis of cultivation theory, which has its roots in the effects of television but has since been found to apply to other media including video games (Williams, 2006), is that “those who spend more time watching television are more likely to perceive the real world in ways that reflect the most common and recurrent messages of the television world, compared to those who watch less television” (Morgan, Shanahan, & Signorielli, 2009, p. 34). Therefore, cultivation theory explains that viewers who spend more time immersed in media are more likely to see the world in ways which reflect the messages of the mediated world than those who spend less time with media. Television cultivates how people view their worlds, as viewers who spend greater time watching television are more likely to see the real world in terms of the ideologies, portrayals, images, and values observed on television (Gerbner et al., 2002). When applied to video games, then, cultivation theory explains that people who spend more time playing video games are more likely to have worldviews reflective of values and ideologies observed during game play.

Cultivation theory views television as the major factor of socialization in our society, and this overall pattern of media use over time is what cultivates stable and common conceptions of reality (Gerbner et al., 2002). It explains that television is our primary story teller in society, or the mainstream of our culture, which consists of the commonality of values and outlooks that heavy exposure may cultivate among viewers. Specifically, the concept of “mainstreaming” means that “heavy viewing may absorb or override differences in perspectives and behavior that ordinarily stem from other factors and influences” (Morgan, Shanahan, & Signorielli, 2009, p. 41). Hence, mainstreaming represents a convergence of outlooks which may override normally

occurring differences among groups (e.g., social, cultural, and political characteristics) (Gerbner et al., 2002; Morgan, Shanahan, & Signorielli, 2009).

Cultivation research shows that heavy exposure to television may cultivate exaggerated perceptions of the amount of people involved in violence (e.g., an exaggerated number of murders per year). In fact, these exaggerated perceptions are termed “mean world syndrome,” which describes that “long term exposure to television tends to cultivate the image of a relatively mean and dangerous world” (Morgan, Shanahan, & Signorielli, 2009, p. 39). As Romer, Jamieson, and Aday (2003) explain, “Cultivation theory, a particularly influential analysis of television’s effects on the public, rests on the assumption that prime-time television portrays a world more filled with menace than the one most of us inhabit” (p. 89).

Cultivation theory makes the assumption that television is a coherent system of messages that is consumed in a nonselective way by viewers. What is most likely to cultivate common conceptions of reality is the overall pattern of programming that communities are exposed to over time. Therefore, it is exposure to the total pattern rather than specific programs or genres which accounts for the cultivation effect. Moreover, cultivation theory assumes that cultivation is not dependent on whether viewers actually believe what they see on television, and knowledge and values are a result of a mixture of the images and stories we have viewed across time. Finally, “cultivation does not see television’s contribution to conceptions of social reality as a one-way, monolithic ‘push’ process. The influence of a pervasive medium upon the composition and structure of the symbolic environment are subtle, complex, and intermingle with other influences” (Morgan, Shanahan, & Signorielli, 2009, p. 37).

Although there has been some debate as to whether cultivation can be generalized to video games, Mierlo and Van den Bulk (2003) explain that “the issue of distinction between the

television mainstream and video games, however, might not be as contentious as it seems” (p. 99) because the majority of video games contain violence. Furthermore, there is some concern that video games are not as realistic as television. However, as video games become more realistic, cultivation theory becomes increasingly relevant. Williams (2006) observed cultivation effects related to perceptions of violent crime in a longitudinal study of video game players.

### *Priming*

Priming refers to the effect of a preceding stimulus on reactions to a subsequent stimulus. Therefore, media priming describes the short-term effects of media exposure on later judgments or behaviors. Studies investigating media priming and violence often show that the priming effect is transient and fades quickly, even within the time course of the experiment (Roskos-Ewoldsen, Roskos-Ewoldsen, & Carpentier, 2009). The priming effect may be accounted for by the cognitive-neoassociation model, which draws greatly from network models of priming and assumes that associative networks link feelings with certain thoughts and physiological reactions (Berkowitz, 1989; Berkowitz, 1990). This model proposes that media violence activates aggressive concepts in the memory, which increases the probability that an individual will adopt aggressive behaviors and interpret others’ behaviors as aggressive (Roskos-Ewoldsen, Roskos-Ewoldsen, & Carpentier, 2009).

Priming was initially used in cognitive psychology in examining the representation of information in memory. Network memory models assume that material is stored in nodes, each node signifies a concept, and nodes are connected to associated nodes via associative pathways. When a node’s activation threshold is exceeded, the node fires, which may influence associated nodes and may spread activation levels. Activation levels accumulate from either dispersion

from other nodes or from environmental inputs. Therefore, when activation is spread, related nodes now need less activation to fire. However, if activation is absent, the node's activation level dissipates and returns to a resting state. The degree to which a prime affects a thought or behavior depends on both the intensity (frequency) and recency (duration) of the prime. Primes of greater intensity and recency tend to produce larger priming effects than do lower intensity and more distant primes. Moreover, priming effects fade over time (Roskos-Ewoldsen, Roskos-Ewoldsen, & Carpentier, 2002; 2009).

Research shows that violent media depictions in video games may prime aggressive concepts in the memory. Bushman (1998) found that violent media increase accessibility of aggressive constructs, as participants who viewed violent videos showed faster reaction times to aggressive words. Anderson and Dill (2000) found that violent video games primed aggressive thoughts, as aggressive words were more available for those who played the violent video game than those who played a nonviolent game. Priming and the cognitive-neoassociation model do not predict only short-term automatic responses such as reaction times and accessibility of words, though. The approach also predicts that priming mechanisms can also influence more complex and deliberate cognitive processes, such as appraisals and decisions. Priming is therefore an important conceptual framework to an understanding of video games' effects on both automatic and deliberative processes, including negative ones such as aggressive thoughts, feelings, and behaviors.

### *General Aggression Model*

The general aggression model is a unified theoretical model that integrates many components of more specific theoretical models (Anderson et al., 2007). It integrates Bandura's

social cognitive theory (1986; 2002), Berkowitz's (1989; 1990) cognitive neoassociationist model, Dodge & Crick's (1990) social information-processing model, Geen's (1990) affective aggression model, Huesmann's (1986) script theory, and Zillmann's (1971) excitation transfer theory. Anderson and Bushman (2002) developed the general aggression model in order to incorporate the many specialized theories into one useful model describing processes related to human aggression. The general aggression model predicts that repeated exposure to violent media, including video games, will lead to increased aggression, and it describes and predicts the likelihood of aggressive behaviors in both the long-term and short-term (Gentile & Stone, 2005). The model makes a distinction between variables and processes that operate in the current situation (proximate causes and processes) and those that exert their influence over a long period of time (distal causes and processes) (Anderson et al., 2007), predicting that "violent video games might cause both short-term and long-term increases in aggression-related feelings, such as state anger, anxiety, or trait hostility" (p. 342) as well as "short-term and long-term increases in aggressive cognitions, such as aggressive priming, hostile attribution bias, and pro-violence attitudes" (p. 345).

The general aggression model describes human aggression as the result of a process wherein personal and situational "input" factors influence the "outcomes" of appraisals, decisions, and behavior. Further, the effects of the input factors on the outcomes are mediated by three internal psychological "state" or "route" variables: cognitions, affect, and arousal. The state variables are influenced by the input variables, then influence each other, and then in turn influence the outcome variables. Finally, the results and consequences of the behavioral outcomes cyclically influence the personal and situational input factors.

*Personal input factors.* Personal input variables include individual traits and personality characteristics such as existing attitudes, beliefs, scripts, biological predispositions, attitudes toward violence, and trait hostility, whereas situation variables are specific proximal characteristics such as whether a person was just insulted, whether there are onlookers nearby, whether a person just played a violent video game, and so on. Present inputs from the individual (attitude, personality, mood) and the situation (e.g., such as if a person were provoked) combine to influence the outcomes of appraisals, decisions, and behavior through the psychological states they create.

*Internal psychological state variables.* Once influenced by the personal and situational input factors, the internal psychological state variables of cognitions (e.g., hostile thoughts), affect (e.g., hostile feelings), and arousal (e.g., blood pressure, heart rate) may influence each other (Kirsh, Olczak, & Bounts, 2005) en route to influencing the outcome variables of appraisal and behavior. For example, personal and situation factors may affect aggression by increasing the accessibility of aggressive concepts and hostile thoughts (as with priming), which may in turn affect appraisals, decisions, and behavior. Input variables may also influence affect, mood, emotion, and expressive motor responses. Arousal can additionally influence aggression by strengthening aggressive tendencies (Anderson & Bushman, 2002). Furthermore, affect, cognition, and arousal may influence a person's interpretation of an aggressive act.

*Appraisal, decision, and behavioral outcomes.* The internal psychological state variables (affect, cognition, and arousal) then affect outcome variables by influencing appraisal and decision processes, which in turn will lead to behavioral actions (either thoughtful or impulsive). These outcomes will be aggressive or nonaggressive depending on the nature of the personal and situational input factors and the internal psychological states they produced. The results of the

entire aggressive episode then affect subsequent episodes, affecting both internal individual states and situation variables in the future.

In sum, then, the general aggression model explains that personal factors and situational factors may influence aggressive appraisals, decisions, and behaviors during aggressive episodes via the internal psychological state variables of cognitions, affect, and arousal. The outcome of a person's behaviors, in turn, influences the person and situation variables in the future. Input variables (personal and situational) influence psychological states (cognition, affect, arousal), which then influence behaviors. For instance, if a person with some aggressive tendencies (personal input) plays a violent video game (situational input), it may cause them to have violent thoughts more readily accessible (cognition), feel vicious (affect), and be excited (arousal), which may then cause the person to appraise a subsequent situation as hostile and behave aggressively. If the behavior is successful, the person may then become incrementally more aggressive as a trait (personal input) in the future.

The above process of input variables influencing psychological states, which then influence appraisals, decisions, and behaviors, is very pertinent to the short-term effects of video games and other media, but the general aggression model has implications for long-term effects as well because the short-term processes can affect the personality input factors over time (Anderson & Bushman, 2002). A basic assumption of the general aggression model is that human memory, thought, and decision processes can be represented as a complex associative network of nodes representing cognitive concepts and emotions. Experience is what links these nodes, as nodes activated at the same time and with similar meanings become linked. Interconnected concepts are knowledge structures. Activation levels (accessibility) are determined by how many links are activated and the strength of association among links.

When activation levels are high enough, the knowledge structure is used. Even if not entirely activated, the knowledge structure can still influence other processes. Knowledge structures affect perception at many levels, and they guide how people interpret their environments and how they behave; in turn, knowledge structures “can contain affective states, behavioral programs, and beliefs” (Anderson et al., 2007, p. 43). If a script is used often enough, it can become automated and activated without awareness. Hence, personality is the sum of an individual’s knowledge structure, and “their development and construction is based on life experiences, in conjunction with biological influence” (p. 43). Therefore, long-term effects occur as the cycle of short-term processes change the person input variable over time and influence their personality and knowledge structures.

## Effects of Violent Content in Video Games

### *Prevalence of Violent Content in Video Games*

The majority of empirical studies investigating the effects of media and violence concern the effects of television and film viewing (Huesmann & Taylor, 2006; Paik & Comstock, 1994), but video games have also been found to increase aggression among users. Examination of the effects of violent games is essential, as the majority of games contain violence and violent games tend to be more popular. Recent content analyses of video games find that around 89% of video games contain violent content, and about half of games include violent actions toward other characters (Carnagey & Anderson, 2004). Smith, Lachlan, and Tamborini (2003) found that mature games, however, are more likely to feature violence than those rated for general audiences. Video games featuring violence tend to outsell those with lesser violence. For

instance, Nintendo sold a sanitized version of Mortal Combat (removing the most graphically violent features), whereas Sega released the full version. The Sega version outsold the Nintendo version by about 3 to 1. Furthermore, surveys of school children show that more than half prefer playing violent games than non-violent games, and many video game companies market violent video games directly toward youth (Carnagey & Anderson, 2004).

### *Effects of Violent Content in Video Games on Aggression*

It is unclear whether the effects of violence in video games are stronger than the effects of violence in television and film. Sherry (2001), in a meta-analysis of studies investigating the effects of violent video games on aggression, states, “There is a correlation between video game play and aggression, but that relationship is smaller than found for television” (p. 424). However, other researchers explain that although there are several differences between television and video games, there may be several reasons why video game exposure may actually be more detrimental than television exposure, especially considering the technological characteristics of recent games and consoles. Carnagey and Anderson (2004) explain that this is because “playing violent video games involves almost complete attention and involvement, more identification with violent characters, more reinforcement of violent acts, and higher frequency of violent scenes” (p. 5). Therefore, as social cognitive theory explains, players may be particularly likely to model behaviors viewed during game play.

While television does not require a great deal of attention from viewers and can be used without much engagement, video games require greater attention, as the player must be constantly watching the screen or else failure of the game or goals will likely occur. While television viewing can be a generally passive process, when playing video games, what happens

next depends on how the player controls video game characters. Thus, players are responsible for the violence that occurs, and research shows that learning is increased when people are actively (versus passively) involved. There may also be enhanced identification with video games, as players are required to take on the identity of a violent character and essentially “become” the character. Violent game play also involves the reinforcement of violent acts (via points, advancement), and aggression is likely to increase when rewarded. Finally, violence in video games is almost continuous and players must be constantly ready to shoot the enemy (Carnagey & Anderson, 2004).

Empirical studies that investigate the negative effects of violent games focus mainly on aggressive behaviors, thoughts, and feelings and physiological arousal, as well as other psychological variables (Lee & Peng, 2006), and some meta-analyses show that exposure to violent games increases aggressive thoughts, feelings, and behaviors and physiological arousal, and decreases helping behavior (Anderson & Bushman, 2001; Carnagey & Anderson, 2004; Anderson et al., 2010). However, other meta-analyses suggest that findings regarding video games and aggression are mixed and whereas some researchers find a relationship between video game violence and aggression among players (either causal or correlational), others (Ferguson, 2007) show evidence that the relationship may be weak or nonexistent once corrected for publication bias.

*Effects of violent content in video games on aggressive behavior.* The findings regarding violent games and aggressive behaviors are mixed—while some studies show increases in aggressive behaviors, others find no such effects (Lee & Peng, 2006). For example, Anderson and Dill (2000) found a positive relationship between violent video game play and self reports of aggression. Anderson and Dill (2000) and Anderson, Carnagey, Flanagan, Benjamin, Eubanks,

and Valentine (2004) found that playing violent video games increases aggressive behavior in a laboratory, measured through the duration and intensity of noise blasts administered by participants in a competitive task. Furthermore, Gentile, Lynch, Linder, and Walsh (2004) found that exposure to violent game content is positively correlated with arguments with teachers and physical fights. However, Williams and Skoric (2005) found that violent game play did not cause significant increases in reported real-world aggression in a longitudinal study. Overall, meta-analyses tend to indicate a relationship between violent video game play and aggressive behaviors, and effects have been found in children and adults, in males and females, and in non-experimental and experimental studies (Anderson & Bushman, 2001; Anderson et al., 2010).

*Effects of violent content in video games on aggressive appraisals and expectations.* The general aggression model (Anderson & Bushman, 2002; Anderson et al., 2007) posits that aggressive behavior stems directly from the appraisals, expectations, and decision processes of the aggressor. If a person's assessment of the situation is that the situation is a hostile one and aggression is appropriate, they will be more likely to aggress. A hostile expectation bias can therefore cause a person to interpret a benign social interaction as a hostile one and respond with aggression. A person may develop a chronic propensity for hostile appraisals and expectations, as has been found in studies of both children (e.g., Crick & Dodge, 1994; Dodge, 1980; Dodge & Crick, 1990; Dodge & Somberg, 1987) and college students (Dill, Anderson, Anderson, & Deuser, 1997). However, a hostile expectation bias can also be temporarily induced in individuals who do not have aggressive personalities when those individuals are exposed to violent media content.

In a study by Bushman and Anderson (2002), college student participants who were assigned to play a violent video game subsequently attributed more aggressive behaviors,

thoughts, and feelings to characters than did participants assigned to play a nonviolent video game when participants were asked to complete a set of ambiguous story stems (e.g., a brief unfinished story about a customer at a restaurant whose order takes 45 minutes to arrive, with participants asked to describe the customer's behavior, thoughts, and feelings as the food arrives). The difference in aggressive expectations expressed between the participants who played the violent and nonviolent games provides evidence for a temporary hostile expectation bias in people who do not have pre-existing aggressive tendencies through exposure to a violent video game. Similarly, Eastin and Griffiths (2006) found that college students assigned to play a fighting video game displayed more hostile expectations using the same story-stem task compared to participants who were assigned to play a shooting or driving video game.

Kirsh (1998) found some evidence for a hostile attribution bias among third- and fourth-graders in a study where participants who played a violent game responded more negatively to some questions about the perpetrator of an ambiguous event in a story (e.g., a question asking why a child in the story hit another child with a ball) compared to participants assigned to play a nonviolent game, though there was not a significant difference between participants in the violent and nonviolent conditions for all questions.

*Effects of violent content in video games on aggressive cognition.* Consistent effects of violent video games on aggressive cognition, one of the internal psychological states predicted to influence aggressive outcomes (appraisals, decisions, and behaviors) in the general aggression model (Anderson & Bushman, 2001), have been found (Lee & Peng, 2006). Correlational and experimental evidence shows that playing violent video games increases aggressive cognitions (Carnagey & Anderson, 2004). For instance, Anderson and Dill (2000) found that violent video game play is related to aggressive thoughts among college students, and Tamborini, Eastin,

Skalski, Lachlan, Fediuk, and Brady (2004) found that more hostile thoughts were found after playing violent versus nonviolent games. Similarly, Anderson et al. (2004) found that violent video games increase the accessibility of aggressive thoughts among college students. Uhlmann and Swanson (2004) found that playing violent games leads participants to associate themselves with aggressive traits and actions, based on the Implicit Association Test. Meta-analyses show a consistent relationship between violent video game play and aggressive cognitions, and effects are found in males and females, in children and adults, and in experimental and non-experimental settings (Anderson & Bushman, 2001; Anderson et al., 2010).

*Effects of violent content in video games on aggressive affect.* The findings regarding video games and aggressive affect, another of the internal psychological states predicted to influence aggressive outcomes (appraisals, decisions, and behaviors) in the general aggression model (Anderson & Bushman, 2001), have been mixed. Lee and Peng (2006) explain that while violent video games have been found to cause intense feelings of aggression and higher anxiety levels, findings have been varied. While some studies have found video game use to be correlated with general hostility and anger, other studies have found that video games are a weak predictor of anger and hostility (Lee & Peng, 2006). Unsworth, Devilly, and Ward (2007) found that most adolescents show no change in anger ratings before, during, and after violent game play, although findings were moderated by the players' prior feelings and temperament. Funk, Baldaci, Pasold, and Baumgardner (2004) found that exposure to video game violence was associated with lower empathy among players. Additionally, the results regarding aggressive affect can be unclear because nonviolent video games can also cause increases in negative affect via difficulty and frustration. However, meta-analyses show a generally consistent relationship

between playing violent games and aggressive affect (Anderson & Bushman, 2001; Anderson et al., 2010).

*Effects of violent content in video games on arousal.* Arousal, the third internal psychological state predicted to influence aggressive outcomes (appraisals, decisions, and behaviors) in the general aggression model, is recognized as an important aspect of the intensity of emotional reactions to media content. Arousal can be measured via physiological measures (e.g., skin conductance, blood pressure, pulse) or through a self-report questionnaire. Zillmann's (1971) excitation transfer theory describes that arousal occurring from violent media exposure may remain after exposure. Therefore, arousal can transfer to subsequent emotional responses and intensify them, making aggressive behaviors more likely to occur (Sparks, Sparks, & Sparks, 2009).

Violent video games have been found to have a significant effect on arousal. For example, some studies have found that violent video games lead to greater increases in cardiovascular activity than nonviolent games (Ballard & Wiest, 1996; Calvert & Tan, 1994), though others have found no such effect (Winkel, Novak, & Hopson, 1987). However, there is evidence that increased heart rate is only temporary and returns to baseline shortly after game play (Lee & Peng, 2006). Although an earlier meta-analysis (Anderson & Bushman, 2001) found too few studies dealing with violent video games and arousal to conclude on an effect, a recent meta-analysis reports a relationship between violent video games and measures of physiological arousal (Anderson et al., 2010).

*Other physiological, psychological, and behavioral effects of violent content in video games.* Researchers have used the term “presence” to describe the feeling of being immersed in media, specifically “the extent to which we perceive that we are actually present in a mediated

environment rather than being present in our natural physical surrounding” (Tamborini et al., 2004, p. 338). Video games have also been found to induce feelings of presence among video game players (Tamborini & Skalski, 2006), which is an important dimension of media experience related to immersion and involvement (Witmer & Singer, 1998), and this experience dimension has also been explored as potentially relevant to the effects of video game violence (Tamborini et al., 2004). Studies have also found that video game violence can result in changes in neural patterns characteristic of aggressive cognition and behavior (Weber, Ritterfeld, & Mathiak, 2006). Finally, prosocial behavior has been shown to decrease after violent game exposure (Anderson & Bushman, 2001; Anderson et al., 2010).

### Potential Effects of Profanity in Video Games

#### *Prevalence of Profanity in Video Games and Other Media Content*

Although empirical research has yet to investigate the effects of profanity in media on viewer aggression and other outcomes, adolescents and young adults are frequently exposed to offensive language via media exposure. Profanity is considered to be a type of verbal aggression, defined as attacking the self-concept of another person while intending to hurt the person psychologically (Infante & Wigley, 1986; Kaye & Sapolsky, 2004b; 2004c). Researchers studying offensive language use several different terms to describe it, such as “swearing,” “profanity,” “cussing,” and “verbal vulgarities” (Kaye & Sapolsky, 2001). Swear words differ on their level of acceptability and offensiveness. For example the Federal Communication Commission (FCC) at one point famously singled out the “seven dirty words” too indecent to be

spoken on the airwaves (“shit,” “piss,” “fuck,” “cunt,” “cocksucker,” “motherfucker,” and “tits”) (Kaye & Sapolsky, 2004a; 2004b; 2004c).

In a content analysis examining the types and frequency of profanity in prime-time television, Kaye and Sapolsky (2004a) found that profanity increased between the years of 1997 to 2001 to a rate of 1 word every 8 minutes in 2001. Moreover, almost 9 out of 10 programs contained objectionable words. Kaye and Sapolsky (2004c) found that age and content warnings do not protect children from offensive language, as TV-PG programs contained just as much profanity as TV-14 programs. In fact, they found that the earliest hour of prime time contained more profanity than during the 10-11pm hour. This finding is particularly alarming, as young children are more likely to be viewing during this time period. Additionally, they found that situation comedies on television contained the greatest amount of objectionable language, although it was more likely to occur in non-humorous settings (Kaye & Sapolsky, 2004b).

The use of profanity in video game content has also been examined. In a content analysis of profanity using a sample of top-selling video games, profanity was found in approximately one in five games and was most often found in games rated for teenagers or above (Ivory et al., 2009). In the games that did contain profanity, it was very frequent. However, no correlation was found between profanity and game sales.

### *The Need for Research on the Effects of Profanity in Video Game Content*

The effects of profanity and other forms of verbal aggression in video games and other media content have yet to be examined empirically, despite calls for such investigations (Bushman & Cantor, 2003; Ivory et al., 2009). Recent studies (Eastin, 2007; 2009) of players in multiplayer online games have measured players’ use of verbal aggression while playing the

games, but the effects of profanity and verbal aggression in video game content remain unexamined. Although there is a vast body of research on the effects of physical aggression in video games in the form of violent content, the effects of verbal aggression merit similar attention. As Potter (2003) explains, children may even be more likely to imitate verbal aggression than physical aggression because it is easier for them to model.

Children learn profanity from a variety of sources including peers and parents, as well as media like movies, music, television (Kadaba, 1999; Kaye & Sapolsky, 2004b). Therefore, another potential effect of profanity involves the potential for children and young adults to imitate the language they hear on television or video games, as much learning occurs vicariously through viewing the behavior of others (Bandura, 2002). In addition to imitation, exposure to profanity may also lead to desensitization, leading viewers to both use and accept profanity to a greater degree in everyday discourse (Kaye & Sapolsky, 2004a; 2004b; 2004c). Exposure to verbal aggression can have negative effects on a child's self-concept (Kaye & Sapolsky, 2004c). Furthermore, verbal aggression may even elicit acts of physical violence (Potter, 2003). Therefore, it is important to begin investigating the potential effects of profanity in video game content on a number of responses in players, including but not limited to aggressive outcomes.

#### *Investigating the Effects of Profanity Used by Both Protagonists and Antagonists*

Video game players' feelings of identification with video game characters have been found to be an important predictor of some video game effects. Identification may be described as "feeling like' or as creating the illusion to 'become' a key person within a computer game's universe" (Hefner, Klimmt, & Vorderer, 2007, p. 40). Video games are unique among other media such as television and movies in that they often provide the player with close control of a

specific character, sometimes even providing the game experience from that character's point of view. Video games allow people to take on important new identities and become invested in new roles (Gee, 2007). Identification is thought to be a key element in game enjoyment (Hefner, Klimmt, & Vorderer, 2007).

Identification with violent media characters has been found to be associated with aggression. Huesmann et al. (2003) found that identification with aggressive television characters predicted later aggression. Similarly, Konijn, Bijvank, and Bushman (2007) found that identifying with violent video game characters increased aggression among game players. Furthermore, players were particularly likely to identify with aggressive characters when they felt immersed in the game and with more realistic games. Schneider, Lang, Shin, and Bradley (2004) found that in first-person shooter games, players feel greater identification, in addition to presence and physiological arousal, when a story is present.

As players' identification with game characters has been found to be associated with aggression and other experience dimensions, it is important to investigate whether the type of character using profanity in video games may influence the possible effects of profanity on video game users. For instance, there may or may not be different types of effects on various player responses depending on whether the player-controlled protagonist engages in profanity, the computer-controlled antagonists engage in profanity, or both the protagonist and antagonists engage in profanity. Therefore, it is important to investigate the effects of profanity used by both protagonist and antagonist characters in video games, and to investigate them in concert.

## Research Questions

### *Potential Effects of Profanity in Video Game Content on Aggression-Related Responses*

Given the body of research indicating effects of violence in video game content on aggression-related responses in video game players (e.g., Anderson & Bushman, 2001; Anderson et al., 2010), this study addresses the effects of verbal aggression in the form of profanity on several aggression-related responses to determine whether the effects of verbal aggression in the form of profanity in video game content mirror those of physical aggression in the form of violent content. Although many effects of video game violence on aggression are well-documented, the absence of research investigating similar effects of verbal aggression in the form of profanity in video games or other media content leads this study to address such potential effects with a series of research questions.

### *Effects of profanity in video game content on aggressive appraisals and expectations.*

While direct examination of effects on aggressive behaviors, particularly in a natural context, is logistically difficult and beyond the scope of this investigation, this study can explore hostile expectations, which is the aggressive outcome most closely linked to aggressive behavior in the general aggression model (Anderson & Bushman, 2002). Given that hostile expectations are closely linked to aggressive behavior in conceptual models and existing research, measuring effects of profanity in video game content on hostile expectations is a useful way to gain some insight into the effects of profanity in video games on aggression when aggressive behavior cannot be directly measured. Although previous research (e.g., Bushman & Anderson, 2002; Eastin & Griffiths, 2006; Kirsh, 1998) has found effects of physical violence in video game content on hostile expectations, effects of verbal aggression in the form of profanity on hostile

expectations have not previously been investigated with video games or other media content. Therefore, the following research question will be examined:

RQ<sub>1</sub>: Does profanity used by video game protagonists and antagonists affect hostile expectations among game players?

*Effects of profanity in video game content on aggressive cognition.* In addition to the hostile expectations outcome, an understanding of media effects on the internal psychological states described in the general aggression model (Anderson & Bushman, 2002) are important to an understanding of media effects on aggression. The effects of physical violence in game content on aggressive cognitions are well-evidenced (Anderson & Bushman, 2001; Anderson et al., 2010), but effects of verbal aggression in the form of profanity on aggressive cognition have not previously been investigated with video games or other media content. Therefore, the following research question will be examined:

RQ<sub>2</sub>: Does profanity used by video game protagonists and antagonists affect accessibility of aggressive thoughts among game players?

*Effects of profanity in video game content on aggressive affect.* Like aggressive cognition, aggressive affect is an internal psychological state described in the general aggression model (Anderson & Bushman, 2002) as a predictor of aggressive outcomes, so it also merits attention in this investigation of the effects of profanity in video game content. Effects of physical violence in game content on aggressive affect are also thoroughly documented

(Anderson & Bushman, 2001; Anderson et al., 2010), but effects of verbal aggression in the form of profanity on aggressive affect have not been investigated with video games or other media content. Therefore, the following research question will be examined:

RQ<sub>3</sub>: Does profanity used by video game protagonists and antagonists affect aggressive feelings among game players?

*Effects of profanity in video game content on perceived arousal.* In addition to being an internal psychological state described in the general aggression model (Anderson & Bushman, 2002) as a predictor of aggressive outcomes, physiological arousal is also an important component of other aspects of the media experience (Zillmann, 1971; Sparks et al., 2009). Given the number of experience dimensions under study in this initial exploration of the effects of profanity in video game content, actual measurement of physiological arousal is beyond the scope of the present research, so this study will investigate participants' self-reported perceptions of arousal, which has been found to be correlated with measures of physiological arousal in some studies (e.g., Ivory & Kalyanaraman, 2007).

Previous research indicates that exposure to physical violence in game content is significantly related to increases in physiological arousal (Anderson et al., 2010), but effects of verbal aggression in the form of profanity on arousal—measured physiologically or self-reported—have not previously been investigated with video games or other media content. Therefore, the following research question will be examined:

RQ<sub>4</sub>: Does profanity used by video game protagonists and antagonists affect perceptions of physiological arousal among game players?

*Potential Effects of Profanity in Video Game Content on Other Responses*

Given that previous research has not investigated the effects of verbal aggression in the form of profanity in video game content or in other media content, this study also addresses the effects of verbal aggression in the form of profanity on several other responses not related to aggression in order to provide more insight about the general effects of profanity in game content on the experience of video game players. In the absence of previous research dealing with verbal aggression in the form of profanity in video games or other media content, this study addresses these various potential effects with research questions.

*Effects of profanity in video game content on the use of profanity.* Given concern about imitation of profanity in media content (Bushman & Cantor, 2003; Kaye & Sapolsky, 2004b) and theoretical frameworks indicating a potential for imitation of media content (Bandura, 2002), the effects of profanity in video game content on subsequent use of profanity by video game players is of interest. The effects of profanity in video games or other media content on subsequent use of profanity have not previously been researched, so the following research question will be examined:

RQ<sub>5</sub>: Does profanity used by video game protagonists and antagonists affect the use of profanity among game players?

*Effects of profanity in video game content on enjoyment.* The concept of enjoyment in media is often used to describe a positive opinion and liking of media content, or attraction to or appreciation of particular media. Enjoyment is obviously of practical importance to both media producers and consumers. It is also an important variable from an effects approach, as relationships between media consumption and enjoyment may allow users to be particularly susceptible to negative effects, such as aggression (Nabi & Krcmar, 2004). Surveys of school children show that more than half prefer playing violent games than non-violent games (Carnagey & Anderson, 2004), so it is important to examine whether verbal aggression in the form of profanity in video games also influences player enjoyment. Therefore, the following research question will be examined:

RQ<sub>6</sub>: Does profanity used by video game protagonists and antagonists affect enjoyment among game players?

*Effects of profanity in video game content on feelings of presence.* As presence is an important component of media experience (Tamborini et al., 2004; Tamborini & Skalski, 2006; Witmer & Singer, 1998) and the relationship between verbal aggression in the form of profanity and players' feelings of presence has not previously been investigated in video games or other media content, the following research question will be examined:

RQ<sub>7</sub>: Does profanity used by video game protagonists and antagonists affect feelings of presence among game players?

*Effects of profanity in video game content on perceived performance.* Given that most video games focus on players' ability to complete tasks and amass some form of measured score or virtual resource, players' performance in video games is an important dimension of their experience. To check whether there is any relationship between verbal aggression in the form of profanity and video game players' assessment of their own performance, the following research question will be examined:

RQ<sub>8</sub>: Does profanity used by video game protagonists and antagonists affect perceptions of performance among game players?

#### *Potential Moderating Role of Gender*

Some effects of video games have been found to differ among males and females (e.g., Anderson & Dill, 2000, Bartholow & Anderson, 2002). In an experiment examining effects of violent video game play on aggressive thoughts, affect, and behavior, Anderson and Dill (2000) found women to display higher levels of aggression and state hostility than men. Bartholow and Anderson (2002), in an experiment examining violent video game play effects on aggression, found gender to be an important moderator, with larger violent video game effects for males than for females. Given these findings, this study will examine whether there is a significant interaction effect between gender and profanity. Therefore, the following research question will be examined:

RQ<sub>9</sub>: Does video game players' gender moderate the effects of profanity used by video game protagonists and antagonists on the players' responses?

### *Individual Difference Variables*

The effects of media, violent or otherwise, are often qualified by important individual difference variables. For instance, violent media may be more likely to increase aggression in individuals who are high in trait aggressiveness (Bushman, 1995). Hoffner and Levine (2005) found that viewers who are higher in sensation seeking and aggressiveness, people lower in empathy, and male viewers all report more enjoyment of violence and fright. Higher levels of sensation-seeking have been found to predict higher levels of violent media content among youth (Slater, 2003). As with other media, such individual traits can influence video games' effects. For example, violent video games' effects have been found to be stronger for those participants higher in trait aggressiveness than for those lower in trait aggressiveness (Anderson & Dill, 2000). Vygotsky and Piaget stressed that play during childhood holds a crucial role in a person's development (Nicolopoulou, 1993). Considering that 8- to 18-year olds in the U.S. play video games nearly an hour each day (Rideout, Roberts, & Foehr, 2005), video games represent a substantial form of play for many modern youths. Therefore, it is necessary to examine how video game play during childhood may influence player responses during young adulthood. For instance, prior video game experience may influence effects of video game exposure, as correlational findings link viewing violent media during childhood with aggressive behaviors during adulthood (Anderson et al., 2003) and indicate that exposure to violent video games over the lifespan can predict aggressive behaviors (Anderson & Dill, 2000).

Based on past research (Anderson & Dill, 2000; Anderson et al., 2003; Bushman, 1995; Hoffner & Levine, 2005; Slater, 2003), it appears possible that pre-existing aggression, sensation-seeking tendencies, and video game experience may influence some effects of video games, though it is unknown whether these important individual difference variables may play a

role with regard to profanity in video game content. Therefore, the following research questions will be examined:

RQ<sub>10</sub>: Does controlling for video game players' pre-existing aggression influence the effects of profanity used by video game protagonists and antagonists on the players' responses?

RQ<sub>11</sub>: Does controlling for video game players' sensation-seeking tendency influence the effects of profanity used by video game protagonists and antagonists on the players' responses?

RQ<sub>12</sub>: Does controlling for video game players' prior general video game experience influence the effects of profanity used by video game protagonists and antagonists on the players' responses?

RQ<sub>13</sub>: Does controlling for video game players' prior violent video game experience influence the effects of profanity used by video game protagonists and antagonists on the players' responses?

RQ<sub>14</sub>: Does controlling for video game players' current video game use influence the effects of profanity used by video game protagonists and antagonists on the players' responses?

## CHAPTER THREE

### METHOD

#### Design

To examine the effects of verbal aggression in the form of profanity in video game content, this study employed a laboratory experiment with a 2 (protagonist profanity: profanity present versus profanity absent) X 2 (antagonist profanity: profanity present versus profanity absent) between-subjects factorial design. The study's two factors were manipulated via the creation of four versions of an original three-dimensional "first-person shooter" video game for the study. A pre-exposure questionnaire (Appendix A) was used in all conditions to collect data pertaining to demographic information and individual difference measures that were used as covariates in analyses, and a post-exposure questionnaire (Appendix B) was used in all conditions to collect data pertaining to the study's dependent measures.

#### Participants/Recruitment

Participants in this study were 321 university students. Participants were randomly assigned to the study's four conditions in approximately equivalent groups (80 participants assigned to three conditions and 81 participants assigned to the fourth). Additionally, 17 more participants were recruited from the same population for a one-session pilot study that was conducted before the study began to test the efficacy of the study procedures, usability of the stimulus materials, and participants' understanding of the questionnaire instructions and items.

Participants in the pilot study completed the same procedures as participants in the main study, but data from the pilot study were not analyzed and participants in the pilot study did not take part in the main study.

Students were recruited via two means: some participated in exchange for course credit through their instructors and a department research participation system ( $N=301$ ), and others ( $N=20$ ) participated in exchange for a \$10 gift certificate from a local GameStop retail video game store. The dual recruiting methods were intended to ensure a large group of both male and female participants from diverse academic units among the university population and with a broad range of experience with video games. Participants who were granted course credit were recruited through an announcement sent via a department research participation system and by email messages from course instructors, and participants who were given a gift certificate were recruited with flyers placed on the university campus and in the local GameStop store where the gift certificates were purchased and via in-person announcement at the beginning of a course meeting. The study was approved by the university's Institutional Review Board (Appendix C)

### Stimulus Materials

An original three-dimensional "first-person shooter" video game was created for the study with FPS Creator software (FPS Creator, 2009). The FPS Creator software allows users to design first-person shooter video games using character, object, and environment models provided with the software. Graphics and audio files can be used as provided or modified by the user. The original game, titled *Rescue Strike* in the study, places the player in the role of the protagonist, a military agent assigned to rescue captured hostages by advancing through the

courtyard of a defended complex and into its basement (Figure 1). Along the way, the protagonist is attacked by a number of enemy troops and must shoot them to advance safely (Figure 2). The protagonist starts the game with an assault rifle and some ammunition, and more weapons and ammunition can be obtained from defeated enemies throughout the game (Figure 3). If the protagonist reaches the captured hostages, the game ends successfully (Figure 4). If the player character's "health" is depleted before reaching the game's end, the protagonist's character loses a "life" and resumes play at a point nearby. Once three lives are exhausted, the game ends and the player must restart (Figure 5). The game is brief and can be completed in several minutes if the player is successful at maneuvering the protagonist character through the game safely.

The study's conditions were manipulated by the inclusion of different audio dialogue files for characters in four different versions of the game. A volunteer recorded dialogue for the protagonist character and other volunteers recorded dialogue for several antagonist characters. Each volunteer read a series of scripted lines, with two versions of each line recorded: one with profanity and one without. The lines were written to be as similar as possible in structure, length, and meaning except for the inclusion of profanity, and the volunteers were instructed to say both versions of each line in as similar a fashion as possible. The audio dialogue files were then placed into different versions of the game so that they are heard at appropriate points during play, with four versions of the game created based on the audio files used: protagonist profanity absent/antagonist profanity absent, protagonist profanity absent/antagonist profanity present, protagonist profanity present/antagonist profanity absent, and protagonist profanity present/antagonist profanity present.

Figure 1. Stimulus Materials: Images of Protagonist Character Advancing Through Game.



Figure 2. Stimulus Materials: Images of Protagonist Character Fighting Antagonist Characters.



Figure 3. Stimulus Materials: Images of Protagonist Character Using Alternate Weapons.



Figure 4. Stimulus Materials: Images of Protagonist Character Successfully Completing Game.



Figure 5. Stimulus Materials: Images of Protagonist Character Losing a “Life” and Failing Game.



For example, near the beginning of the game, the protagonist character says either, “These guys are gonna pay!” or, “These fuckers are gonna pay!” depending on the game version, one antagonist shouts, either, “I’ll fuck you up!” or, “I’ll mess you up!” while pursuing the protagonist character depending on the game version, and another antagonist says either, “Ah! I can’t breathe!” or, “Shit! I can’t breathe” after being shot by the protagonist character. The protagonist character and all of the antagonist characters were male, though a hostage at the end of the game is a female character with the spoken line, “Let’s get out of here.” Other than the variation of some audio files to include or exclude profanity, there are no differences in the content of the game. All other sound effects, graphics, and game play elements are identical across game versions other than the manipulated dialogue.

## Dependent Measures

### *Hostile Expectations*

Hostile expectations were measured via a story-completion measure adapted from Bushman and Anderson (2002), which was included in the post-exposure questionnaire. Participants were presented with two story stems (one about a character who gets into a minor car accident and the other about a character at a restaurant whose order takes 45 minutes to arrive), each of which ended with the question "What happens next?" Participants were then asked what the character would think, and what the character would feel, and what the character would do or say. Participants were asked to list five responses for each of the three categories, making a total of 15 responses for each story stem and 30 responses overall. The original

measure used by Bushman and Anderson (2002) included three story stems, but this study removed one story stem to allow time for participants to complete all measures.

The hostile expectations measure was calculated as the total number of aggressive responses given by a participant for both story stems across all expectation responses (all responses for what the character will think, feel, and do or say). For further analysis, the measure also produced three hostile expectations subscores (hostile cognitive expectations, hostile affective expectations, and hostile behavioral expectations), which were calculated as the total number of aggressive responses given by a participant for both story stems within each expectation response category (each of the separate categories asking what the character will think, feel, and do or say).

Responses for the hostile expectations measure were coded by two independent raters who were blind to the purpose of this study and who were paid for their coding work. The coders met initially with the researcher for training to go over coding instructions, operational definitions, and to address any questions. Coding instructions included the word completion task coding instructions used by Anderson, Carnagey, and Eubanks (2003), the story-completion measure coding instructions from Bushman and Anderson (2002), and instructions from the researcher regarding classification of profanity into one of three separate categories. After this initial meeting, coding ensued and the coders worked independently throughout the entire coding process. There was no confusion with the coding instructions, so no revisions to the coding instructions were needed to resolve discrepancies. Each coder was randomly assigned 186 of the 321 cases, which provided an overlap of 51 cases (15.89% of the 321 total cases) that were assigned to both coders to allow assessment of intercoder reliability (in addition to the 135 cases unique to each coder). Coders received the cases in random order with no indication of the

study's conditions or design. The order of each coder's list of cases was randomized separately to guard against consistent order effects in coding. For the 51 cases randomly assigned to both coders, the two coders' scores were averaged to produce the final score for each measure after assessment of reliability.

Intercoder reliability for the hostile expectations measure was assessed using a Pearson's  $r$  correlation between coders for all coded responses for the 51 cases randomly assigned to both coders. The intercoder reliability assessment indicated a strong correlation between coder scores ( $r = .856$ ) for the hostile expectations item.

Reliability was also calculated for the three separate subscores using the same measure, with resulting correlations varying from moderately strong to strong ( $r = .570$  for hostile cognitive expectations,  $r = .905$  for hostile affective expectations, and  $r = .677$  for hostile behavioral expectations).

### *Accessibility of Aggressive Thoughts*

Aggressive cognition was assessed with a word completion (WC) task (Anderson, Carnagey, & Eubanks, 2003) measuring the accessibility of aggressive thoughts that was included in the post-exposure questionnaire. Participants were presented with 98 words that had at least one letter missing, and they were instructed to fill in the missing letters in order to form a word. They were given three minutes to complete as many words as possible. These word fragments were all designed so that they could form either aggressive or non-aggressive words (e.g., `expl_o_e` is completed as "explore" or "explode"). Accessibility of aggressive thoughts was calculated as the proportion of word completions that are aggressive (total aggressive words divided by total words completed).

Responses to the word completion task were coded by the same two independent raters who were paid to code the story completion task. As with the story completion task, each coder was randomly assigned 186 of the 321 cases, which provided an overlap of 51 cases (15.89% of the 321 total cases) that were assigned to both coders to allow assessment of intercoder reliability (in addition to the 135 cases unique to each coder). The random assignment procedures for the story completion task and word completion task, however, were carried out separately so that assignment of cases was not the same for each task. As with the story completion task, coders received the cases in random order with no indication of the study's conditions or design, and the order of each coder's list of cases was randomized separately to guard against consistent order effects in coding. For the 51 cases randomly assigned to both coders, the two coders' scores were averaged to produce the final score for each measure after assessment of reliability.

Intercoder reliability for the aggressive cognition measure was assessed using a Pearson's  $r$  correlation between coders for all coded responses for the 51 cases randomly assigned to both coders. The intercoder reliability assessment indicated a strong correlation between coder scores ( $r = .762$ ) for the accessibility of aggressive thoughts measure (total aggressive words divided by total words completed), as well as for the word completion categories used to calculate it ( $r = .736$  for neutral words,  $r = .711$  for ambiguous words,  $r = .909$  for aggressive words,  $r = .787$  for nonwords).

### *Aggressive Feelings*

Aggressive affect was measured using the state hostility scale (SHS) (Anderson, Deuser, & DeNeve, 1995), which was included in the post-exposure questionnaire. The scale used included 32 statements containing adjectives related to anger and hostility. Each item contains a

sentence frame, “I feel x,” in which x is the action or adjective. Examples of items include “I feel mad,” “I feel discontented,” and “I feel friendly.” The items not consistent with hostility (e.g., “I feel friendly”) were reverse scored. The statements were rated on 5-point Likert scales (1 = “strongly disagree,” 2 = “disagree,” 3 = “neither agree nor disagree,” 4 = “agree,” 5 = “strongly agree”). Three of the items from the original scale, which contained 35 items, yielded poor item-total correlations in previous studies because they contained vocabulary that some participants did not understand (Anderson et al., 2003). Therefore, these three items were excluded in the present study for a total of 32 items. The reliability of this index was high (Cronbach’s  $\alpha = .96$ ). Scores for the 32 items were averaged to produce a single state hostility index.

#### *Perceived Arousal*

Perceived arousal was measured using the perceived arousal scale (PAS) (Anderson, Deuser, & DeNeve, 1995), which was included in the post-exposure questionnaire. This measure requires participants to rate 24 statements containing adjectives related to arousal on 7-point scales (1 = “Does not describe how I feel at all” to 7 = “Accurately describes how I feel”). Some of the adjectives reflect low arousal (e.g., “sluggish,” “exhausted”), whereas others reflect high arousal (“active,” “excited”). Items reflecting low arousal were reverse scored. The reliability of this index was high (Cronbach’s  $\alpha = .92$ ). Scores for the 24 items were averaged to produce a single perceived arousal index.

#### *Use of Profanity*

Use of profanity was measured with an original measure derived from responses for the same story-completion measure used to assess hostile expectations, which was adapted from

Bushman and Anderson (2002) and which was included in the post-exposure questionnaire. The use of profanity measure was calculated as all instances of profanity used in the 30 “What happens next?” question responses (15 for each of two story stems) given by participants describing what the character would think, and what the character would feel, and what the character would do or say for the two story stems. Use of profanity was defined using guidance from previous content analyses by Kaye and Sapolski (2001; 2004a; 2004b; 2004c), and was operationalized as the sum of responses including one of three separate categories of profanity: the “seven dirty words” and variations of them (“shit,” “piss,” “fuck,” “cunt,” “cocksucker,” “motherfucker,” and “tits”), other strong profanity (strong excretory words [e.g., asshole], sexual words [e.g., pecker], and other words that evoke strong emotion and offense [e.g., bitch], but are not on the “seven dirty words” list), and mild profanity (words that are considered to have some degree of profanity, rudeness, or offensiveness, but which are not widely considered to evoke strong emotion and offense, such as “hell,” “damn,” “crap,” and “slut,” and “Christ,” “Jesus,” and “God” if uttered in vain). For further analysis, scores for the three profanity subcategories (“seven dirty words,” other strong profanity, and mild profanity), were also calculated.

Responses for the use of profanity measure were coded by the same two independent raters who were paid to code responses for the hostile expectations measure. Each coder was randomly assigned 186 of the 321 cases, which provided an overlap of 51 cases (15.89% of the 321 total cases) that were assigned to both coders to allow assessment of intercoder reliability (in addition to the 135 cases unique to each coder). The same random assignment procedure used with responses for the hostile expectations measure was used with responses for the use of the profanity measure because both measures involved the story completion task. As with the hostile expectations and accessibility of aggressive thoughts measures, coders received the cases in

random order with no indication of the study's conditions or design, and the order of each coder's list of cases was randomized separately to guard against consistent order effects in coding. For the 51 cases randomly assigned to both coders, the two coders' scores were averaged to produce the final score for each measure after assessment of reliability.

Intercoder reliability for the use of profanity measure was assessed using a Pearson's  $r$  correlation between coders for all coded responses for the 51 cases randomly assigned to both coders. The intercoder reliability assessment indicated a moderately strong correlation between coder scores ( $r = .564$ ) for the profanity item.

Reliability was also calculated for the three separate subscores using the same measure, with resulting correlations varying from moderate to strong ( $r = .776$  for the "seven dirty words,"  $r = .700$  for other strong profanity, and  $r = .454$  for mild profanity).

### *Enjoyment*

Enjoyment was measured with a scale used by Klimmt, Rizzo, Vorderer, Koch, and Fischer (2008), which was included in the post-exposure questionnaire. This scale contains 10 items and used 7-point Likert scales (1 = strongly disagree, 7 = strongly agree). Items included statements such as: "I liked playing the game;" "For me the game was entertaining;" "It was great fun for me to take control of this game;" "The game almost invited me to take control;" "The game was no challenge at all for me" (reverse scored); "The game was absolutely not interesting to me" (reverse scored); "I think the game was boring" (reverse scored); "I really felt like engaging with the game;" "I was sad when the experience was over;" "I would recommend the experience to my friends." The reliability of this index was acceptable (Cronbach's  $\alpha = .88$ ). Scores for the 10 items were averaged to produce a single enjoyment index.

### *Feelings of Presence*

Presence was assessed using three semantic differential items included in the post-exposure questionnaire that used a 7-point scale to rate the degree to which participants felt that they were “there” in the game environment and that the game characters and game environment were real (Schneider et al., 2004). This scale includes the following items: While playing the game, how much did you feel like you were really “there” in the game environment? (1 = “There,” 7 = “Not There”); While playing the game, how much did you feel like the game environment was a real place? (1 = “Real,” 7 = “Not Real”); While playing the game, how much did you feel like other characters in the game were real? (1 = “Real,” 7 = “Not Real”). The reliability of this index was acceptable (Cronbach’s  $\alpha = .81$ ). All items were reversed scored so that higher scores would indicate greater feelings of presence, and scores for the three items were averaged to produce a single presence index.

### *Perceived Performance*

Perceptions of performance were measured with a single item included in the post-exposure questionnaire that instructed participants, “Please rate your performance in this game as a percentage score, with “100% = As well as possible” and 0% = “As badly as possible.” The percentage score was then used as the perceived performance measure.

## Individual Difference Variables

### *Gender*

A pre-exposure questionnaire item asked participants to report their gender.

### *Pre-Existing Aggression*

Pre-existing levels of participants' aggression, or trait aggressiveness, were measured through Buss and Perry's (1992) aggression questionnaire (AQ), which measures trait aggressiveness through four subtraits (physical aggression, verbal aggression, anger, and hostility) and was included in the study's pre-exposure questionnaire. Sample items include "I have threatened people I know" and "I am suspicious of overly friendly strangers." The questionnaire is composed of 29 items on a five-point Likert scale (1 = "extremely uncharacteristic of me" to 5 = "extremely characteristic of me"). The reliability of this index was acceptable (Cronbach's  $\alpha = .88$ ). Scores for the 29 items were averaged to produce a single pre-existing aggression index.

### *Sensation-Seeking*

Sensation-seeking was assessed using Hoyle, Stephenson, Palmgreen, Lorch, and Donohew's (2002) brief sensation seeking scale (BSSS), which was included in the study's pre-exposure questionnaire. It contains the same general content as Zuckerman's sensation seeking scale, form V (SSS-V) (Zuckerman, 1994), which includes 40-items. However, the full 40-item scale was not optimal for this study because of its long number of items. Therefore, the shorter BSSS version, which uses eight Likert-type items (1 = "strongly disagree," 2 = "disagree," 3 = "neither agree nor disagree," 4 = "agree," 5 = "strongly agree"), was used. The scale contains two items for each of the four primary dimensions of sensation seeking (experience seeking, boredom susceptibility, thrill and adventure seeking, disinhibition), for a total of eight items. Items included statements such as: "I would like to explore strange places," "I prefer friends who are excitingly unpredictable," "I would like to try bungee jumping," and "I like wild parties."

The reliability of this index was only moderate (Cronbach's  $\alpha = .69$ ), but was comparable to reported reliability for the scale using adults in this age range ( $\alpha = .70$ ) (Stephensen et al., 2007). Scores for the eight items were averaged to produce a single sensation-seeking index.

#### *Prior General Video Game Experience*

Participants' general previous experience was assessed using items from an adapted version of Anderson and Dill's (2000) video game experience questionnaire, which was included in the study's pre-exposure questionnaire. Participants were asked to name their three favorite video games and indicate on a seven-point scale (1 = "rarely," 4 = "occasionally," 7 = "often") how often they played the game during four time periods: "in recent months," "during 11<sup>th</sup> and 12<sup>th</sup> grades," "during 9<sup>th</sup> and 10<sup>th</sup> grades," and during "7<sup>th</sup> and 8<sup>th</sup> grades." The 12 scores for each of the favorite games over each of the time periods were then averaged to produce a single prior general video game experience index.

#### *Prior Violent Video Game Experience*

Participants' prior violent video game experience was assessed using items from the same adapted version of Anderson and Dill's (2000) video game experience questionnaire that was used to assess prior general video game experience, which was included in the study's pre-exposure questionnaire. In addition to naming their three favorite video games and indicating on the seven-point scale how often they played the game at four time periods in their lives, participants also completed two seven-point items for each of the three favorite games rating the amount of violence in each game's content (1 = "little or no violent content," 7 = "extremely violent content") and graphics (1 = "little or no blood and gore," 7 = "extremely bloody and

gory”). A violence exposure score was calculated for each of the three favorite games by summing the ratings for violent content and violent graphics and multiplying this number by the average rating of how often they played the game over the four time periods (Anderson & Dill, 2000, p. 778). Then, the exposure scores for all three favorite games were averaged to create a single prior violent video game experience index.

### *Current Video Game Use*

Participants’ current video game use was assessed with an item on the pre-exposure questionnaire asking, “On average, how many hours per week do you spend playing video games (including computer, console, online, or arcade games)?”

### Demographic Measures

In addition to gender, pre-exposure questionnaire items asked participants to report their age and ethnicity.

### Procedures

Participants each signed up to attend one of a series of available study sessions with up to 20 students allowed to sign up for each session. The study was conducted in a large computer laboratory that contained more than 20 available personal desktop computers. Each participant was seated at a computer equipped with a keyboard, mouse, and headset. Participants were each randomly assigned to one of the four study conditions, but were not made aware of the study’s

intent or the presence of multiple conditions. Computers were set up in advance with the appropriate version of the *Rescue Strike* game installed for each participant's assigned condition. Random assignment to conditions was accomplished by randomly generating the order of conditions assigned to each of the computers used in each session so that the appropriate game version could be set up on each computer before participants arrived for each session.

After being seated and welcomed to the study, participants were told they would be participating in a study about their responses to a video game. Participants then read and completed the informed consent form (Appendix C). After completing the informed consent form, participants completed the pre-exposure questionnaire on the computer. After completing the pre-exposure questionnaire, participants put on the headsets and played the video game for a period of 12 minutes. If participants lost the game or completed the game before the 12-minute time period ended, they were instructed to start over from the beginning until the time period was completed. After the 12 minutes of game play were completed, participants completed the timed word completion task (administered before the rest of the post-exposure questionnaire so that it could be assigned a three-minute time limit), then completed the remainder of the post-exposure questionnaire.

After completing the questionnaire, participants were thanked and dismissed. Participants were debriefed via email after completion of the study to prevent them from revealing the intent of the study to other participants before their sessions were completed.

## CHAPTER FOUR

### RESULTS

#### Descriptive Statistics and Preliminary Analyses

##### *Participant Demographics*

Of the 321 participants, 176 (54.83%) were female and 145 (45.17) were male. Participants ranged in age from 18 to 32 years, with a mean age of 20.25 years ( $SD = 1.77$ ) and a median age of 20 years. The sample's ethnic distribution was mostly Caucasian, with 266 (82.87%) reporting Caucasian ethnicity, 21 (6.54%) reporting Asian ethnicity, 13 (4.05%) reporting Black or African American ethnicity, 13 (4.05%) reporting bi- or multi-racial ethnicity or choosing multiple options from the item's list of ethnicity choices, 4 (1.25%) reporting Hispanic or Latino/Latina ethnicity, 2 (.623%) reporting Native American or Alaska Native ethnicity, and 2 (.623%) reporting other ethnicities.

##### *Check for Equal Distribution of Gender by Condition*

Males and females have sometimes been found to respond to video games differently (e.g., Anderson & Dill, 2000), so a chi-square analysis was conducted with the list of four conditions as a row variable and gender as a column variable to ensure that gender was not unevenly distributed across conditions. Although random assignment to conditions introduced slight variations in the gender makeup of each condition, with a range of 43-46 (53.09%-57.05%) female participants per condition and 34-38 (42.5%-46.91%) male participants per condition, the chi-square analysis found that the gender distribution across conditions was not

significantly uneven,  $\chi^2(3, N = 321) = .368, p = .947$ . This result indicates that gender distribution across the conditions was effectively equal.

### *Participants' Video Game Experience and Relationships to Other Individual Difference Variables*

Participants reported playing video games an average of 3.50 ( $SD = 6.16$ ) hours per week, with males ( $M = 6.17, SD = 7.29$ ) spending more hours playing than females ( $M = 1.30, SD = 3.85$ ),  $t(319) = 7.65, p < .001$ . Participants' gender also predicted their reported prior general video game experience,  $t(319) = 8.64, p < .001$ , with males ( $M = 3.36, SD = .982$ ) reporting more prior general video game experience than females ( $M = 2.32, SD = 1.16$ ), and their reported prior violent video game experience,  $t(319) = 15.32, p < .001$ , with males ( $M = 22.96, SD = 11.88$ ) reporting more prior violent video game experience than females ( $M = 7.27, SD = 5.99$ ). Current video game use was significantly correlated with both prior general video game experience ( $r = .363, p < .001$ ) and prior violent video game experience ( $r = .436, p < .001$ ). The prior general and prior violent video game experience measures were also significantly correlated with each other ( $r = .740, p < .001$ ).

Additionally, pre-existing aggression was significantly correlated with current video game play ( $r = .262, p < .001$ ), prior general video game play ( $r = .325, p < .001$ ), and prior violent video game play ( $r = .387, p < .001$ ). Sensation-seeking was correlated with pre-existing aggression ( $r = .288, p < .001$ ), prior general video game play ( $r = .199, p < .001$ ), prior violent video game play ( $r = .221, p < .001$ ), but not with current video game play ( $r = .098, p < .079$ ). Participants' gender predicted their pre-existing aggression,  $t(319) = 6.90, p < .001$ , with pre-existing aggression scores higher for males ( $M = 3.17, SD = .808$ ) than for females ( $M = 2.58,$

$SD = .724$ ), and their sensation-seeking tendency,  $t(319) = 4.32, p < .001$ , with sensation-seeking scores higher for males ( $M = 3.54, SD = .585$ ) than for females ( $M = 3.26, SD = .577$ ).

Together, these results indicate that current video game play for participants in this study is predicted by prior video game play, both violent and otherwise. Further, for participants in this study, pre-existing aggression and sensation-seeking are related to prior video game play, both violent and otherwise, and pre-existing aggression is also related to current video game use. Male participants in the study currently play more video games and have played more video games, violent and otherwise, in the past compared to female participants in the study, and male participants in the study reported more pre-existing aggression and sensation-seeking tendency than female participants in the study.

#### *Relationships Between Participants' Video Game Experience and Dependent Measures*

Participants' reported current video game use was significantly correlated with their responses for the perceived arousal measure ( $r = .181, p = .001$ ), the presence measure ( $r = -.140, p = .012$ ), and the perceived performance measure ( $r = .241, p < .001$ ), but not with their responses for the hostile expectations measure from the story completion task ( $r = .044, p = .428$ ), the aggressive cognition measure from the word completion task ( $r = .082, p = .142$ ), the state hostility scale ( $r = -.036, p = .519$ ), the profanity usage measure ( $r = .020, p = .723$ ), or the enjoyment measure ( $r = .036, p = .520$ ). Participants' reported prior general video game experience was significantly correlated with their responses for the perceived arousal measure ( $r = .124, p = .026$ ), the enjoyment measure ( $r = .231, p < .001$ ), and the perceived performance measure, ( $r = .336, p < .001$ ), but not with their responses for the hostile expectations measure from the story completion task ( $r = .029, p = .608$ ), the aggressive cognition measure from the

word completion task ( $r = .098, p = .079$ ), the state hostility scale ( $r = -.028, p = .612$ ), the profanity usage measure ( $r = .026, p = .639$ ), or the presence measure ( $r = -.048, p = .389$ ).

Participants' reported prior violent video game experience was significantly correlated with their responses for the perceived arousal measure ( $r = .157, p = .005$ ), the enjoyment measure ( $r = .198, p < .001$ ), the presence measure ( $r = -.120, p = .031$ ), and the perceived performance measure ( $r = .387, p < .001$ ), but not with their responses for the hostile expectations measure from the story completion task ( $r = .016, p = .770$ ), the aggressive cognition measure from the word completion task ( $r = .108, p = .053$ ), the state hostility scale ( $r = -.037, p = .506$ ), or the profanity usage measure ( $r = .018, p = .746$ ).

Together, these results indicate that prior video game play, violent and otherwise, and current video game play for participants in this study predicted several responses related to participants' game play experience during the study, namely their perceived arousal and perceived performance and in some cases feelings of presence and enjoyment, but did not predict participants' hostile expectations, accessibility of aggressive thoughts, aggressive feelings, or use of profanity.

#### *Relationships Between Other Individual Difference Variables and Dependent Measures*

Participants' gender predicted their responses for the perceived arousal measure,  $t(319) = 4.86, p < .001$ , with males ( $M = 3.15, SD = .628$ ) reporting more arousal from the game than females ( $M = 2.80, SD = .644$ ). Participants' gender also predicted their responses for the enjoyment measure,  $t(319) = 3.73, p < .001$ , with males ( $M = 3.43, SD = 1.24$ ) reporting more enjoyment from the game than females ( $M = 2.92, SD = 1.21$ ). Participants' gender also predicted their responses for the presence measure,  $t(319) = 3.43, p < .001$ , with females ( $M =$

1.82,  $SD = 1.36$ ) reporting more feelings of presence while playing the game than males ( $M = 1.30$ ,  $SD = 1.34$ ). Finally, participants' gender also predicted their responses for the perceived performance measure,  $t(319) = 9.53$ ,  $p < .001$ , with males ( $M = 87.21$ ,  $SD = 27.43$ ) reporting better performances playing the game than females ( $M = 59.41$ ,  $SD = 24.53$ ). Participants' gender did not predict their responses for the hostile expectations measure from the story completion task,  $t(319) = 1.78$ ,  $p = .077$ , the aggressive cognition measure from the word completion task ( $r = .082$ ,  $p = .142$ ), the state hostility scale,  $t(319) = .740$ ,  $p = .458$ , or the profanity usage measure,  $t(319) = .90$ ,  $p = .371$ .

Participants' pre-existing aggression was significantly correlated with their responses for the hostile expectations measure from the story completion task ( $r = .164$ ,  $p = .003$ ), the aggressive cognition measure from the word completion task ( $r = .116$ ,  $p = .037$ ), the state hostility scale ( $r = .226$ ,  $p < .001$ ), the enjoyment measure ( $r = .309$ ,  $p < .001$ ), and the perceived performance measure ( $r = .216$ ,  $p < .001$ ), but not with their responses for the perceived arousal measure ( $r = -.068$ ,  $p = .226$ ) or the presence measure ( $r = -.055$ ,  $p = .327$ ). Participants' sensation-seeking tendency was significantly correlated with their responses for the hostile expectations measure from the story completion task ( $r = .137$ ,  $p = .014$ ), the perceived arousal measure ( $r = .180$ ,  $p = .001$ ), the enjoyment measure ( $r = .298$ ,  $p < .001$ ), and the perceived performance measure ( $r = .164$ ,  $p = .003$ ), but not with their responses for the aggressive cognition measure from the word completion task ( $r = -.015$ ,  $p = .784$ ), the state hostility scale ( $r = -.022$ ,  $p = .694$ ) or the presence measure ( $r = .017$ ,  $p = .755$ ).

Together, these results indicate that gender predicted a number of responses related to participants' game play experience during the study. Male participants in the study were more aroused by the game used in the study, enjoyed the game used in the study more, and believed

that they performed better on the game used in the study compared to female participants in the study, but females reported experiencing more feelings of presence while playing the game used in the study. Effects of gender on responses directly related to aggression and imitation were limited, though. Males and females did not significantly differ in their hostile expectations, accessibility of aggressive thoughts, aggressive feelings, or use of profanity after playing the game used in the study.

Further, pre-existing aggression for participants in this study predicted a number of aggressive responses to the game, namely their hostile expectations, accessibility of aggressive thoughts, aggressive feelings, as well as their use of profanity after playing the game, their enjoyment of the game and their perceptions of performance while playing it, but did not predict their perceived arousal or feelings of presence while playing the game. Sensation-seeking tendency for participants in this study had inconsistent effects on their aggressive responses to the game, predicting hostile expectations and perceived arousal, but not accessibility of aggressive thoughts or aggressive feelings, and also predicted enjoyment of the game and perceived performance but not feelings of presence.

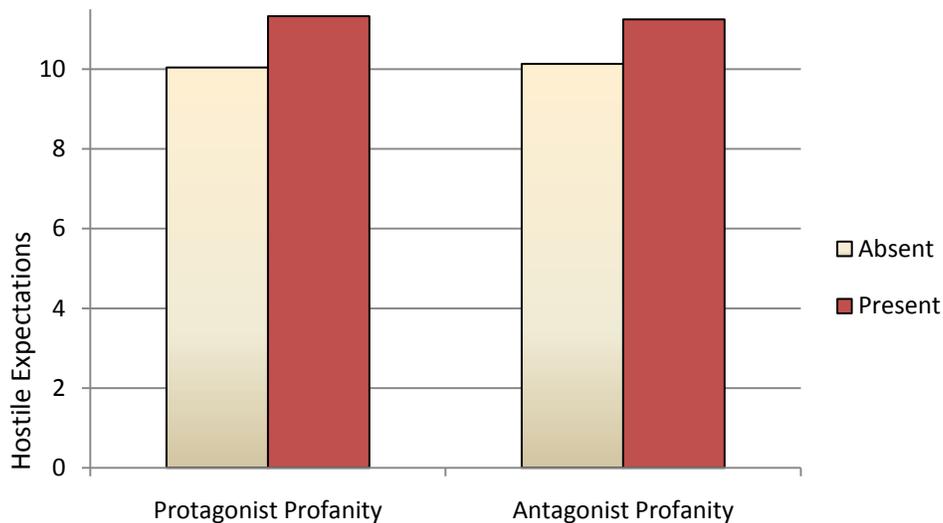
### Results for Effects of Profanity on Aggression-Related Responses

#### *Effects of Protagonist and Antagonist Profanity on Hostile Expectations*

Research question one asked whether profanity used by video game protagonists and antagonists affects hostile expectations among game players. A two-way ANOVA was run with protagonist profanity and antagonist profanity as independent factors and the hostile expectations measure (from the story completion task) as the dependent variable. The ANOVA revealed a

significant main effect of protagonist profanity (Figure 6),  $F(1, 317) = 5.71, p = .017, \eta_p^2 = .018$ , with hostile expectations significantly higher in the protagonist profanity present condition ( $M = 11.33, SD = 4.81$ ) than in the protagonist profanity absent condition ( $M = 10.04, SD = 4.83$ ). The ANOVA also revealed a significant main effect of antagonist profanity,  $F(1, 317) = 4.35, p = .038, \eta_p^2 = .014$ , with hostile expectations significantly higher in the antagonist profanity present condition ( $M = 11.25, SD = 4.84$ ) than in the antagonist profanity absent condition ( $M = 10.13, SD = 4.82$ ). The interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .031, p = .861, \eta_p^2 < .001$ .

Figure 6. Main Effects of Protagonist Profanity and Antagonist Profanity on Hostile Expectations (Bars indicate group means).



To further examine possible effects of profanity used by video game protagonists and antagonists on hostile expectations, three subsequent ANOVAs were run examining effects of protagonist profanity and antagonist profanity on each of the three hostile expectations subscores

(the hostile cognitive expectations, hostile affective expectations, and hostile behavioral expectations subscores from the story completion task).

A two-way ANOVA with protagonist profanity and antagonist profanity as independent factors and the hostile cognitive expectations subscore as the dependent variable revealed a significant main effect of protagonist profanity (Figure 7),  $F(1, 317) = 6.31, p = .013, \eta_p^2 = .020$ , with hostile cognitive expectations significantly higher in the protagonist profanity present condition ( $M = 4.05, SD = 2.20$ ) than in the protagonist profanity absent condition ( $M = 3.45, SD = 2.09$ ). The ANOVA also revealed a significant main effect of antagonist profanity,  $F(1, 317) = 6.71, p = .010, \eta_p^2 = .021$ , with hostile expectations significantly higher in the antagonist profanity present condition ( $M = 4.06, SD = 2.27$ ) than in the antagonist profanity absent condition ( $M = 3.44, SD = 2.02$ ). The interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .028, p = .868, \eta_p^2 < .001$ .

A two-way ANOVA with protagonist profanity and antagonist profanity as independent factors and the hostile affective expectations subscore as the dependent variable revealed a significant main effect of protagonist profanity (Figure 8),  $F(1, 317) = 4.13, p = .043, \eta_p^2 = .013$ , with hostile cognitive expectations significantly higher in the protagonist profanity present condition ( $M = 4.38, SD = 1.85$ ) than in the protagonist profanity absent condition ( $M = 3.97, SD = 1.75$ ). The main effect of antagonist profanity, however, was not significant,  $F(1, 317) = .368, p = .545, \eta_p^2 = .001$ , and the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) < .001, p = .989, \eta_p^2 < .001$ .

Figure 7. Significant Main Effects of Protagonist Profanity and Antagonist Profanity on Hostile Cognitive Expectations Subscore (Bars indicate group means).

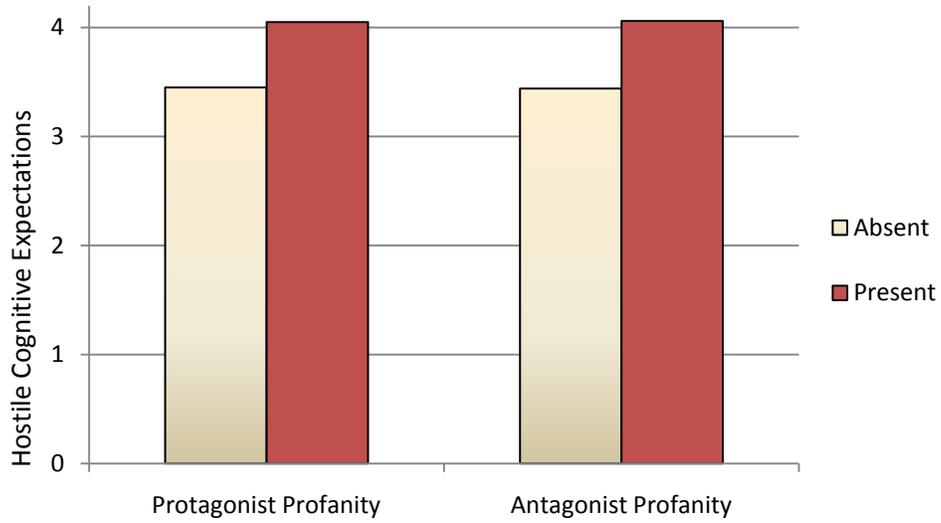
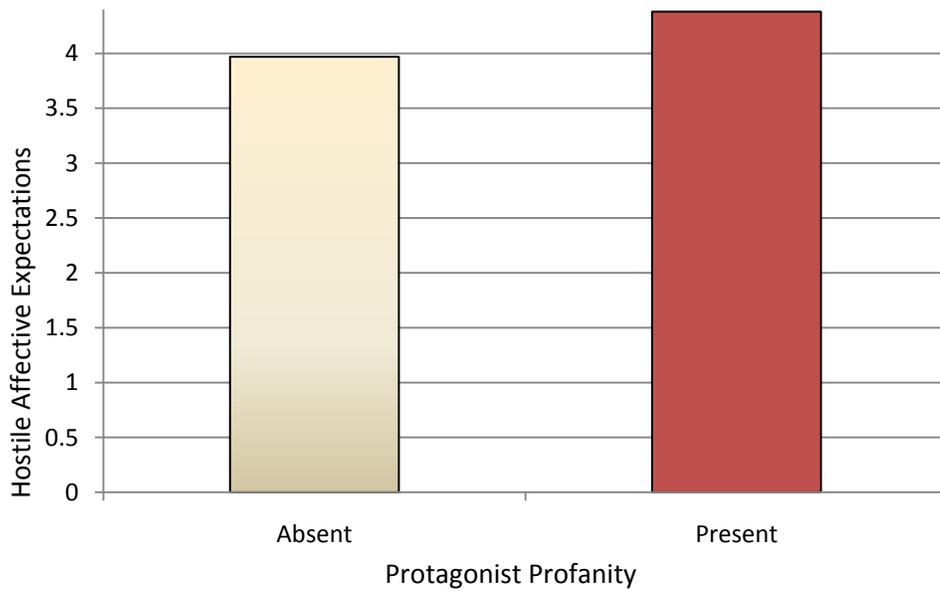


Figure 8. Significant Main Effect of Protagonist Profanity on Hostile Affective Expectations Subscore (Bars indicate group means).



A two-way ANOVA with protagonist profanity and antagonist profanity as independent factors and the hostile behavioral expectations subscore as the dependent variable indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = 1.23, p = .269, \eta_p^2 = .004$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = 2.36, p = .125, \eta_p^2 = .007$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .304, p = .582, \eta_p^2 = .001$ .

Regarding RQ1, these results indicate that profanity used by both protagonists and antagonists increased participants' hostile expectations and that the effects of each of the two different types of profanity do not appear to depend on the other. Further, the pattern of subscores of hostile cognitive expectations, hostile affective expectations, and hostile behavioral expectations indicates that the effects of profanity used by protagonists and antagonists on hostile expectations did not influence all of the hostile expectation subscores uniformly. Specifically, profanity used by both protagonists and antagonists significantly increased participants' expectations of hostile thoughts, but only protagonist profanity significantly increased participants' expectations of hostile feelings, and neither type of profanity used by game characters significantly affected expectations of hostile behaviors.

#### *Effects of Protagonist and Antagonist Profanity on Accessibility of Aggressive Thoughts*

Research question two asked whether profanity used by video game protagonists and antagonists affects accessibility of aggressive thoughts among game players. A two-way ANOVA was run with protagonist profanity and antagonist profanity as independent factors and the aggressive cognition measure (from the word completion task) as the dependent variable. The ANOVA indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) =$

.109,  $p = .742$ ,  $\eta_p^2 < .001$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = .285$ ,  $p = .594$ ,  $\eta_p^2 = .001$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = 1.43$ ,  $p = .232$ ,  $\eta_p^2 = .005$ .

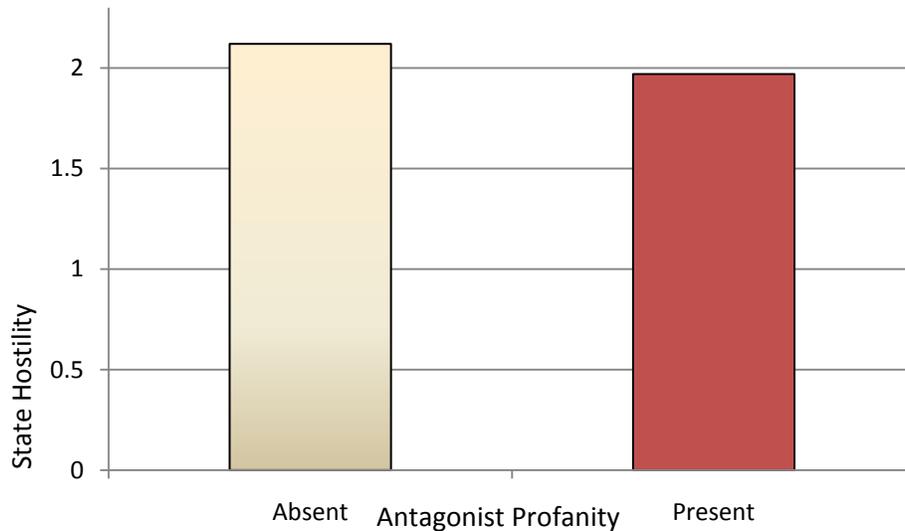
Regarding RQ2, these results indicate no evidence for an effect of profanity used by either protagonists or antagonists on accessibility of participants' aggressive thoughts, at least as it was measured here using the word completion task.

### *Effects of Protagonist and Antagonist Profanity on Aggressive Feelings*

Research question three asked whether profanity used by video game protagonists and antagonists affects aggressive feelings among game players. A two-way ANOVA was run with protagonist profanity and antagonist profanity as independent factors and the state hostility scale measure as the dependent variable. The ANOVA indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = .067$ ,  $p = .796$ ,  $\eta_p^2 < .001$ , but the ANOVA revealed a significant main effect of antagonist profanity (Figure 9),  $F(1, 317) = 4.71$ ,  $p = .031$ ,  $\eta_p^2 = .015$ , with aggressive feelings significantly higher in the antagonist profanity absent condition ( $M = 2.12$ ,  $SD = .624$ ) than in the antagonist profanity present condition ( $M = 1.97$ ,  $SD = .577$ ). The interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .305$ ,  $p = .581$ ,  $\eta_p^2 = .001$ .

Regarding RQ3, these results indicate no evidence for an effect of profanity used by protagonists on participants' aggressive feelings, but that profanity used by antagonists decreased participants' aggressive affect and that the effects of antagonist profanity do not appear to depend on protagonist profanity.

Figure 9. Significant Main Effect of Antagonist Profanity on State Hostility (Bars indicate group means).



#### *Effects of Protagonist and Antagonist Profanity on Perceived Arousal*

Research question four asked whether profanity used by video game protagonists and antagonists affects perceived arousal among game players. A two-way ANOVA was run with protagonist profanity and antagonist profanity as independent factors and the perceived arousal measure as the dependent variable. The ANOVA indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = .391, p = .532, \eta_p^2 = .001$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = .157, p = .692, \eta_p^2 < .001$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .569, p = .451, \eta_p^2 = .002$ .

Regarding RQ4, these results indicate no evidence for an effect of profanity used by either protagonists or antagonists on participants' perceived arousal, at least as it was measured here using the perceived arousal scale.

### *Summary of Results for Effects of Protagonist and Antagonist Profanity on Aggression-Related Responses*

The effects of protagonist profanity on aggression-related measures are mixed. The strongest effects of protagonist and antagonist profanity in this study are on the higher-order outcome of hostile expectations, with both types of profanity being found to significantly increase players' hostile expectations. A closer post-hoc examination of subscales that made up the hostile expectations measure indicated that both protagonist and antagonist profanity influenced players' expectations of aggressive thoughts, but that only protagonist profanity significantly affected players' expectations of aggressive feelings and neither profanity factor influenced players' expectations of aggressive behaviors. The different patterns of effects observed with these subscales adds some nuance to the more uniform pattern of profanity effects observed with the complete hostile expectations measure.

Evidence for the influence of profanity in game content on psychological states related to aggression, though, was limited. Neither protagonists' nor antagonists' use of profanity was found to influence players' accessibility of aggressive thoughts. Protagonists' use of profanity was not found to influence players' aggressive feelings, though antagonists' use of profanity was found to decrease players' aggressive feelings.

### Results for Effects of Profanity on Other Responses (RQs 5-8)

#### *Effects of Protagonist and Antagonist Profanity on Use of Profanity*

Research question five asked whether profanity used by video game protagonists and antagonists affects use of profanity among game players. A two-way ANOVA was run with

protagonist profanity and antagonist profanity as independent factors and the profanity usage measure (from the story completion task) as the dependent variable. The ANOVA indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = .716, p = .398, \eta_p^2 = .002$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = 1.94, p = .164, \eta_p^2 = .006$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .002, p = .969, \eta_p^2 < .001$ .

To further examine possible effects of profanity used by video game protagonists and antagonists on the use of specific types of profanity among game players, three subsequent ANOVAs were run examining effects of protagonist profanity and antagonist profanity on each of the three profanity usage subscores (the “seven dirty words,” other strong profanity, and mild profanity subscores from the story completion task).

A two-way ANOVA with protagonist profanity and antagonist profanity as independent factors and the “seven dirty words” subscore as the dependent variable indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = .187, p = .666, \eta_p^2 = .001$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = 1.65, p = .200, \eta_p^2 = .005$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .222, p = .638, \eta_p^2 = .001$ .

A two-way ANOVA with protagonist profanity and antagonist profanity as independent factors and the other strong profanity subscore as the dependent variable indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = 1.01, p = .315, \eta_p^2 = .003$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = .672, p = .413, \eta_p^2 = .002$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .401, p = .527, \eta_p^2 = .001$ .

A two-way ANOVA with protagonist profanity and antagonist profanity as independent factors and the mild profanity subscore as the dependent variable indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = 2.12, p = .147, \eta_p^2 = .007$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = 1.25, p = .265, \eta_p^2 = .004$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .263, p = .609, \eta_p^2 = .001$ .

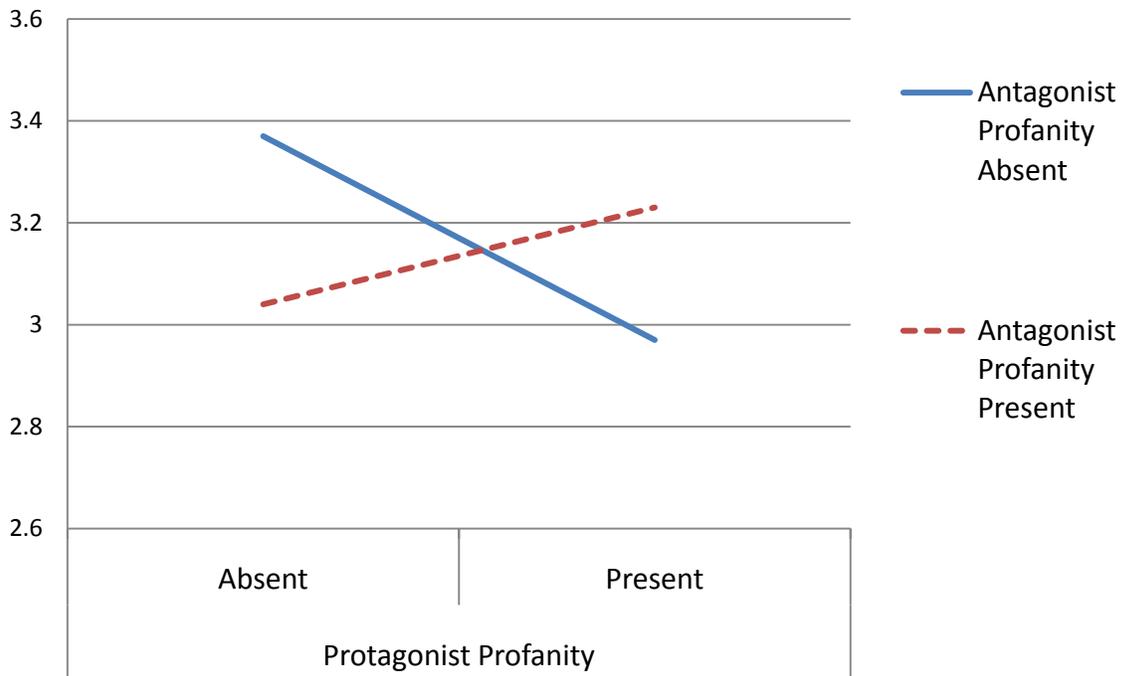
Regarding RQ5, these results indicate no evidence for an effect of profanity used by either protagonists or antagonists on players' use of profanity (either in general or more specifically in the use of the "seven dirty words," other strong profanity, or mild profanity), at least as profanity was measured here using the story completion task.

#### *Effects of Protagonist and Antagonist Profanity on Enjoyment*

Research question six asked whether profanity used by video game protagonists and antagonists affects enjoyment among game players. A two-way ANOVA was run with protagonist profanity and antagonist profanity as independent factors and the enjoyment measure as the dependent variable. The ANOVA indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = .516, p = .473, \eta_p^2 = .002$ , and that the main effect of antagonist profanity was not significant,  $F(1, 317) = .070, p = .792, \eta_p^2 < .001$ . The ANOVA revealed, however, a significant interaction effect between the protagonist profanity and antagonist profanity factors (Figure 10),  $F(1, 317) = 4.445, p = .036, \eta_p^2 = .014$ .

The pattern of means indicates a transverse interaction effect. Specifically, when protagonist profanity is absent, enjoyment is higher when antagonist profanity is absent ( $M = 3.37, SD = 1.31$ ) than when antagonist profanity is present ( $M = 3.04, SD = 1.21$ ), but when

Figure 10. Significant Protagonist Profanity X Antagonist Profanity Interaction Effect on Enjoyment.



protagonist profanity is present, enjoyment is higher when antagonist profanity is present ( $M = 3.23$ ,  $SD = 1.24$ ) than when antagonist profanity is absent ( $M = 2.97$ ,  $SD = 1.22$ ).

Regarding RQ6, these results indicate no evidence for independent effects of profanity used by either protagonists or antagonists on players' enjoyment, at least as it was measured here, but that the effects of the profanity types may be interdependent such that enjoyment is highest when use of profanity is consistent across protagonists and antagonists (with either both types of characters using profanity or neither type of character using profanity) and lowest when use of profanity is inconsistent between protagonists and antagonists (with one type of character using profanity and the other type of character not using profanity).

### *Effects of Protagonist and Antagonist Profanity on Feelings of Presence*

Research question seven asked whether profanity used by video game protagonists and antagonists affects feelings of presence among game players. A two-way ANOVA was run with protagonist profanity and antagonist profanity as independent factors and the presence measure as the dependent variable. The ANOVA indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = .819, p = .366, \eta_p^2 = .003$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = 3.62, p = .058, \eta_p^2 = .011$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .220, p = .640, \eta_p^2 = .001$ .

Regarding RQ7, these results indicate no evidence for an effect of profanity used by both protagonists and antagonists on players' feelings of presence, as it was measured here.

### *Effects of Protagonist and Antagonist Profanity on Perceived Performance*

Research question eight asked whether profanity used by video game protagonists and antagonists affects game players' perceptions of how they performed in the game. A two-way ANOVA was run with protagonist profanity and antagonist profanity as independent factors and the perceived performance measure as the dependent variable. The ANOVA indicated that the main effect of protagonist profanity was not significant,  $F(1, 317) = .388, p = .534, \eta_p^2 = .001$ , that the main effect of antagonist profanity was not significant,  $F(1, 317) = 1.01, p = .317, \eta_p^2 = .003$ , and that the interaction effect between the protagonist profanity and antagonist profanity factors was not significant,  $F(1, 317) = .028, p = .867, \eta_p^2 < .001$ .

Regarding RQ8, these results indicate no evidence for an effect of profanity used by both protagonists and antagonists on players' perceptions of their performance, as it was measured here.

### *Summary of Results for Effects of Protagonist and Antagonist Profanity on Other Player Responses*

Aside from the four aggression-related measures in the study, profanity in video game content was found to have little influence on players' experiences. Neither protagonists' nor antagonists' use of profanity significantly influenced players' use of profanity, enjoyment, feelings of presence, or perceived performance directly. However, a significant interaction effect was observed between protagonist and antagonist profanity on players' enjoyment, such that players appear to enjoy the game more when profanity is either used by both protagonists and antagonists or used by neither type of character.

## Results Related to Individual Difference Variables (RQs 9-14)

### *Moderating Effects of Players' Gender*

Research question nine asked whether video game players' gender moderates the effects of profanity used by video game protagonists and antagonists on the players' responses. A series of three-way ANOVAs were run for each of the study's eight dependent variables (the hostile expectations measure from the story completion task, the aggressive cognition measure from the word completion task, the state hostility scale, the perceived arousal measure, the profanity usage measure, the enjoyment measure, the presence measure, and the perceived performance measure)

with protagonist profanity, antagonist profanity, and gender as independent factors. These analyses were therefore identical to those conducted to examine RQs 1-8 except for the addition of gender as a third factor.

Then, results were examined to assess whether gender was part of any two- or three-way interactions with the independent variables (protagonist profanity and antagonist profanity) for any independent variable, which would indicate a moderating effect of gender. Main and interaction effects of the protagonist and antagonist profanity variables from the three-way ANOVAs were also compared to those from the two-way ANOVAs that were conducted to examine RQs 1-8 to determine whether any of the independent variables' effects changed with the addition of the gender factor (i.e., whether any results from the two-way ANOVAs changed from  $p < .05$  to  $p > .05$  in the three-way ANOVAs, or vice versa). Additionally, instances where gender had a main effect on dependent measures were identified to better describe the role of gender in the study, even though such main effects of gender were not evidence for any moderated relationships.

In this series of three-way ANOVAs with gender added as a third factor, significance was not found for any two- and three-way interaction effects involving the gender factor (all  $ps < .05$ ). Further, results of significance tests for all main and interaction effects of the protagonist profanity and antagonist profanity factors mirrored those observed with the two-way ANOVAs (i.e., all instances of  $p < .05$  found in the two-way ANOVAs were also found in the three-way ANOVAs, as were all instances of  $p > .05$ ).

Regarding RQ9, gender does not appear to moderate any effects of protagonist profanity and antagonist profanity on the player response measures used in this study. The various effects

of protagonist profanity and antagonist profanity are therefore fairly consistent regardless of player gender.

### *Influence of Players' Pre-Existing Aggression*

Research question 10 asked whether controlling for video game players' pre-existing aggressive tendency influenced the effects of profanity used by video game protagonists and antagonists on the players' responses. A series of two-way ANCOVAs were run for each of the study's eight dependent variables (the hostile expectations measure from the story completion task, the aggressive cognition measure from the word completion task, the state hostility scale, the perceived arousal measure, the profanity usage measure, the enjoyment measure, the presence measure, and the perceived performance measure) with protagonist profanity and antagonist profanity as independent factors and pre-existing aggression as a covariate. These analyses were therefore identical to the ANOVAs conducted to examine RQs 1-8 except for the addition of pre-existing aggression as a covariate.

Then, main and interaction effects of the protagonist and antagonist profanity variables from the ANCOVAs were compared to those from the ANOVAs that were conducted to examine RQs 1-8 to determine whether any of the independent variables' effects changed with the addition of the pre-existing aggression covariate (i.e., whether any results from the ANOVAs changed from  $p < .05$  to  $p > .05$  in the ANCOVAs, or vice versa). Additionally, instances where pre-existing aggression was a significant predictor of dependent measures were identified to better describe the role of pre-existing aggression in the study, even though these direct relationships were not evidence for influence of the control variable on the independent factors' effects.

In this series of ANCOVAs with pre-existing aggression added as a covariate, results of significance tests for all main effects of the protagonist profanity and antagonist profanity factors mirrored those observed with the ANOVAs (i.e., all instances of  $p < .05$  found in the ANOVAs were also found in the ANCOVAs, as were all instances of  $p > .05$ ). However, the two-way interaction effect of protagonist profanity and antagonist profanity on enjoyment, which had been found to be significant in the ANOVA test related to RQ6, was no longer significant in the ANCOVA test with pre-existing aggression added as a covariate,  $F(1, 316) = 3.25, p = .073, \eta_p^2 = .010$ . Results of significance tests for all other two-way interaction effects between the protagonist profanity and antagonist profanity factors in the ANCOVAs mirrored those observed with the ANOVAs (i.e., all instances of  $p > .05$  found in the ANOVAs were also found in the ANCOVAs). As a covariate, pre-existing aggression was a significant predictor of the hostile expectations measure,  $F(1, 316) = 9.81, p = .002, \eta_p^2 = .030$  (positive beta), the aggressive cognition measure,  $F(1, 316) = 4.09, p = .044, \eta_p^2 = .013$  (positive beta), the state hostility scale,  $F(1, 316) = 17.518, p < .001, \eta_p^2 = .053$  (positive beta), enjoyment,  $F(1, 316) = 31.79, p < .001, \eta_p^2 = .091$  (positive beta), and perceived performance,  $F(1, 313) = 15.95, p < .001, \eta_p^2 = .048$  (positive beta), but was not a significant predictor of the profanity usage measure,  $F(1, 316) = 1.07, p = .301, \eta_p^2 = .003$ , perceived arousal,  $F(1, 316) = 1.41, p = .237, \eta_p^2 = .004$ , or feelings of presence,  $F(1, 316) = .981, p = .323, \eta_p^2 = .003$ ,

Regarding RQ10, pre-existing aggression does not appear to influence any main effects of protagonist profanity and antagonist profanity on the player response measures used in this study, though it influences the interaction effect between protagonist profanity and antagonist profanity on enjoyment such that the interaction effect is not significant once pre-existing aggression is accounted for. The various main effects of protagonist profanity and antagonist

profanity are therefore fairly consistent regardless of players' pre-existing aggression levels, though the interaction effect on enjoyment is less consistent.

### *Influence of Players' Sensation-Seeking*

Research question 11 asked whether controlling for video game players' pre-existing sensation-seeking tendency influences the effects of profanity used by video game protagonists and antagonists on the players' responses. A series of two-way ANCOVAs were run for each of the study's eight dependent variables (the hostile expectations measure from the story completion task, the aggressive cognition measure from the word completion task, the state hostility scale, the perceived arousal measure, the profanity usage measure, the enjoyment measure, the presence measure, and the perceived performance measure) with protagonist profanity and antagonist profanity as independent factors and sensation-seeking tendency as a covariate. These analyses were therefore identical to the ANOVAs conducted to examine RQs 1-8 except for the addition of sensation-seeking tendency as a covariate.

Then, main and interaction effects of the protagonist and antagonist profanity variables from the ANCOVAs were compared to those from the ANOVAs that were conducted to examine RQs 1-8 to determine whether any of the independent variables' effects changed with the addition of the sensation-seeking tendency covariate (i.e., whether any results from the ANOVAs changed from  $p < .05$  to  $p > .05$  in the ANCOVAs, or vice versa). Additionally, instances where sensation-seeking tendency was a significant predictor of dependent measures were identified to better describe the role of sensation-seeking tendency in the study, even though these direct relationships were not evidence for influence of the control variable on the independent factors' effects.

In this series of ANCOVAs with pre-existing aggression added as a covariate, results of significance tests for all main effects of the protagonist profanity and antagonist profanity factors mirrored those observed with the ANOVAs (i.e., all instances of  $p < .05$  found in the ANOVAs were also found in the ANCOVAs, as were all instances of  $p > .05$ ). However, the two-way interaction effect of protagonist profanity and antagonist profanity on enjoyment, which had been found to be significant in the ANOVA test related to RQ6, was no longer significant in the ANCOVA test with sensation-seeking tendency added as a covariate,  $F(1, 316) = 1.88, p = .171, \eta_p^2 = .006$ . Results of significance tests for all other two-way interaction effects between the protagonist profanity and antagonist profanity factors in the ANCOVAs mirrored those observed with the ANOVAs (i.e., all instances of  $p > .05$  found in the ANOVAs were also found in the ANCOVAs). As a covariate, sensation-seeking was a significant predictor of the hostile expectations measure,  $F(1, 316) = 6.69, p = .010, \eta_p^2 = .021$  (positive beta), perceived arousal,  $F(1, 316) = 11.46, p = .001, \eta_p^2 = .035$  (positive beta), the profanity usage measure,  $F(1, 316) = 8.16, p = .005, \eta_p^2 = .025$  (positive beta), enjoyment,  $F(1, 316) = 27.93, p < .001, \eta_p^2 = .081$  (positive beta), and perceived performance,  $F(1, 313) = 9.21, p < .003, \eta_p^2 = .029$  (positive beta), but was not a significant predictor of the aggressive cognition measure,  $F(1, 316) = .196, p = .658, \eta_p^2 = .001$ , the state hostility scale,  $F(1, 316) = .093, p = .760, \eta_p^2 < .001$ , or feelings of presence,  $F(1, 316) = .089, p = .766, \eta_p^2 < .001$ .

Regarding RQ11, sensation-seeking tendency does not appear to influence any main effects of protagonist profanity and antagonist profanity on the player response measures used in this study, though it influences the interaction effect between protagonist profanity and antagonist profanity on enjoyment such that the interaction effect is not significant once sensation-seeking tendency is accounted for. The various main effects of protagonist profanity

and antagonist profanity are therefore fairly consistent regardless of players' sensation-seeking tendencies, though the interaction effect on enjoyment is less consistent.

### *Influence of Players' Prior General Video Game Experience*

Research question 12 asked whether controlling for video game players' prior general video game experience influenced the effects of profanity used by video game protagonists and antagonists on the players' responses. A series of two-way ANCOVAs were run for each of the study's eight dependent variables (the hostile expectations measure from the story completion task, the aggressive cognition measure from the word completion task, the state hostility scale, the perceived arousal measure, the profanity usage measure, the enjoyment measure, the presence measure, and the perceived performance measure) with protagonist profanity and antagonist profanity as independent factors and prior general video game experience as a covariate. These analyses were therefore identical to the ANOVAs conducted to examine RQs 1-8 except for the addition of prior general video game experience as a covariate.

Then, main and interaction effects of the protagonist and antagonist profanity variables from the ANCOVAs were compared to those from the ANOVAs that were conducted to examine RQs 1-8 to determine whether any of the independent variables' effects changed with the addition of the prior general video game experience covariate (i.e., whether any results from the ANOVAs changed from  $p < .05$  to  $p > .05$  in the ANCOVAs, or vice versa). Additionally, instances where prior general video game experience was a significant predictor of dependent measures were identified to better describe the role of prior general video game experience in the study, even though these direct relationships were not evidence for influence of the control variable on the independent factors' effects.

In this series of ANCOVAs with pre-existing aggression added as a covariate, results of significance tests for all main effects of the protagonist profanity and antagonist profanity factors mirrored those observed with the ANOVAs (i.e., all instances of  $p < .05$  found in the ANOVAs were also found in the ANCOVAs, as were all instances of  $p > .05$ ). However, the two-way interaction effect of protagonist profanity and antagonist profanity on enjoyment, which had been found to be significant in the ANOVA test related to RQ6, was no longer significant in the ANCOVA test with prior general video game experience added as a covariate,  $F(1, 316) = 3.63$ ,  $p = .058$ ,  $\eta_p^2 = .011$ . Results of significance tests for all other two-way interaction effects between the protagonist profanity and antagonist profanity factors in the ANCOVAs mirrored those observed with the ANOVAs (i.e., all instances of  $p > .05$  found in the ANOVAs were also found in the ANCOVAs). As a covariate, prior general video game experience was a significant predictor of perceived arousal,  $F(1, 316) = 5.17$ ,  $p = .024$ ,  $\eta_p^2 = .016$  (positive beta), enjoyment,  $F(1, 316) = 16.88$ ,  $p < .001$ ,  $\eta_p^2 = .051$  (positive beta), and perceived performance,  $F(1, 313) = 40.684$ ,  $p < .001$ ,  $\eta_p^2 = .115$  (positive beta), but was not a significant predictor of the hostile expectations measure,  $F(1, 316) = .308$ ,  $p = .579$ ,  $\eta_p^2 = .001$ , the aggressive cognition measure,  $F(1, 316) = 2.869$ ,  $p = .091$ ,  $\eta_p^2 = .009$ , the state hostility scale,  $F(1, 316) = .237$ ,  $p = .627$ ,  $\eta_p^2 = .001$ , the profanity usage measure,  $F(1, 316) = .241$ ,  $p = .624$ ,  $\eta_p^2 = .001$ , or feelings of presence,  $F(1, 316) = .780$ ,  $p = .378$ ,  $\eta_p^2 = .002$ .

Regarding RQ12, prior general video game experience does not appear to influence any main effects of protagonist profanity and antagonist profanity on the player response measures used in this study, though it influences the interaction effect between protagonist profanity and antagonist profanity on enjoyment such that the interaction effect is not significant once prior general video game experience is accounted for. The various main effects of protagonist

profanity and antagonist profanity are therefore fairly consistent regardless of players' prior general video game experience, though the interaction effect on enjoyment is less consistent.

### *Influence of Players' Prior Violent Video Game Experience*

Research question 13 asked whether controlling for video game players' prior violent video game experience influences the effects of profanity used by video game protagonists and antagonists on the players' responses. A series of two-way ANCOVAs were run for each of the study's eight dependent variables (the hostile expectations measure from the story completion task, the aggressive cognition measure from the word completion task, the state hostility scale, the perceived arousal measure, the profanity usage measure, the enjoyment measure, the presence measure, and the perceived performance measure) with protagonist profanity and antagonist profanity as independent factors and prior violent video game experience as a covariate. These analyses were therefore identical to the ANOVAs conducted to examine RQs 1-8 except for the addition of prior violent video game experience as a covariate.

Then, main and interaction effects of the protagonist and antagonist profanity variables from the ANCOVAs were compared to those from the ANOVAs that were conducted to examine RQs 1-8 to determine whether any of the independent variables' effects changed with the addition of the prior violent video game experience covariate (i.e., whether any results from the ANOVAs changed from  $p < .05$  to  $p > .05$  in the ANCOVAs, or vice versa). Additionally, instances where prior violent video game experience was a significant predictor of dependent measures were identified to better describe the role of prior violent video game experience in the study, even though these direct relationships were not evidence for influence of the control variable on the independent factors' effects.

In this series of ANCOVAs with prior violent video game experience added as a covariate, results of significance tests for all main and interaction effects of the protagonist profanity and antagonist profanity factors mirrored those observed with the ANOVAs (i.e., all instances of  $p < .05$  found in the ANOVAs were also found in the ANCOVAs, as were all instances of  $p > .05$ ). As a covariate, prior violent video game experience was a significant predictor of perceived arousal,  $F(1, 316) = 8.10, p = .005, \eta_p^2 = .025$  (positive beta), enjoyment,  $F(1, 316) = 12.52, p < .001, \eta_p^2 = .038$  (positive beta), feelings of presence,  $F(1, 316) = 4.60, p = .033, \eta_p^2 = .014$  (positive beta), and perceived performance,  $F(1, 313) = 55.76, p < .001, \eta_p^2 = .151$  (positive beta), but was not a significant predictor of the hostile expectations measure,  $F(1, 316) = .098, p = .754, \eta_p^2 < .001$ , the aggressive cognition measure,  $F(1, 316) = 3.64, p = .057, \eta_p^2 = .011$ , the state hostility scale,  $F(1, 316) = .388, p = .534, \eta_p^2 = .001$ , or the profanity usage measure,  $F(1, 316) = .105, p = .746, \eta_p^2 < .001$ .

Regarding RQ13, prior violent video game experience does not appear to influence any main or interaction effects of protagonist profanity and antagonist profanity on the player response measures used in this study. The various effects of protagonist profanity and antagonist profanity are therefore fairly consistent regardless of players' prior violent video game experience.

#### *Influence of Players' Current Video Game Use*

Research question 14 asked whether controlling for video game players' current video game use influences the effects of profanity used by video game protagonists and antagonists on the players' responses. A series of two-way ANCOVAs were run for each of the study's eight dependent variables (the hostile expectations measure from the story completion task, the

aggressive cognition measure from the word completion task, the state hostility scale, the perceived arousal measure, the profanity usage measure, the enjoyment measure, the presence measure, and the perceived performance measure) with protagonist profanity and antagonist profanity as independent factors and current video game use as a covariate. These analyses were therefore identical to the ANOVAs conducted to examine RQs 1-8 except for the addition of current video game use as a covariate.

Then, main and interaction effects of the protagonist and antagonist profanity variables from the ANCOVAs were compared to those from the ANOVAs that were conducted to examine RQs 1-8 to determine whether any of the independent variables' effects changed with the addition of the current video game use covariate (i.e., whether any results from the ANOVAs changed from  $p < .05$  to  $p > .05$  in the ANCOVAs, or vice versa). Additionally, instances where current video game use was a significant predictor of dependent measures were identified to better describe the role of current video game use in the study, even though these direct relationships were not evidence for influence of the control variable on the independent factors' effects.

In this series of ANCOVAs with current video game use added as a covariate, results of significance tests for all main and interaction effects of the protagonist profanity and antagonist profanity factors mirrored those observed with the ANOVAs (i.e., all instances of  $p < .05$  found in the ANOVAs were also found in the ANCOVAs, as were all instances of  $p > .05$ ). As a covariate, current video game use was a significant predictor of perceived arousal,  $F(1, 316) = 11.14, p = .001, \eta_p^2 = .034$  (positive beta), feelings of presence,  $F(1, 316) = 6.41, p = .012, \eta_p^2 = .020$  (positive beta), and perceived performance,  $F(1, 313) = 19.62, p < .001, \eta_p^2 = .059$  (positive beta), but was not a significant predictor of the hostile expectations measure,  $F(1, 316) = .624, p$

= .430,  $\eta_p^2 = .002$ , the aggressive cognition measure,  $F(1, 316) = 1.93$ ,  $p = .166$ ,  $\eta_p^2 = .006$ , the state hostility scale,  $F(1, 316) = .324$ ,  $p = .570$ ,  $\eta_p^2 = .001$ , the profanity usage measure,  $F(1, 316) = .120$ ,  $p = .729$ ,  $\eta_p^2 < .001$ , or enjoyment,  $F(1, 316) = .218$ ,  $p = .641$ ,  $\eta_p^2 = .001$ .

Regarding RQ14, current video game use does not appear to influence any main or interaction effects of protagonist profanity and antagonist profanity on the player response measures used in this study. The various effects of protagonist profanity and antagonist profanity are therefore fairly consistent regardless of players' current video game use.

#### *Summary of Results Related to Individual Difference Variables and Gender*

The pattern of effects of protagonist profanity and antagonist profanity on the four aggression-related variables (hostile expectations, accessibility of aggressive thoughts, aggressive feelings, and perceived arousal) appears to be consistent and robust across a number of individual difference variables and gender, as there was no evidence that any of the effects on aggression-related variables were influenced by gender, pre-existing aggression, sensation-seeking tendency, prior general video game experience, prior violent video game experience, or current video game use.

Similarly, the consistent absence of significant effects of protagonist profanity and antagonist profanity on the various player response variables not related to aggression was consistent even after examining the potential role of gender as a moderator and controlling for pre-existing aggression, sensation-seeking tendency, prior general video game experience, prior violent video game experience, and current video game use, suggesting that profanity has limited effects on the experience variables measured here that were not related to aggression. The interaction effect of protagonist aggression and antagonist aggression on enjoyment, though,

appears to be sensitive to individual differences, as it was no longer significant after controlling for pre-existing aggression, sensation-seeking tendency, or prior general video game experience.

### Overall Summary of Results

In sum, profanity in video games was found to have clear and consistent effects on players' hostile expectations, particularly on their expectations of hostile thoughts and also on their expectations of hostile feelings in the case of protagonist profanity. Despite this effect on players' higher-order aggressive outcomes, there was limited evidence for effects of profanity in game content on players' accessibility of aggressive thoughts, aggressive feelings, and perceived arousal.

Aside from these aggression-related responses, profanity in video game content had little impact on how much players used profanity themselves, how much they enjoyed the game, how much they experienced feelings of presence with the game, and how they rated their performance in the game. All of these trends were consistent across a range of demographic, personality, and video game experience dimensions, except for the somewhat weak interaction effect of protagonist profanity and antagonist profanity on enjoyment.

Table 1:  
Summary of Research Questions and Relevant Findings

Research Questions	Outcome Measures	Moderating or Control Variables	Findings
RQ <sub>1</sub> : Does profanity used by video game protagonists and antagonists affect hostile expectations among game players?	Hostile expectations Measured with story-completion measure adapted from Bushman and Anderson (2002)	None	Significant main effect of protagonist profanity and antagonist profanity
RQ <sub>2</sub> : Does profanity used by video game protagonists and antagonists affect accessibility of aggressive thoughts among game players?	Aggressive cognitions measured with Word Completion (WC) task from Anderson, Carnagey, and Eubanks, 2003	None	No significant effect
RQ <sub>3</sub> : Does profanity used by video game protagonists and antagonists affect aggressive feelings among game players?	Aggressive feelings measured with State Hostility Scale (SHS) from Anderson, Deuser, and DeNeve, 1995	None	Significant main effect of antagonist profanity
RQ <sub>4</sub> : Does profanity used by video game protagonists and antagonists affect perceptions of physiological arousal among game players?	Arousal measured with Perceived Arousal Scale (PAS) from Anderson, Deuser, and DeNeve, 1995	None	No significant effect
RQ <sub>5</sub> : Does profanity used by video game protagonists and antagonists affect the use of profanity among game players?	Original use of profanity measure derived from responses for the same story-completion measure	None	No significant effect

Table 1 (Continued):  
Summary of Research Questions and Relevant Findings

Research Questions	Outcome Measures	Moderating or Control Variables	Findings
RQ <sub>6</sub> : Does profanity used by video game protagonists and antagonists affect enjoyment among game players?	Enjoyment scale used by Klimmt, Rizzo, Vorderer, Koch, and Fischer (2008)	None	Significant interaction effect between protagonist profanity and antagonist profanity
RQ <sub>7</sub> : Does profanity used by video game protagonists and antagonists affect feelings of presence among game players?	Presence measured with scale from Schneider et al., 2004	None	No significant effect
RQ <sub>8</sub> : Does profanity used by video game protagonists and antagonists affect perceptions of performance among game players?	Perceptions of performance measured by single item accessing perceived skill at game	None	No significant effect
RQ <sub>9</sub> : Does video game players' gender moderate the effects of profanity used by video game protagonists and antagonists on the players' responses?	Each of the dependent measures	Self-report of participant sex (male or female)	No significant effect
RQ <sub>10</sub> : Does controlling for players' pre-existing aggression influence the effects of profanity used by video game protagonists and antagonists on the players' responses?	Each of the dependent measures	Pre-existing aggression measured with Buss and Perry's (1992) aggression questionnaire (AQ)	Two-way interaction effect of protagonist profanity and antagonist profanity on enjoyment no longer significant

Table 1 (Continued):  
Summary of Research Questions and Relevant Findings

Research Questions	Outcome Measures	Moderating or Control Variables	Findings
RQ <sub>11</sub> : Does controlling for players' sensation-seeking tendency influence the effects of profanity used by video game protagonists and antagonists on the players' responses?	Each of the dependent measures	Sensation-seeking accessed using Hoyle et al. (2002) brief sensation seeking scale (BSSS)	Two-way interaction effect of protagonist profanity and antagonist profanity on enjoyment no longer significant
RQ <sub>12</sub> : Does controlling for players' prior general video game experience influence the effects of profanity used by video game protagonists and antagonists on the players' responses?	Each of the dependent measures	General previous experience accessed using items from an adapted version of Anderson and Dill's (2000) video game experience questionnaire	Two-way interaction effect of protagonist profanity and antagonist profanity on enjoyment no longer significant
RQ <sub>13</sub> : Does controlling for players' prior violent video game experience influence the effects of profanity used by video game protagonists and antagonists on the players' responses?	Each of the dependent measures	Prior violent video game experience measured using items from an adapted version of Anderson and Dill's (2000) video game experience questionnaire	No significant effect
RQ <sub>14</sub> : Does controlling for video game players' current video game use influence the effects of profanity used by video game protagonists and antagonists on the players' responses?	Each of the dependent measures	Current game use accessed by self-report of weekly video game play	No significant effect

## CHAPTER FIVE

### DISCUSSION

#### Purpose and Aim of Study

This dissertation aimed to make a contribution to media effects research by exploring the unknown effects of media profanity on viewers while simultaneously considering theoretically relevant experiential and developmental factors. This line of research is essential to aid in the understanding of violent media effects on both young viewers and adults. While the effects of physical aggression have been examined in great depth and a vast body of research shows that violent video games can increase aggressive behaviors, aggression-related feelings and thoughts, and increase physiological arousal, no empirical studies to date have examined the effects of verbal aggression in video games. Theoretical models indicate not only that young viewers and adults may directly learn and imitate the profane language heard in media like video games, but that they can also more abstractly model aggression. The broad range of potential effects of profanity in media on users runs from their accepting profanity to a larger degree in everyday discourse to potentially even exhibiting an increased propensity for acts of physical violence.

Of course, it is not known yet how many of these potential effects of profanity in media will actually be supported by plausible evidence from empirical research, but such research is needed to determine what potential effects of profanity in media are indeed likely and which are not. Considering that children and young adults are frequently exposed to profanity through media such as television, video games, and music, a thorough program of research into the effects of profanity in media is timely, if not past due.

In an effort to take a first step toward such a program of research, this dissertation investigated the effects of profanity in video games on college students to begin to broaden our understanding of the effects of verbal aggression in both video games and other general media content. Several theoretical perspectives that are relevant to the potential effects of profanity in video games and other media guided this study's design. For instance, social cognitive theory explains how youth may learn aggressive behaviors from viewing violent media via observational learning, priming theory describes how violent media exposure may influence later judgments or behaviors, and the general aggression model describes how violent media exposure may cause short- and long-term increases in aggression-related feelings and cognitions. Cultivation theory describes how cumulative exposure to media may shape worldviews over time. These and other perspectives influenced the dependent measures that were included in this research.

Further, video game players can identify with video game characters, many of whom are violent, and the structure of video games allows players to essentially take on the identity of violent video game characters. Identification with violent media characters has even been found to be associated with aggression (Huesmann et al., 2003; Konijn, Bijvank, & Bushman, 2007). Therefore, the present study manipulated profanity used by both protagonists and antagonists in a factorial design to examine whether the potential effects of profanity in video games varied depending on the type of character (i.e., protagonist or antagonist) using profanity.

## Findings and Implications

As the effects of profanity in video games have not yet been previously examined, this dissertation examined a broad range of potential effects of profanity as a starting point to ascertain what potential effects might merit further inquiry and what potential effects are unlikely. In particular, however, this study aspired to investigate the potential effects of profanity on aggression, as the effects of video game physical violence on some forms of aggression are already well-documented and have been found to have deleterious effects on users. Perhaps the most significant discovery of this dissertation, then, is the finding that profanity used by both protagonists and antagonists increased video game players' hostile expectations. The findings regarding aggressive expectations suggest that the predictions of the general aggression model may hold true for verbal aggression in media, as exposure to media violence through profanity affected the degree of aggressive expectations people had in regard to conflict situations via story stems.

### *Theoretical Implications*

*Profanity and hostile expectations.* Although it was beyond the scope of this study and too logistically difficult to measure aggressive behaviors directly, hostile expectations are the outcome linked most closely to aggressive behaviors in the general aggression model (Anderson & Bushman, 2002). Most simply, the general aggression model explains that input variables (personal and situational) influence psychological states (arousal, cognition, affect), which then influence behaviors. However, before the occurrence of behavioral outcomes, people engage in

appraisal and decision processes. During this decision process, then, if a person considers a situation to be hostile, the person will be more likely to aggress.

The finding that profanity used by both protagonists and antagonists increased video game players' hostile expectations is certainly noteworthy, yet at the same time troubling. Although no definitive claims about behaviors can be made based on these results, this study found that the presence of profanity in video games had significant influence on the appraisal processes that determine behaviors. Therefore, it may be inferred that violent video games containing profanity may have the potential to elicit behaviors among their players.

For instance, a young adult might spend their time after school playing their favorite video game, *House of the Dead: Overkill*, a first-person rail shooter game released in 2009 for the Wii. This particular game is currently noted in the *Guinness World Records Gamer's Edition* for having the most swearing in a video game, with a massive 189 instances of the F-word alone (Rosenberg, 2009). Based on the findings from the present study, time spent with this game may have the potential to influence important appraisal and decision processes which may lead to aggression. After playing the game, the young adult may be more likely to interpret neutral social interactions as hostile, and may be more likely to subsequently respond with aggressive acts. With frequent game play, the young adult may even develop a chronic propensity for hostile appraisals and expectations (Dill et al., 1997).

The finding that profanity used by both protagonists and antagonists increased video game players' hostile expectations is consistent with the general aggression model. The finding is also particularly in accord with social cognitive theory, which explains that learning does not just take the form of mimicry but can rather incorporate higher-order abstract modeling, akin to the higher-order cognitive processes measured via hostile expectations. Thus, as explained by

social cognitive theory, profanity in video games seemed to provide a potential source for learning aggressive behaviors in general, rather than direct mimicry of profanity. Furthermore, such general learning of aggressive behaviors may also have implications regarding cultivation theory, as people exposed to profane media may cultivate exaggerated perceptions that the world is a mean and dangerous place (e.g., “mean world syndrome”). This main finding is also in harmony with Piaget’s conception of play as bridging the gap between sensory-motor experience and the emergence of symbolic thought (Pulaski, 1971), as profanity learned during play appeared to influence higher-order thought processes.

Moreover, this study’s findings showed that the effects of the profanity used by two types of characters, protagonists and antagonists, did not appear to depend on the other with regard to effects on hostile expectations. Therefore, regardless of whether the game characters may have identified with the main character, the mere presence of profanity by either character type appears to increase hostile expectations among game players. It should be noted, however, that participants in this study played the violent game for only 12 minutes. It is possible that with more extensive game play over a longer period of time, a game player may come to identify with the game’s protagonist to a greater degree, which could potentially have an influence on aggressive effects. However, based on this study’s findings, profanity used by protagonist and antagonist characters alike appear to influence hostile appraisals and expectations among video game players.

Findings also showed that even though profanity used by protagonists and antagonists influenced hostile expectations, the subscores of hostile cognitive expectations, hostile affective expectations, and hostile behaviors expectations were not all significantly influenced. While profanity used by both protagonist and antagonist characters increased expectations of hostile

thoughts, only protagonist profanity increased expectations of hostile feelings and neither profanity type influenced expectations of hostile behaviors. Previous research employing the story stem measure used to examine aggressive expectations after violent video game play (e.g., Bushman & Anderson, 2002) found significant effects on all three subscales. The reasons for these differential effects are somewhat unclear. It is possible that the subscales represent varying degrees of overtly aggressive expectations, with expectations of hostile behaviors much more blatant and the cognitive and affective expectation measures less so. If such is the case, then perhaps the differential effects on the hostile expectations subscales represent a limit to the effects on hostile expectations. There may also have been some degree of a ceiling effect, as all of the games played by participants in the present study were violent shooter games and Bushman and Anderson (2002) compared violent and nonviolent game conditions. It is also possible that profanity, or verbal aggression, is more likely to elicit cognitive and affective responses than behavioral responses among viewers and works through a different mechanism than physical aggression. While verbal aggression, an arguably less extreme form of aggression than physical may bring about more aggressive expectations via thoughts and feelings, it is possible that it does not have as large an effect on behavioral appraisals. Moreover, in regard to the finding that only protagonist profanity increased expectations of hostile feelings, it is feasible that perhaps identification was somewhat at play here, and identification with the protagonist character may have brought about stronger expectations of hostile feelings. Lastly, the difference between subscores may be idiosyncratic, as the overall hostile expectations may be the only measure of importance if there are not meaningful conceptual differences between the types of thoughts tapped by the subscores.

*Profanity and accessibility of aggressive thoughts.* In the general aggression model, violent media exposure is described as influencing people through their current internal psychological states (cognitions, affect, and arousal). For instance, past research shows that brief amount of exposure to violent video games can alter present internal states via accessibility of aggressive thoughts (Anderson & Dill, 2000). While the aggressive expectations measure (using the story stem task) was used to gauge higher-order thought processes related to appraisal and decisions, more simple and automatic mental associations were measured through the use of the word completion measure. Past research has found that participants who listened to songs with violent lyrics showed significantly greater aggressive cognition scores on the word completion measure than did students who listened to songs with nonviolent lyrics (Anderson et al., 2003). Similarly, Anderson et al. (2004) found that participants who played violent games produced significantly more violent words on the word completion task than did those participants who played non-violent games. However, in the present study, unlike the main effect found for aggressive expectations, profanity used by video game protagonists and antagonists did not appear to affect the accessibility of aggressive thoughts among game players. This null finding fails to support the predictions of the general aggression model and priming theory, as depictions of profanity in media did not appear to prime aggressive concepts in the memory as measured using the word completion task. However, the degree to which a prime affects thoughts and behaviors depends on both the frequency and duration of a prime. It is possible that the profanity manipulated in this video game was not of high enough intensity or duration to influence cognitions as reported by the word completion task. It is also possible that potential priming effects may have faded over time.

Therefore, while there is a clear effect of profanity in video games on higher-thought processes, it is not clear what route or internal state influenced these aggressive outcomes. There was, however, quite possibly a ceiling effect occurring in terms of effects on aggressive cognition, as all of the games played by participants in the present study were violent shooter games which may have primed accessibility of aggressive thoughts whether profanity was present or not. Participants in all conditions already may have been saturated in terms of accessibility of aggressive thoughts due to their exposure to violent content. Thus, it is important for future research to investigate effects of profanity in video games and other media in the absence of media violence as well as in its presence.

*Profanity and aggressive feelings.* Interestingly, while there was no evidence for an effect of protagonist profanity on participants' aggressive feelings, antagonist profanity appeared to decrease participants' aggressive affect. This finding is in contrast to the predictions of the general aggression model, which explains that violent video games might cause short-term and long-term increases in aggression-related feelings (e.g., state anger). This finding is also in contrast to the fear and negative outlook portrayed by cultivation theory, although cultivation would predict that changes in worldview would only change over time due to heavy exposure, not from a single exposure experienced during an experimental procedure such as this. The reasons for this finding are a bit unclear. It is possible that the profanity directed toward the protagonist evoked other affective responses that were not conducive to aggression. Future research should further investigate a more nuanced picture of affective responses to profanity in media to help clarify this phenomenon. It may also be that the results with regard to affect stem from a self-report bias among participants. Given that the state hostility scale asks for fairly overt admissions of anger, annoyance, and related feelings, participants who had been cursed at on the

game by antagonists may have simply been willful enough about indicating that they were not bothered by it to respond differently on the self-report measure compared to participants in other conditions. In any case, measures of affect that are less reliant on self-reports, such as facial electromyogram, may be appropriate in future research.

*Profanity and arousal.* This study found no relationship between profanity used by protagonist or antagonist characters and participants' perceived arousal. Again, this may be likely due to a ceiling effect, as all of the games played by participants in the present study were violent shooter games and participants may have already been saturated in terms of arousal because each of the game conditions contained violent content. Further, it may simply be that with video games, arousal is often not a key path between aggression in media and aggression in its users because many video games tend to be exciting whether or not their content contains aggression (Anderson & Bushman, 2001). Perhaps if violent content were removed or manipulated in future study, it would be easier to explore profanity's effects on arousal. As with affect, it may also be necessary to use another measure of arousal that is not reliant on self-reports, such as skin conductance, to gain a better understanding of the effects of profanity in video games and other media on physiological arousal.

In sum, with regard to the aggressive outcome measures, the most robust findings were the effects of profanity on the higher-order outcome of hostile expectations, with both types of profanity being found to significantly increase players' hostile expectations. Furthermore, while both protagonist and antagonist profanity influenced expectations of aggressive thoughts, only protagonist profanity influenced expectations of aggressive feelings and neither antagonist nor protagonist profanity influenced expectations of aggressive behaviors. While findings regarding higher-order outcomes were strong, the findings regarding internal states were more limited.

Protagonist and antagonist profanity were not found to influence participants' perceived arousal nor aggressive thought accessibility, although antagonist profanity was found to decrease aggressive feelings among participants.

Anderson and Bushman (2001) have suggested that although in the general aggression model there are the three routes (cognition, affect, and arousal), it is only the cognitive route that is particularly tied to the effects of violent video game content on aggression. That is, nonviolent games can increase aggressive affect (via frustration and other responses) and increase arousal as well, but only violent games should prime aggressive thoughts directly. They state, "Frustrating nonviolent games can increase aggressive cognitions indirectly, through links between feelings and thoughts (Anderson & Dill, 2000), but the real crux of the debate lies in the unique ability of violent video games to directly increase aggressive cognitions" (p. 356). The present study's findings suggest that the effects of verbal aggression may be similarly limited to the cognitive route, though in this study even the effects of profanity on aggressive thoughts were limited primarily to higher-order thinking in the form of hostile expectations rather than more automatic accessibility of aggressive thoughts. Therefore, this study suggests that profanity in video games certainly has potential for meaningful effects on aggressive responses in players, but the mechanisms by which those effects may occur require much more investigation.

*Profanity and enjoyment.* This study also examined whether protagonist and antagonist profanity had an influence on player enjoyment. Although protagonist and antagonist profanity did not appear to directly influence reported video game enjoyment, there was an interaction effect between protagonist and antagonist profanity. Specifically, it appeared that enjoyment was greatest when profanity was consistent across protagonists and antagonists and lowest when profanity usage was inconsistent between protagonists and antagonists. The reasons for this

finding are slightly uncertain. This finding may just be the mere result of cognitive consistency theories, which explain how individuals come to expect consistency and any inconsistencies may create a state of dissonance, which may have resulted in the lower degree of player enjoyment seen here (Abelson, 1983). The interaction effect, however, might only occur with some individuals given that it was no longer significant in analyses that controlled for pre-existing aggression, sensation-seeking tendency, or prior general video game experience.

*Profanity and perceptions of game play.* Effects of profanity on presence were also examined in this dissertation. However, findings showed no evidence for an effect of antagonist profanity or protagonist profanity on feelings of presence. Therefore, profanity did not seem to affect participants' perceptions that they were present in a mediated environment. This may be simply because profanity has little effect on presence, or because participants did not find the game designed for this study to be particularly engaging. There was also no evidence that profanity had an effect on players' perceptions of their performance at the game. While only perceived performance was examined here, it may be useful to examine detailed measures of actual performance to determine whether profanity can distract from video game play or enhance it.

### *Practical Implications*

*Profanity and video game content ratings.* The main finding that profanity used by both protagonists and antagonists increased participants' hostile expectations has many practical implications. Most importantly, profanity in media matters. Like physical aggression, verbal aggression may have some similar effects regarding aggression among viewers, particularly that of aggressive expectations, the precursor to aggressive behaviors in the general aggression

model. This study showed clear effects on college-aged students. The effects on children and early adolescents may be even stronger, as they may potentially be more susceptible to identification with violent video game characters. This finding speaks to the importance of careful attention to video game ratings and related strategies with regard to sales to minors.

Parents also play a critical role in helping to protect children from potentially harmful media content, and continued efforts need to be made to help better educate parents about video game rating systems. For instance, the ESRB (Entertainment Software Rating Board) designed ratings to help provide information about video game content to game players and especially parents. ESRB ratings (available at [http://www.esrb.org/ratings/ratings\\_guide.jsp](http://www.esrb.org/ratings/ratings_guide.jsp)) include both rating symbols (age appropriateness for the game) and content descriptors (elements of the game which may be of concern). In fact, two of the content descriptors speak directly to game profanity, specifically the “Language” (Mild to moderate use of profanity) and “Strong Language” (Explicit and/or frequent use of profanity) descriptors.

*Imitation of profanity in video games and media.* A common public concern with profanity in media is that children and adolescents could learn swearing from media (Bushman & Cantor, 2003), as social cognitive theory might predict. However, this study’s findings did not produce evidence for imitation of profanity. No significant effects of profanity in the game content on participants’ use of profanity were found, whether in terms of general profanity use or the three profanity usage subscores (e.g., the “seven dirty words,” other strong profanity, and mild profanity). However, the present study’s failure to find direct imitation of profanity is far from conclusive evidence against potential for effects, and it would be careless not to still consider imitation of profanity in media as a potential concern. This experiment only examined the effects of a single twelve-minute period of exposure to profane content. Extended exposure

to profanity in video game content (as would be more likely in real-life circumstances for many game players) might be more likely to encourage imitation.

Additionally, the sample used for this study was young adults, with an average age of 20 years. Although young adults can still be influenced by media content, even in short-term settings (e.g., Anderson & Dill, 2000), the current study's participants had likely already been exposed to profanity through life experiences and formed a degree of habit in their use or non-use of foul language. Some of their beliefs and values are likely already well-formed, and they are not likely to "learn" profanity from short-term exposure to profanity in a video game. However, young children whose schemas and beliefs are less developed may be more prone to imitate profanity in media content, particularly with more exposure. In addition, imitation of profanity is difficult to measure in an experimental setting. For instance, participants may have been hesitant to use profanity in an experiment questionnaire, as the experiment took place in a school setting where swearing is generally not viewed as socially acceptable. Additionally, profanity usage was measured via a typed response, a format in which the use of profanity would require more conscious and deliberate intent than spoken profanity. Thus, it would be valuable to measure the learning of profanity with oral measures rather than through a novel, and therefore previously untried, questionnaire measure.

*Profanity and the game and experience.* As there were no main effects of protagonist or antagonist profanity on enjoyment, from a practical standpoint, this study provides no "good" reason for game designers to include profanity in video games because it does not appear to affect enjoyment and might therefore be unlikely to influence games' popularity or sales. Similarly, the absence of effects of profanity on feelings of presence or perceived performance

suggest that the inclusion of profanity does not contribute to the types of engaging experiences that commercial games often aim to elicit.

### *Consistency of Findings Across Individual Differences and Gender*

To better ascertain the effects of profanity, this dissertation also looked at whether gender and several individual difference variables had any influence on profanity. A number of theoretical perspectives, such as social cognitive theory's key tenet of triadic reciprocal causation, emphasize the importance of personal factors (e.g., individual difference variables) in impacting human behaviors, so the potential role of these variables is important to an understanding of how profanity in video game content affects game players. First, gender was not found to change any of the main findings regarding antagonist and protagonist profanity on any of the aggression variables or non-aggression variables. Therefore, the important finding that protagonist and antagonist profanity influences hostile expectations among game players appears to be stable for both male and female players. The study's effects were also unrelated to prior video game experience, (violent and non-violent), or current video game use. It seems that regardless of what video game experience people have or whether or not they are heavy versus light video game players, the effects (and absence of effects) of antagonist and protagonist profanity observed here are relatively consistent.

Similarly, pre-existing aggression levels and sensation-seeking tendencies also did not change any of the study's main effects. Thus, regardless if a game player has aggressive tendencies or is high in sensation seeking, the use of profanity by antagonists and protagonists still seems to raise hostile expectations while leaving many other aspects of the game experience relatively unaffected. Overall, then, it appears that none of the control variables examined (video

game experience, sensation-seeking, pre-existing aggression, or gender) seemed to play a role in this study's findings. This finding is important because it indicates that profanity in video games has an effect on aggressive responses in the form of hostile expectations that may be prevalent across individual differences such as demographics, personality dimensions, and media use patterns.

The absence of the moderating effects of gender, and the absence of influence of the individual difference variables related to personality and other traits, namely pre-existing aggression, and sensation-seeking, could be considered somewhat surprising given the role of individual differences in some theoretical models of media effects and given previous findings such as that violent video game effects have been found to be stronger for those participants higher in trait aggressiveness than those lower in trait aggressiveness (Anderson & Dill, 2000). These findings indicate the robustness of the effects of profanity in video game content across people with different traits. It is possible, though, that there may be other personal factors not accounted for here that could influence this relationship. Similarly, although Vygotsky and Piaget stressed that play during childhood holds a crucial role in a person's development, video game play during childhood (both violent and nonviolent) and current video game play did not appear to influence the effects of profanity on this study's dependent measures. It appears that exposure to profanity in game content, then, has somewhat consistent effects on players regardless of their past or present exposure to video games.

Although the effects of profanity on the outcome measures in this study were not influenced by individual difference variables related to video game experience, personality and other traits, it is important to note the relationships between these individual difference variables and their relationships with the dependent measures. For instance, current video game play was

predicted by prior video game play, pre-existing aggression and sensation-seeking were related to prior video game play, and pre-existing aggression was related to current game play. These relationships are in support of past research which finds higher levels of sensation-seeking to predict higher levels of violent media content among youth (Slater, 2003) and cross-sectional surveys linking media violence to aggressive behaviors (Anderson et al., 2003).

Moreover, several individual difference variables were shown to predict many of the dependent measures. For instance, past and present video game play predicted perceived arousal, perceived performance, presence, and enjoyment, although it did not affect participants' hostile expectations, accessibility of aggressive thoughts, aggressive feelings, or profanity use. Thus, it appears that although participants' video game experience did not contribute to aggression-related factors, it did seem to influence several dimensions of game experience, particularly those related to game enjoyment and perceived success at the game. Pre-existing aggression levels predicted participants' hostile expectations, accessibility of aggressive thoughts, aggressive feelings, profanity, game enjoyment, and perceptions of performance, but not perceived arousal or presence. While sensation-seeking predicted hostile expectations, arousal, game enjoyment, and perceived performance, it did not predict accessibility of aggressive thoughts, aggressive feelings, or presence. Therefore, although these personality and trait variables did not influence the main effects of profanity used by protagonists and antagonists that were observed in this study, it is still important to note that overall, more aggressive participants and those with greater sensation-seeking tendencies tended to experience game play differently than their less aggressive, less sensation-seeking counterparts.

## Limitations and Future Research

This study has several limitations. This study occurred in a laboratory setting, and participants may have been less likely to use profanity in the questionnaires due to social desirability effects. This poses a major problem with regard to some elements of the study's external generalizability, as is the case with all laboratory experiments. Studies involving video games played within a participant's home setting or through online game play may provide more insight regarding the effects of profanity in game content on aggression and other variables. Furthermore, all of the manipulated game conditions were violent, possibly resulting in a ceiling effect for some of the main dependent variables pertaining to aggression. Because all of the game conditions were violent, this study is also unable to shed light on the effects of profanity in non-violent games.

Additionally, using the FPS Creator software was useful for creating the game conditions for the present study, but the graphics and other features were less advanced than some games more frequently played today. Therefore, it is possible that variables that are related to games' technological advancement, such as presence (Ivory & Kalyanaraman, 2007), may have been diminished in this study. This study also failed to provide much understanding about how differential amounts of profanity in video games may have varying effects. For instance, it is possible that games with large amounts of profanity may have more effects than games with smaller amounts of profanity. Additionally, this study did not differentiate between different levels of profanity in game content (strong versus mild profanity). Profanity used in this study was generally strong, but it is unclear whether mild profanity may have similar effects.

Lastly, this study used college students as research participants. While this represents an important group to initially examine effects of profanity, its findings cannot be generalized to other age groups, particularly young children, who may be particularly susceptible to learning aggressive media content.

This study's findings point to the need for future research regarding the effects of profanity in video games and other media. A next step in this line of research is to examine the influence of profanity in both violent and non-violent video games of multiple genres. It is possible that profanity's effects may depend on its context. This study also only looked at video games. It is unknown whether profanity on television or in music might have similar effects on higher-order cognitive processes. Based on this study's findings, though, this seems very likely. Future research must also examine effects of verbal aggression in alternate age groups, as effects of profanity among young children may be heightened. This study also only looked at effects of verbal aggression at one time point. Future studies would benefit from a longitudinal design to better determine how profanity affects game players over time and whether verbal aggression has a cumulative effect on viewers.

## Conclusion

The most important contribution of this study was the finding that profanity used by both protagonists and antagonists increased video game players' hostile expectations. While this study's findings did not necessarily indicate imitative modeling of profanity, they point to more general effects regarding aggressive outcomes. This finding that verbal aggression may lead to some general aggressive outcomes rather than imitation, though, is even more troubling.

Profanity in video games appears to influence video game players' hostile expectations, which is the most direct precursor to aggressive behavior in the process described by the general aggression model. If a person's assessment of a situation is that the situation is hostile and aggression is appropriate, they will be more likely to aggress. Past research has only examined the effects of violent physical aggression in video game content, and findings from studies examining physical aggression show that its presence in game content can elicit increases in aggressive behaviors, increases in aggression-related feelings and thoughts, and increases in physiological arousal. When video game violence is coupled with profanity, then, it is troublesome that negative video game effects may be amplified to an even greater degree. Considering profanity is found in approximately one in five video games and when games do contain profanity, usage is very frequent, these concerns are noteworthy.

This study's findings, which suggest some potential links between profanity in video games and aggression in players via hostile expectations, are in many ways exploratory. They do not flesh out the picture of profanity's effects on video game players and other media users, but they do point to a first indication that something is indeed happening when video game players are exposed to profanity in game content. It is now important for others to continue a program of research to determine what exactly is happening when video game players and other media users encounter profanity in their entertainment fare—and what we can do about it.

## REFERENCES

- Abelson, R. P. (1983). Whatever became of consistency theory? *Personality and Social Psychology Bulletin*, 9, 37-54.
- American Academy of Pediatrics (2000). *Joint statement on the impact of entertainment violence on children*. Retrieved August 12, 2010, from <http://www.aap.org/advocacy/releases/jstmtevc.htm>.
- Anderson, C. A., Berkowitz, L., Donnerstein, E., Huesmann, L. R., Johnson, J. D., Linz, D. L., Malamuth, N.M., & Wartella, E. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest*, 4, 81-110.
- Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science*, 12, 353-359.
- Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, 53, 27-51.
- Anderson, C. A., Carnagey, N. L., & Eubanks, J. (2003). Exposure to violent media: The effects of songs with violent lyrics on aggressive thoughts and feelings. *Journal of Personality and Social Psychology*, 84, 960-971.
- Anderson, C. A., Carnagey, N. L., Flanagan, M., Benjamin, A. J., Eubanks, J., & Valentine, J. C. (2004). Violent video games: Specific effects of violent content on aggressive thoughts and behavior. *Advances in Experimental Social Psychology*, 36, 199-249.

- Anderson, C. A., Deuser, W. E., & DeNeve, K. (1995). Hot temperatures, hostile affect, hostile cognition, and arousal: Tests of a general model of affective aggression. *Personality and Social Psychology Bulletin*, *21*, 434-448.
- 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*, 772-290.
- Anderson, C. A., Gentile, D. A., & Buckley, K. E. (2007). *Violent video game effects on children and adolescents: Theory, research, and public policy*. Oxford: Oxford University Press.
- Anderson, C. A., Shibuya, A., Ihori, N., Bushman, B. J., Sakamoto, A., Rothstein, H. R., & Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries: A meta-analytic review. *Psychological Bulletin*, *136*, 151-173.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall, Inc.
- Bandura, A. (2002). Social cognitive theory of mass communication. In J. Bryan & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (2<sup>nd</sup> ed., pp. 121-154). Mahwah, NJ: Lawrence Erlbaum Associates.
- Bandura, A. (2009). Social cognitive theory of mass communication. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (3<sup>rd</sup> ed., pp. 94-124). New York: Routledge.
- Baran, S. J., & Davis, D. K. (2003). *Mass communication theory: Foundations, ferment, and future* (3<sup>rd</sup> ed.). Belmont, CA: Wadsworth.

- Baranowski, T., Perry, C. L., & Parcel, G. S. (2002). How individuals, environments, and health behavior interact. In K. Glanz, B. K. Rimer, & F. M. Lewis (Eds.), *Health behavior and health education: Theory research, and practice* (3<sup>rd</sup> ed., pp. 165-184). San Francisco, CA: Jossey-Bass.
- Bartholow, B. D., & Anderson, C. A. (2002). Effects of violent video games on aggressive behavior: Potential sex differences. *Journal of Experimental Social Psychology, 38*, 283-290.
- Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin, 106*, 59-73.
- Berkowitz, L. (1990). On the formation and regulation of anger and aggression: A cognitive-neoassociationistic analysis. *American Psychologist, 45*, 494-503.
- Blumberg, F. C., & Sokol, L. M. (2004). Boys' and girls' use of cognitive strategy when learning to play video games. *The Journal of General Psychology, 13*, 151-158.
- Buchman, D. D., & Funk, J. B. (1996). Video and computer games in the '90s: Children's time commitment and game preference. *Children Today, 24*, 12-16.
- Bushman, B. J. (1995). Moderating role of trait aggressiveness in the effects of violent media on aggression. *Journal of Personality and Social Psychology, 69*, 950-960.
- Bushman, B. J. (1998). Priming effects of media violence on the accessibility of aggressive concepts in memory. *Personality and Social Psychology Bulletin, 24*, 537-545.
- Bushman, B. J., & Anderson, C. A. (2001). Media violence and the American public: Scientific facts versus media misinformation. *American Psychologist, 56*, 477-489.

- Bushman, B. J., & Anderson, C. A. (2002). Violent video games and hostile expectations: A test of the general aggression model. *Personality and Social Psychology Bulletin, 28*, 1679-1686.
- Bushman, B. J., & Cantor, J. (2003). Media ratings for violence and sex: Implications for policymakers and parents. *American Psychologist, 58*, 130-141.
- Buss, A. H., & Perry, M. P. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology, 63*, 452-459.
- Bushman, B. J., & Anderson, C. A. (2002). Violent video games and hostile expectations: A test of the general aggression model. *Personality and Social Psychology Bulletin, 28*, 1679-1686.
- Carnagey, N. L., & Anderson, C. A. (2004). Violent video game exposure and aggression: A literature review. *Minerva Psichiatrica, 45*, 1-18.
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*, 74-101.
- Dill, K. E., & Anderson, C. A., Anderson, K. B., & Deuser, W. E. (1997). Effects of aggressive personality on social expectations and social perceptions. *Journal of Research in Personality, 31*, 272-292.
- Din, F. S., & Calao, J. (2001). The effects of playing educational video games on kindergarten achievement. *Child Study Journal, 31*, 95-102.
- Dodge, K. A. (1980). Social cognition and children's aggressive behavior. *Child Development, 51*, 162-170.

- Dodge, K. A., & Crick, N. R. (1990). Social information-processing bases of aggressive behavior in children. *Personality and Social Psychology Bulletin*, *16*, 8-22.
- Dodge, K. A., & Somberg, D. R. (1987). Hostile attributional biases among aggressive boys are exacerbated under conditions of threats to the self. *Child Development*, *58*, 213-224.
- Eastin, M. S. (2007). The influence of competitive and cooperative group game play on state hostility. *Human Communication Research*, *33*, 450-466.
- Eastin, M. S. (2009). Unreal: Hostile expectations from social gameplay. *New Media and Society*, *11*, 509-531.
- Eastin, M. S., & Griffiths, R. P. (2006). Beyond the shooter game: Examining presence and hostile outcomes among male players. *Communication Research*, *33*, 448-466.
- Ferguson, C. J. (2007). The good, the bad, and ugly? The meta-analytic review of positive and negative effects of violent video games. *Psychiatric Quarterly*, *78*, 309-316.
- Fein, G. G. (1981). Pretend play in childhood: An integrative review. *Child Development*, *52*, 1095-1118.
- FPS Creator (2009). *About FPS creator*. Retrieved August 12, 2010 from <http://www.fpscreator.com/about.html>.
- Funk, J. B., Baldacci, H. B., Pasold, T., & Baumgardner, J. (2004). Violence exposure in real-life, video games, television, movies, and the Internet: Is there desensitization? *Journal of Adolescence*, *27*, 23-39.
- Gee, J. P. (2007). *Good video games + good learning: Collected essays on video games, learning and literacy*. New York: Peter Lang Publishing, Inc.
- Geen, R. G. (1990). *Human aggression*. Pacific Grove, CA: McGraw-Hill.

- Gentile, D. A., & Gentile, J. R. (2008). Violent video games as exemplary teachers: A conceptual analysis. *Journal of Youth and Adolescence*, *37*, 127-141.
- Gentile, D. A., Lynch, P. J., Linder, J. R., & Walsh, D. (2004). The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. *Journal of Adolescence*, *27*, 5-22.
- Gentile, D. A., & Stone, W. (2005). Violent video game effects on children and adolescents: A review of the literature. *Minerva Pediatrica*, *57*, 337-358.
- Gerbner, G., Gross, L., Morgan, M., Signorielli, N., & Shanahan, J. (2002). Growing up with television: Cultivation processes. In J. Bryan & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (2<sup>nd</sup> ed., pp. 43-67). Mahwah, NJ: Lawrence Erlbaum Associates.
- Gerevich, J., Backai, E., & Czobor, P. (2007). The generalizability of the Buss-Perry aggression questionnaire. *International Journal of Methods in Psychiatric Research*, *16*, 124-126.
- Haninger, K., & Thompson, K. M. (2004). Content and ratings of teen-rated video games. *Journal of the American Medical Association*, *291*, 856-865.
- Hefner, D., Klimmt, C., & Vorderer, P. (2007). Identification with the player character as determinant of video game enjoyment. *Lecture Notes in Computer Science*, *4740*, 39-48.
- Hoffner, C. A., & Levine, K. J. (2005). Enjoyment of mediated fright and violence: A meta-analysis. *Media Psychology*, *7*, 207-237.
- Hoyle, R. H., Stephenson, M. T., Palmgreen, P., Lorch, E. P., & Donoher, R. L. (2002). Reliability and validity of a brief measure of sensation seeking. *Personality and Individual Differences*, *32*, 401-414.

- 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*, 125-139.
- Huesmann, L. R., Moise-Titus, J., Podolski, C. L., & Eron, L. D. (2003). Longitudinal relations between children's exposure to TV violence and their aggressive and violent behavior in young adulthood: 1977-1992. *Developmental Psychology, 39*, 201-221.
- Huesmann, L. R., & Taylor, L. (2006). The role of media violence in violent behavior. *Annual Review of Public Health, 27*, 393-415.
- Infante, D. A., & Wigley, C. J. (1986). Verbal aggressiveness: An interpersonal model and measure. *Communication Monographs, 53*, 61-69.
- Ivory, J. D., & Kalyanaraman, S. (2007). The effects of technological advancement and violent content in video games on players' feelings of presence, involvement, physiological arousal, and aggression. *Journal of Communication, 57*, 532-555.
- Ivory, J. D., Williams, D., Martins, N., & Consalvo, M. (2009). Good clean fun? A content analysis of profanity in video games and its prevalence across game systems and ratings. *CyberPsychology & Behavior, 12*, 457-460.
- Kadaba, L. S. (1999, November 16). *Off the bleep end*. Knight-Ridder Tribune News Service.
- Kaye, B. K., & Sapolsky, B. S. (2001). Offensive language in prime time television: Before and after content ratings. *Journal of Broadcasting and Electronic Media, 45*, 303-319.
- Kaye, B. K., & Sapolsky, B. S. (2004a). Offensive language in prime-time television: Four years after television age and content ratings. *Journal of Broadcasting and Electronic Media, 48*, 554-569.

- Kaye, B. K., & Sapolsky, B. S. (2004b). Talking a “blue” streak: Context and offensive language in prime time network television programs. *Journalism and Mass Communication Quarterly*, *81*, 911-927.
- Kaye, B. K., & Sapolsky, B. S. (2004c). Watch your mouth! An analysis of profanity uttered by children on prime-time television. *Mass Communication and Society*, *7*, 429-452.
- Kirsh, S. J. (1998). Seeing the world through Mortal Kombat-colored glasses: Violent video games and the development of a short-term hostile attribution bias. *Childhood*, *5*, 177-184.
- Kirsh, S. J., Olczak, P. V., & Mounts, J. R. W. (2005). Violent video games induce and affect processing bias. *Media Psychology*, *7*, 239-250.
- Klimmt, C., Rizzo, A., Vorderer, P., Koch, J., & Fischer, T. (2008). Experimental evidence for suspense as a determinant of video game enjoyment. *CyberPsychology & Behavior*, *12*, 29-31.
- Konijn, E. A., Bijvank, M. N., & Bushman, B. J. (2007). I wish I were a warrior: The role of wishful identification in the effects of violent video games on aggression in adolescent boys. *Developmental Psychology*, *43*, 1038-1044.
- Lee, K. M., & Peng, W. (2006). What do we know about social and psychological effects of computer games? A comprehensive review of the current literature. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 327-345). Mahwah, NJ: Lawrence Erlbaum Associates.
- Levesque, R. J. R. (2007). *Adolescents, media, and the law: What developmental science reveals and free speech requires*. New York: Oxford University Press.

- Mayer, R. E., Mautone, P., & Prothero, W. (2002). Pictorial aids for learning by doing in a multimedia geology simulation game. *Journal of Educational Psychology, 94*, 171-185.
- Meyer, G., Roberto, A. J., Boster, F. J., & Robert, H. L. (2004). Assessing the Get Real about Violence® curriculum: Process and outcome evaluation results and implications. *Health Communication, 16*, 451-474.
- Mierlo, J. V., & Van den Bulck, J (2003). Benchmarking the cultivation approach to video game effects: A comparison of the correlates of TV viewing and game play. *Journal of Adolescence, 27*, 97-111.
- Morgan, M., Shanahan, J., & Signorielli, N. (2009). Growing up with television: Cultivation processes. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (3<sup>rd</sup> ed., pp. 34-49). New York: Routledge.
- Nabi, R. L., & Krcmar, M. (2004). Conceptualizing media enjoyment as attitude: Implications for mass media effects research. *Communication Theory, 14*, 288-310.
- National Adolescent Health Information Center. (2007). Fact Sheet on Violence: Adolescents & Young Adults. San Francisco, CA: Author, University of California, San Francisco.
- Nicolopoulou, A. (1993). Play, cognitive development, and the social world: Piaget, Vygotsky, and beyond. *Human Development, 36*, 1-23.
- Ogletree, S. M., & Drake, R. (2007). College students' video game participation and perceptions: Gender differences and implications. *Sex Roles, 56*, 537-542.
- Paik, H. & Comstock. G. (1994). The effects of television violence on antisocial behavior: A metaanalysis. *Communication Research, 21*, 516-546.
- Piaget, J. (1962). *Play, dreams, and imitation in childhood*. New York: W. W. Norton & Company.

- Potter, W. J. (2003). *The 11 myths of media violence*. Thousand Oaks, CA: Sage.
- Pulaski, M. A. (1971). *Understanding Piaget: An introduction to children's cognitive development*. New York: Harper & Row Publishers.
- Rideout, V., Roberts, D. F., & Foehr, U. G. (2005). *Generation M: Media in the lives of 8-18 year olds*. Menlo Park, CA: Kaiser Family Foundation.
- Roberto, A. J., Meyer, G., Boster, F. J., & Roberto, H. L. (2003). Adolescents' decisions about verbal and physical aggression: An application of the theory of reasoned action. *Human Communication Research, 29*, 135-147.
- Romer, D., Jamieson, K. H., & Aday, S. (2003). Television news and the cultivation of fear of crime. *Journal of Communication, 53*, 88-104.
- Rosenberg, D. (2009). House of the dead: Most profane game ever. *Cnet news*. Accessed July 28, 2010. [http://news.cnet.com/8301-13846\\_3-10198183-62.html](http://news.cnet.com/8301-13846_3-10198183-62.html).
- Roskos-Ewoldsen, D. R., Roskos-Ewoldsen, B., & Dillman Carpentier, F. (2002). Media priming: A synthesis. In J. Bryan & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (2<sup>nd</sup> ed., pp. 97-120). Mahwah, NJ: Lawrence Erlbaum Associates.
- Roskos-Ewoldsen, D. R., Roskos-Ewoldsen, B., & Dillman Carpentier, F. (2009). Media priming: An updated synthesis. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (3<sup>rd</sup> ed., pp. 74-93). New York: Routledge.
- Schneider, E. F., Lang, A., Shin, M., & Bradley, S. D. (2004). Death with a Story: How story impacts emotional, motivational, and physiological responses to first-person shooter video games. *Human Communication Research, 30*, 361-375.
- Sherry, J. L. (2001). The effects of violent video games on aggression: A meta-analysis. *Human Communication Research, 27*, 409-431.

- Slater, M. D. (2003). Alientation, aggression, and sensation-seeking as predictors of adolescent use of violent film, computer, and website content. *Journal of Communication, 53*, 105-121.
- Smith, S. L., Lachlan, K., & Tamborini, R. (2003). Popular video games: Quantifying the presentation of violence and its context. *Journal of Broadcasting and Electronic Media, 47*, 58-76.
- Sparks, G. G., Sparks, C. W., & Sparks, E. A. (2009). Media violence. In J. Bryant & M. B. Oliver (Eds.), *Media effects: Advances in theory and research* (3<sup>rd</sup> ed., pp. 269-286). New York: Routledge.
- Stephensen, M. T., Velez, L. F., Chalela, P., Ramirez, A., & Hoyle, R. H. (2007). The reliability and validity of the Brief Sensation Seeking Scale (BSSS-8) with young adult Latino workers: Implications for tobacco and alcohol disparity research. *Addiction, 102* (Suppl. 2), 79-91.
- Tamborini, R., Eastin, M. S., Skalski, P., Lachlan, K., Fediuk, T. A., & Brady, R. (2004). Violent virtual video games and hostile thoughts. *Journal of Broadcasting & Electronic Media, 48*, 335-357.
- Tamborini, R., & Skalski, P. (2006). The role of presence in the experience of electronic games. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 225-240). Mahwah, NJ: Lawrence Erlbaum Associates.
- Thompson, K. M., & Haninger, K. (2001). Content and ratings of teen-rated video games. *Journal of the American Medical Association, 286*, 591-598.
- Thompson, K. M., Tepichin, K., & Haninger, K. (2006). Content and ratings of mature-rated video games. *Archives of Pediatrics and Adolescent Medicine, 160*, 402-410.

- Uhlmann, E., & Swanson, J. (2004). Exposure to violent video games increases automatic aggressiveness. *Journal of Adolescence, 27*, 41-42.
- Unsworth, G., Devilly, G. J., & Ward, T. (2007). The effect of playing violent video games on adolescents: Should parents be quaking in their boots? *Psychology, Crime, & Law, 13*, 383-394.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Cambridge, MA: Harvard University Press.
- Weber, R., Ritterfeld, U., & Mathiak, K. (2006). Does playing violent video games induce aggression? Empirical evidence of a functional magnetic resonance imaging study. *Media Psychology, 8*, 38-60.
- Williams, D. (2006). Virtual cultivation: Online worlds, offline perceptions. *Journal of Communication, 56*, 69-87.
- Williams, D., & Skoric, M. (2005). Internet fantasy violence: A test of aggression in an online game. *Communication Monographs, 72*, 217-233.
- Winkel, M., Novak, D. M., & Hopson, M. (1987). Personality factors, subject gender and the effects of aggressive video games on aggression in adolescents. *Journal of Research in Personality, 21*, 211-233.
- Witmer, B. G., & Singer, M. J. (1998). Measuring presence in virtual environments: A presence questionnaire. *Presence: Teleoperators and Virtual Environments, 7*, 225-240.
- Zillmann, D. (1971). Excitation transfer in communication-mediated aggressive behavior. *Journal of Experimental Social Psychology, 7*, 419-434.

Zuckerman, M. (1994). *Behavioral expressions and biosocial bases of sensation seeking*. New York: Cambridge University Press.

## APPENDIX A: PRE-EXPOSURE QUESTIONNAIRE

(Questionnaires were deployed online, so formatting of items looked somewhat different than as shown here.)

Please respond to the following questions:

What is your gender?            Male            Female

What is your age?: \_\_\_\_\_ years

Which of the following best represents your ethnic group? (Please check)

_____ Caucasian	_____ Black or African-American
_____ Asian or Asian American	_____ Native American or Alaska Native
_____ Hispanic or Latino/Latina	_____ Native Hawaiian or other Pacific Islander
_____ Bi- or Multi-Racial	Other (Please List): _____

On average, how many hours per week do you spend playing video games (including computer, console, online, or arcade games)?  
\_\_\_\_\_ hours

Please indicate the extent to which you agree or disagree with each of the following statements. (Scale for all items: 1 = Strongly Agree, 2 = Disagree, 3 = Neither Agree Nor Disagree, 4 = Agree, 5 = Strongly Agree)

I would like to explore strange places.  
I get restless when I spend too much time at home.  
I like to do frightening things.  
I like wild parties.  
I would like to take off on a trip with no pre-planned routes or timetables.  
I prefer friends who are excitingly unpredictable.  
I would like to try bungee jumping.  
I would love to have new and exciting experiences, even if they are illegal.

Please rate each of the following items in terms of how characteristic they are of you. (Scale for all items: 1 = Extremely Uncharacteristic of Me, 7 = Extremely Characteristic of Me)

Once in a while I can't control the urge to strike another person.  
Given enough provocation, I may hit another person.  
If somebody hits me, I hit back.  
I get into fights a little more than the average person.  
If I have to resort to violence to protect my rights, I will.  
There are people who pushed me so far that we came to blows.  
I can think of no good reason for ever hitting a person.

I have threatened people I know.  
 I have become so mad that I have broken things.  
 I tell my friends openly when I disagree with them.  
 I often find myself disagreeing with people.  
 When people annoy me, I may tell them what I think of them.  
 I can't help getting into arguments when people disagree with me.  
 My friends say that I'm somewhat argumentative.  
 I flare up quickly but get over it quickly.  
 When frustrated, I let my irritation show.  
 I sometimes feel like a powder keg ready to explode.  
 I am an even-tempered person.  
 Some of my friends think I'm a hothead.  
 Sometimes I fly off the handle for no good reason.  
 I have trouble controlling my temper.  
 I am sometimes eaten up with jealousy.  
 At times I feel I have gotten a raw deal out of life.  
 Other people always seem to get the breaks.  
 I wonder why sometimes I feel so bitter about things.  
 I know that "friends" talk about me behind my back.  
 I am suspicious of overly friendly strangers.  
 I sometimes feel that people are laughing at me behind me back.  
 When people are especially nice, I wonder what they want.

Instructions: Please think of the five video games that you have played for the greatest amount of time from when you were in 7th grade until the present. Include computer, console/TV, and arcade games. Please write down the titles of these games on the blank lines below. If you have never played a video game in your life, please check here and go on to the next questionnaire \_\_\_\_\_.

1) Title of your "most played" game: \_\_\_\_\_  
 PLEASE PRINT CLEARLY

2) Title of your "2nd most played" game: \_\_\_\_\_  
 PLEASE PRINT CLEARLY

3) Title of your "3rd most played" game: \_\_\_\_\_  
 PLEASE PRINT CLEARLY

Now, please rate each game by answering the questions that follow.

1). For the following items, rate the game you listed as your "most played" game:

a) In recent months, how often have you played this game?

1	2	3	4	5	6	7
Rarely			Occasionally			Often





## APPENDIX B: POST-EXPOSURE QUESTIONNAIRE

Below is a list of words with letters missing. Your task is to fill in the blanks to make complete words. You will be given three minutes to complete as much of the word task as you can. You will begin and end this task as indicated by the study administrator. When the three minutes are over and the administrator tells you to stop, scroll down to the bottom of the page and click the "submit" button.

Please type the word that completes each incomplete word in the boxes below. Be sure to type the entire word, spell the word correctly, and type a word that uses the correct letters to complete each incomplete word.

- |                  |                |                      |
|------------------|----------------|----------------------|
| 1 b _ h _ _ _    | 34 s m _ c k   | 67 w _ _ d _ w       |
| 2 i n _ _ r e    | 35 s m _ _ e   | 68 w _ _ k e d       |
| 3 e x _ e _ _    | 36 k n _ _ _   | 69 v i s _ _ n       |
| 4 m u _ _ e r    | 37 t _ n e     | 70 e n _ a g e       |
| 5 p r _ _ e      | 38 s _ _ b     | 71 s c r _ _ n       |
| 6 s p e a _      | 39 s h _ r _   | 72 h _ t r _ d       |
| 7 f l i _ _ e r  | 40 d r _ _ n   | 73 t _ l _ p h _ _ _ |
| 8 e x p l _ _ e  | 41 p _ _ n e   | 74 d i s _ _ s _ e d |
| 9 w _ _ m        | 42 a n g _ _   | 75 c _ n t _ _ l     |
| 10 k i _ _       | 43 f l _ _ t   | 76 p r o v _ _ e     |
| 11 t _ p _       | 44 f i _ _ t   | 77 p _ n b _ l l     |
| 12 h _ r _       | 45 p _ c k     | 78 o u t _ _ _ e     |
| 13 a _ t _ r     | 46 h a _ e     | 79 c _ l l           |
| 14 c h o _ e     | 47 a _ t       | 80 r _ d e           |
| 15 s _ m p _ _   | 48 c _ t       | 81 m _ n _ g e       |
| 16 a t t _ c _   | 49 w _ n       | 82 i n s _ _ _       |
| 17 c _ m p _ _ t | 50 a _ e       | 83 s _ d _           |
| 18 d e s _ _ _ _ | 51 _ r y       | 84 b _ _ t           |
| 19 s h _ l _     | 52 w a _       | 85 b r _ _ z e       |
| 20 s h o _ t     | 53 f _ m _     | 86 r e v _ _ t       |
| 21 r _ p _ _ t   | 54 s l _ p     | 87 c o o _           |
| 22 s t r _ _ e   | 55 b _ _ k     | 88 s _ _ y           |
| 23 l _ _ e       | 56 r _ p e     | 89 d _ _ r           |
| 24 b _ r n       | 57 f o _ e _ t | 90 s m _ c k         |
| 25 s t _ r _ o   | 58 o f f _ _ _ | 91 f r _ _ t         |
| 26 p _ _ s o n   | 59 l _ _ o n   | 92 _ u n c h         |
| 27 p _ s t _ r   | 60 c r _ _ l   | 93 s h _ r e         |
| 28 m _ _ g l e   | 61 c _ e _ t e | 94 a _ u s e         |
| 29 b l _ n d     | 62 s t _ r _ y | 95 c l _ _ r         |
| 30 s n _ r e     | 63 m _ t c _   | 96 h _ n t           |
| 31 b _ e         | 64 f _ r _ _   | 97 w _ t _ r         |
| 32 h _ t         | 65 t _ _ t e   | 98 s _ a s h         |
| 33 g _ _ p e     | 66 n _ _ t _   |                      |

For the next few questions, you will first read a short story. Then, you will be prompted to list what happens next by listing what the main character will do or say, think, and feel.

**THE CAR ACCIDENT**

Todd was on his way home from work one evening when he had to brake quickly for a yellow light. The person in the car behind him must have thought Todd was going to run the light because he crashed into the back of Todd’s car, causing a lot of damage to both vehicles. Fortunately, there were no injuries. Todd got out of his car and surveyed the damage. He then walked over to the other car. What happens next? List 5 things that Todd will do or say, 5 things Todd will think, and 5 things Todd will feel as the story continues. Please use a separate line for each thing you list.

<b>Things Todd will do or say</b>	<b>Things Todd will think</b>	<b>Things Todd will feel</b>
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.
5.	5.	5.

**GOING TO A RESTAURANT**

Jane had worked hard all day long cleaning her apartment. She was tired but decided to reward herself with a meal in one of the restaurants down the street. Upon entering the restaurant, Jane decided upon a Caesar salad, French onion soup, and filet mignon. Some 15 minutes later, a waiter came around to take her order. Time slowly passed and Jane was getting hungrier and hungrier. Finally, about 45 minutes after her order had been taken, Jane was about to leave when she saw the waiter approaching with her food. What happens next? List 5 things that Jane will do or say, 5 things Jane will think, and 5 things Jane will feel as the story continues. Please use a separate line for each thing you list.

<b>Things Jane will do or say</b>	<b>Things Jane will think</b>	<b>Things Jane will feel</b>
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.
5.	5.	5.

Please indicate the extent to which you agree or disagree with each of the following mood statements.

(Scale for all items: 1 = Strongly Agree, 2 = Disagree, 3 = Neither Agree Nor Disagree, 4 = Agree, 5 = Strongly Agree)

- |                                 |                                   |
|---------------------------------|-----------------------------------|
| I feel furious.                 | I feel like I'm about to explode. |
| I feel tame.                    | I feel friendly.                  |
| I feel aggravated.              | I feel understanding.             |
| I feel disgusted.               | I feel amiable.                   |
| I feel stormy.                  | I feel mad.                       |
| I feel polite.                  | I feel mean.                      |
| I feel discontented.            | I feel bitter.                    |
| I feel like banging on a table. | I feel burned up.                 |
| I feel irritated.               | I feel like yelling at somebody.  |
| I feel frustrated.              | I feel cooperative.               |
| I feel kindly.                  | I feel like swearing.             |
| I feel unsociable.              | I feel cruel.                     |
| I feel outraged.                | I feel good-natured.              |
| I feel agreeable.               | I feel disagreeable.              |
| I feel angry.                   | I feel enraged.                   |
| I feel offended.                | I feel sympathetic.               |

While playing the game, how much did you feel like you were really "there" in the game environment?

There	1	2	3	4	5	6	7	Not There
-------	---	---	---	---	---	---	---	-----------

While playing the game, how much did you feel like the game environment was a real place?

Real	1	2	3	4	5	6	7	Not Real
------	---	---	---	---	---	---	---	----------

While playing the game, how much did you feel like other characters in the game were real?

Real	1	2	3	4	5	6	7	Not Real
------	---	---	---	---	---	---	---	----------

Different people react very differently to the same situations. Indicate to what extent you feel this way right now, that is, at the present moment. Use the following 5-point rating scale. Write the number corresponding to your rating on the blank line next to each word. (Scale for all items: 1 = Very Slightly or Not at All, 2 = A Little, 3 = Moderately, 4 = Quite a Bit, 5 = Extremely)

- |           |          |           |           |
|-----------|----------|-----------|-----------|
| active    | alert    | aroused   | depressed |
| drowsy    | dull     | energetic | excited   |
| exhausted | fatigued | forceful  | inactive  |
| lively    | powerful | quiet     | sharp     |
| sleepy    | slow     | sluggish  | tired     |
| vigorous  | weak     | weary     | worn-out  |

Please rate your level of agreement with the following statements.  
(Scale for all items: 1 = Strongly Disagree, 7 = Strongly Agree)

I liked playing the game.  
For me the game was entertaining.  
It was great fun for me to take control of this game.  
The game almost invited me to take control.  
The game was no challenge at all for me.  
The game was absolutely not interesting to me.  
I think the game was boring.  
I really felt like engaging with the game.  
I was sad when the experience was over.  
I would recommend the experience to my friends.

Please rate your performance in this game as a percentage score, with “100% = As well as possible” and 0% = “As badly as possible.”  
Percentage Score (0% to 100%): \_\_\_\_\_%

## APPENDIX C: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER



VirginiaTech

Office of Research Compliance  
Institutional Review Board  
2000 Kraft Drive, Suite 2000 (0497)  
Blacksburg, Virginia 24060  
540/231-4606 Fax 540/231-0959  
e-mail [irb@vt.edu](mailto:irb@vt.edu)  
Website: [www.irb.vt.edu](http://www.irb.vt.edu)

### MEMORANDUM

**DATE:** April 6, 2010

**TO:** Christine Kaestle, Adrienne Ivory

**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires June 13, 2011)

**PROTOCOL TITLE:** The Effects of Profanity in Video Games

**IRB NUMBER:** 10-297

As of April 6, 2010, the Virginia Tech IRB Chair, Dr. David M. Moore, approved the new protocol for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at <http://www.irb.vt.edu/pages/responsibilities.htm> (please review before the commencement of your research).

### PROTOCOL INFORMATION:

Approved as: **Exempt, under 45 CFR 46.101(b) category(ies) 2**

Protocol Approval Date: **4/6/2010**

Protocol Expiration Date: **NA**

Continuing Review Due Date\*: **NA**

\*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

### FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals / work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

*Invent the Future*

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY  
*An equal opportunity, affirmative action institution*

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

\*Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office ([irbadmin@vt.edu](mailto:irbadmin@vt.edu)) immediately.

cc: File