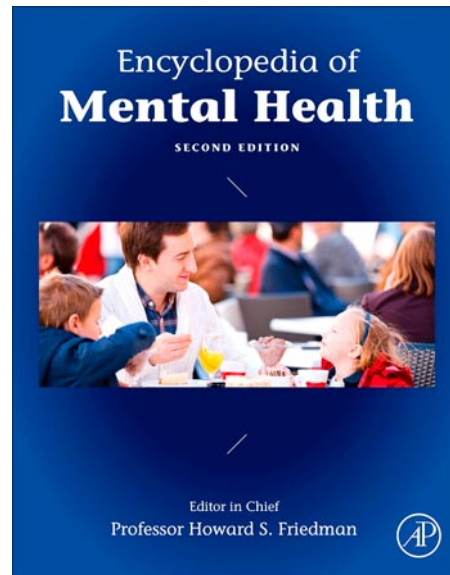


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Violent Media Effects: Theory and Evidence

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Glossary

Cognitive script A set of knowledge structures responsible for guiding behavior through a series of events (e.g., ordering food at a restaurant; appropriately responding to a provocation).

Desensitization A reduction in emotion-related physiological reactivity to real violence.

Excitation transfer A process in which the arousal derived from a previous event serves to

amplify the excitatory response to a future event.

Hostile attribution bias A tendency to interpret ambiguous provocations by another person as intentionally hostile rather than benign.

Knowledge structure A cognitive organization of information in a way that assists in guiding behavior and processing information within the environment.

Introduction

The advancement of technology over the past 20 years has revolutionized the ways in which people entertain themselves. Smart phones, tablets, home computers, and video game consoles are capable of providing access to television shows, movies, and video games within seconds, leading to a society in which citizens have unprecedented access to media. Currently, youth in the United States spend an average of 7.5 h per day consuming media (Rideout *et al.*, 2010) constituting nearly a full-time job. One survey indicated that among a nationally representative sample of US adolescents, 71% of 14-year-olds and 35% of 10-year-olds had seen at least one extremely violent movie. For children without rules in the home regarding violent television viewing, this percentage rose to 87% (Worth *et al.*, 2008).

Such extraordinary exposure to media naturally leads to questions regarding the short and long-term effects of such exposure. After all, when consuming media, individuals do not merely watch a blank screen. They observe and participate in rich stories with themes, lessons, and portrayals that make lasting impressions on viewers. Such activity not only allows one to enjoy the experience of another (real or fictional), but also allows one to learn from that experience. With this in mind, researchers have focused on major content themes within media to examine their effects on consumers. Perhaps the most prevalent of these themes, and thus the most heavily researched, is the presence of violence.

Aggressive Outcomes Following Violent Media Exposure

Aggression is defined as “any behavior directed toward another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, the perpetrator must believe that the behavior will harm the target, and that the target is motivated to avoid the behavior” (Anderson and Bushman, 2002, pp. 28) (this concept is more thoroughly discussed in another article of this encyclopedia). Violence is defined as an act of aggression with extreme harm as its goal (Anderson and

Bushman, 2002). However, media violence is usually defined as media portrayals of characters trying to harm other characters. Therefore, both minor and severe forms of aggression qualify as ‘media violence’ (A more specified discussion of the influence of these media types on mental health are found in other articles of this encyclopedia.).

A large portion of mass media contains violence (e.g., Linder and Gentile, 2009; Smith *et al.*, 1998; Wilson *et al.*, 1997, 1998; Thompson and Haninger, 2001; Thompson *et al.*, 2006; Yokota and Thompson, 2000). Hundreds of studies have investigated the effects of this type of media (Anderson *et al.*, 2010; Bushman and Huesmann, 2006; Wartella and Reeves, 1985). After decades of research a clear finding emerges: violent media exposure is a causal risk factor for increases in aggression (American Academy of Pediatrics, 2009; American Psychological Association, 2005; Anderson *et al.*, 2003, 2010; Bushman and Huesmann, 2006; International Society for Research on Aggression, 2012). These findings have been replicated across cultures, ages, and gender (e.g., Anderson *et al.*, 2003, 2010). Consistent findings occur regardless of how aggressive behavior is measured as well. Violent media exposure has been found to increase likelihood of verbal aggression (Parke *et al.*, 1977; Krcmar and Farrar, 2009), children's aggressiveness during free-play (Silvern and Williamson, 1987), physical aggression in the form of noise blasts administered to another person (Engelhardt *et al.*, 2011), administering hot sauce to another individual known to dislike spicy food (Barlett *et al.*, 2009b), and is even associated with an increased likelihood of committing serious crimes as an adult (Huesmann *et al.*, 2003).

Theoretical Processes

With the influence of violent media clearly illustrated, questions have shifted toward how they occur. Numerous theories have contributed to better understanding this question. The General Aggression Model (GAM; Anderson and Bushman, 2002) serves as the most comprehensive, contemporary framework through which domain-specific theories are integrated to help explain how these phenomena occur, but all modern social-cognitive theories also apply.

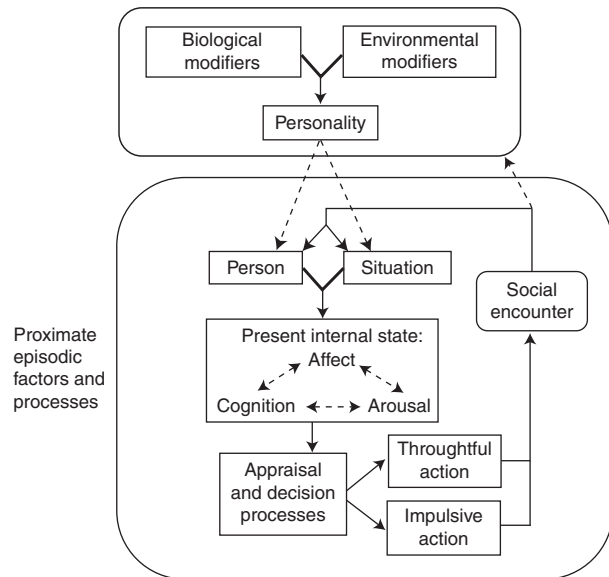


Figure 1 Single cycle within the GAM.

The GAM delineates both short and long-term processes that lead to aggression. Short-term processes are represented by GAM's single-cycle episode (Figure 1). The single-cycle begins with two forms of input. The first form of input derives from the characteristics of the person that are carried across situations. These include personality variables, attitudes, and biologically based dispositions such as trait aggressiveness or high testosterone. The second form of input is the situation itself. This includes qualities of the immediate situation that lead to increases or decreases in aggression such as provocation or being in an aggression-inhibiting setting (e.g., church).

Next, these forms of input influence internal states which consist of affect, cognitions, and arousal. These internal states are said to be highly interactive – for example, following a provocation, aggressive cognitions (e.g., aggressive fantasizing) may increase aggressive affect (e.g., feelings of irritation or frustration) which increase arousal (e.g., heart rate). These internal states then influence decision-making processes that determine a behavioral outcome.

Decision-making processes begin with an initial appraisal which can occur with or without conscious awareness. If the initial appraisal is deemed appropriate, then a behavioral response will immediately occur. However, if the initial appraisal is considered unsatisfying and important, and if the individual has sufficient time and cognitive resources available, then reappraisal is likely to occur. If the reappraisal is considered satisfactory, then a thoughtful action (or inaction) will likely follow. Importantly, a reappraisal is not guaranteed to reduce the aggressiveness of a behavior nor is an impulsive decision guaranteed to increase the aggressiveness of a behavior. Once a behavioral response is selected and executed, the situation is influenced by the behavior, and thus begins a new cycle.

Although applications of GAM are not limited to understanding of the influence of violent media, it serves as a

theoretical foundation through which such effects are understood. Next, several of the domain-specific theories of aggression which GAM incorporates are briefly described.

Priming Effects

GAM is a biosocial cognitive model of aggression. Cognitive neo-association theory was proposed by Berkowitz (1990, 1993) in an attempt to expand on the earlier frustration-aggression hypothesis which states that aggression occurs as the direct result of frustration defined as a reaction to the thwarting of a goal. Cognitive neo-association theory proposes that aggression is the result of experiencing an aversive event. Aversive events produce negative affect which are automatically associated with fight or flight tendencies. Critically, cognitive neo-association theory incorporates a knowledge structure approach to understanding how aggressive cues, such as witnessing violence, increase aggression. The theory posits that aggressive thoughts, emotions, and behavioral tendencies are linked together in memory, forming a network of related concepts (Collins and Loftus, 1975). For example, the word 'gun' is much more closely related to the word 'kill' than the word 'cucumber.' When exposed to images of violence, related concepts are automatically activated in memory, effectively priming the mind to operate on aggression-related concepts.

This theoretical account has received support from a number of studies. For instance, individuals playing a violent game have been found to be more likely to fill in the letters of fragmented words in a way that produced more aggressive words compared to nonaggressive words (Carnagey and Anderson, 2005; Barlett and Rodeheffer, 2009). For example, the word 'explo_e' can be completed to form 'explore' or 'explode.' After playing a video game that involved shooting enemy soldiers, participants were more likely to associate aggression-related words with their self-concept in an implicit association task compared to participants playing an identical game involving the watering of flowers in place of firing on enemies (Bluemke et al., 2010). Other studies using other measures of accessibility of aggressive thoughts have found that brief exposure to violent media increases the amount of violent content in written stories, speed of recognizing and reading aggressive words, negative attitudes toward Arab/Muslims, and biased similarity ratings of aggressive/ambiguous word pairs (e.g., Anderson et al., 2003; Bösche, 2010; Bushman and Anderson, 2002; Saleem and Anderson, 2013). In contrast, other studies demonstrate that playing prosocial games reduces the accessibility of aggressive thoughts (Greitemeyer and Osswald, 2009), providing evidence that the same processes are at least partially responsible for aggressive, as well as prosocial outcomes of exposure to certain forms of video game content. Importantly, cognitive processes such as these appear to be largely responsible for aggressive behavior following brief violent media exposure (Anderson and Dill, 2000; Barlett and Anderson, 2013; Carnagey and Anderson, 2005).

Script Theory

Script theory (Huesmann, 1988) holds that individuals develop knowledge structures responsible for guiding behavior within any given social context. For example, when entering a

restaurant, patrons often know the precise steps to conduct business in a socially appropriate manner: enter, wait to be seated, view the menu, order food, eat, pay, and lastly, leave. Script theory contributes to the understanding of violent media effects by elucidating the ways in which such scripts are developed, reinforced, and ultimately guide behavior.

When viewing violent media, individuals repeatedly observe aggression within a rewarding context. Protagonists in films, television shows, and video games are frequently rewarded for providing violent solutions to problems. Meanwhile, the consequences (e.g., pain, fear, and collateral damage) associated with aggression and violence are often underrepresented in such media. These characteristics effectively make the act of aggression appear as more attractive and less threatening than it truly is in real life, consequently making it easier for viewers and players to imagine themselves acting aggressively and having positive outcomes. Supporting evidence indicates that the viewing of violent television shows is associated with aggressive fantasizing in boys (Viemerö and Paajanen, 1992) and other research indicates that imagining oneself taking a particular action increases one's intentions to take such action (e.g., Anderson and Godfrey, 1987). Furthermore, media violence research has found that children who actively imagine themselves as the violent characters in their media diet are also the ones most likely to behave aggressively (e.g., Konijn *et al.*, 2007; Leyens and Picus, 1973).

Further, the increased positive associations, and reduced negative associations with violence and aggression feed into decision-making processes when selecting a most appropriate course of action within a given social context (Huesmann, 1986). Therefore, when faced with the decision to aggress or not aggress, individuals who are frequently exposed to violence in a positive context are more likely to select an aggressive course of action.

Excitation Transfer

Arousal is another route through which violent media can increase aggression. Viewing violence is inherently arousing and this effect is seen across media forms (c.f. Anderson *et al.*, 2004; Zillmann, 1971). Further, the nature and degree of violence within media also influences arousal. For instance, playing a violent fighting game with the blood turned on to maximum increases heart rate (Barlett *et al.*, 2008). The presence of red blood and auditory pain cues (e.g., screaming) have also been shown to increase the galvanic skin response (Jeong *et al.*, 2012), another indicator of physiological arousal. Newer violent video games, those with improved graphical realism, also increase physiological arousal in the form of blood pressure and body temperature (Barlett and Rodeheffer, 2009) as well as skin conductance (Ivory and Kalyanaraman, 2007).

Work by Zillmann (1971) and Zillmann *et al.* (1972) demonstrates that arousal resulting from a given event can carry into future contexts and influence behavior. An arousing event is likely to conclude before the dissipation of the arousal elicited by the event itself. Arousal is then carried into the next situational episode (see Figure 1) and influences the likelihood of aggression by coupling the residual arousal from the

previous episode with the arousal elicited by the subsequent episode. Such excitation transfer may play a role in some of the short-term effects of violent media on aggression, though to date there are no studies that have tested this specific application of excitation transfer theory. Nonetheless, when encountering a provoking social situation, residual arousal derived from recent violent media exposure could well add to the arousal resulting from the provocation, and thus could exacerbate an aggressive reaction.

Desensitization to Violence

Violent media exposure also changes the way in which individuals perceive and react to violence in real life. This process, called desensitization, is a reduction in emotional and physiological responsiveness to violence. Violence in real life becomes more acceptable after much greater violence has been seen on the screen (Mullin and Linz, 1995). For example, after playing a violent video game for 20 min, players exhibit lower physiological arousal whereas watching scenes of real-life violence (Carnagey *et al.*, 2007). After viewing sexually violent films, people show less empathy to victims of violence and are more likely to blame them for being responsible for the abuse (Mullin and Linz, 1995; Dexter *et al.*, 1997). There is also evidence that long-term violent media consumption leads to chronic desensitization to violence. Habitual violent video game players show reduced neural responding while viewing violent images (Bartholow *et al.*, 2006). Long-term exposure to violent media is also associated with more positive attitudes toward violence and is negatively associated with empathy (Funk *et al.*, 2004).

Desensitization to violence can be adaptive in some contexts (e.g., desensitizing soldiers to the sights of war). However, desensitization of children and other civilians to violence is harmful in several ways. Anxiety in response to violence plays an important role in the inhibition of aggression, so a reduction in such responses is expected to lead to disinhibition of aggression (Bartholow *et al.*, 2006). In line with this view, desensitization has been shown to increase aggressive thoughts and behaviors (Bartholow *et al.*, 2005; Engelhardt *et al.*, 2011; Krahé *et al.*, 2011). This type of emotional numbing has also been found to reduce the likelihood of helping victims of violence (Bushman and Anderson, 2009). Frequent exposure to media violence is also associated with significant reductions in certain brain functions known to be associated with emotional processing and cognitive preparation for aggressive behavior, as shown in several functional magnetic resonance imaging and event-related potential studies (Bailey *et al.*, 2011; Hummer *et al.*, 2010; Kronenberger *et al.*, 2005; Mathews *et al.*, 2005; Strenziok *et al.*, 2010; Weber *et al.*, 2006).

Aggressive Beliefs and Attitudes

Aggressive behavioral tendencies are significantly influenced by how people encode, interpret, and respond to social cues (Crick and Dodge, 1994; Dodge, 2011). Another key route through which media violence exposure affects aggression is by influencing different aspects of social information processing.

Hostile attribution bias

One way in which social information is processed is by making attributions (or explanations) regarding the sources (or causes) of another's behavior. For instance, highly aggressive children and adults exhibit a hostile attribution bias – a tendency to interpret ambiguous provocations by another person as intentionally hostile rather than accidental (Crick and Dodge, 1994; Dodge, 2011; Orobio de Castro *et al.*, 2002). In other words, people who have this type of hostile attributional style “view the world through blood-red tinted glasses” (Dill *et al.*, 1997, p. 275). They ‘see’ intentional harm in events that most people would interpret as accidental. Several studies demonstrate that media violence consumption can foster hostile attributions both in short-term (Bushman and Anderson, 2002; Kirsh, 1998) and long-term contexts. For example, the first longitudinal study to test this mechanism in the media violence domain (Anderson *et al.*, 2007a,b) found that high frequency violent video game exposure early in a school year increased hostile attribution bias, which in turn increased physical aggression later in the school year (Gentile *et al.*, 2011; Hasan *et al.*, 2012).

Normative beliefs about aggression

Exposure to media violence also distorts people's normative beliefs about violence and leads to perceptions of the world as a dangerous place (Bryant *et al.*, 1981). For example, heavy television viewers tend to overestimate the amounts of crime and danger in the real world (Gerbner *et al.*, 1982). Such distortions lead to other negative consequences. Media violence use reinforces beliefs that aggression is an appropriate response in different situations (Bushman and Huesmann, 2006; Funk *et al.*, 2004). Such increases in pro-violence attitudes can, in turn, lead to increased aggression (Möller and Krahé, 2009).

Personality Processes

Thus far, discussion has focused on the major theoretical processes through which violent media exposure is said to increase aggression. Priming effects, scripts, desensitization, hostile attribution bias, and normative beliefs can all be seen as types and artifacts of knowledge structures associated with aggression which are developed and reinforced following violent media exposure. Each of these processes is incorporated within the framework of GAM and contribute to the long-term development of aggressive personalities (Anderson and Bushman, 2002). Within any given social encounter, individuals draw upon knowledge structures to assist in interpreting social cues, distinguishing between appropriate and inappropriate responses in social situations, making judgments, and executing behavioral responses. Figure 2 graphically represents some of these long-term processes.

Attention Problems, Executive Functioning, and Impulsivity

Although most media violence research has focused on developing a better understanding of how media violence leads to aggression, other recent work has uncovered several other deleterious effects. Some of these appear to be related to

excessive media use in general, although some also appear to be especially linked to violent media.

Particular focus has been placed on fast-paced screen media with research suggesting that it may increase attention problems and impulsiveness as well as decrease cognitive control. Television viewing is associated with greater attention problems in childhood (e.g., Christakis *et al.*, 2013, 2004; Landhuis *et al.*, 2007; Levine and Waite, 2000; Mistry *et al.*, 2007). Several studies have also found a higher prevalence of attention problems among habitual video game players (Gentile, 2009; Bioulac *et al.*, 2008; Mistry *et al.*, 2007). Longitudinal studies demonstrate that television and video game use is related to greater subsequent attention problems, even when earlier attention problems are statistically controlled (Gentile *et al.*, 2012; Swing *et al.*, 2010). These findings suggest that the relationship between screen media and attention problems may be causal. High excitement and rapid changes of focus that occur in many television shows and video games may make it harder for children to focus on less exciting tasks (e.g., homework) and shorten their attention spans (Christakis *et al.*, 2004; Gentile *et al.*, 2012).

Several studies have also linked screen media use with decrements in certain types of executive functioning (Bailey *et al.*, 2011; Hummer *et al.*, 2010; Mathews *et al.*, 2005). For example, one study found that habitual video game players demonstrate lower proactive cognitive control, a type of executive function involving the maintenance of information in working memory that serves to optimize task preparation (Bailey *et al.*, 2010).

Finally, there is also evidence linking media use to increased impulsiveness. A recent longitudinal study demonstrated evidence of a bidirectional relationship of video game use with attention problems and impulsiveness: more impulsive individuals tend to spend more time playing video games, which in turn increases subsequent attention problems and impulsiveness (Gentile *et al.*, 2012).

Other Effects

Prosocial Behavior Decrements

Prosocial behaviors involve voluntary, intentional actions that benefit another person or society at large, especially when this behavior brings no benefit to the helper (Barlett *et al.*, 2009a). The same social learning mechanisms that link violent media to aggressive behavior also affect prosocial behavior. In fact, several studies have demonstrated reduced prosocial behavior as a result of media violence use. Even a single instance of media violence exposure has been shown to reduce the likelihood of helping and cooperation in the immediate situation (Rothmund *et al.*, 2011; Sheese and Graziano, 2005). For example, in a field experiment, participants who just watched a violent movie are less likely to help a seemingly injured woman pick up her crutches than participants who watched a nonviolent movie (Bushman and Anderson, 2009). People who just played a violent video game are more likely to exploit their partners in a cooperative-decision-making task (Sheese and Graziano, 2005). Other studies provide evidence that such short-term effects can accumulate through repeated media

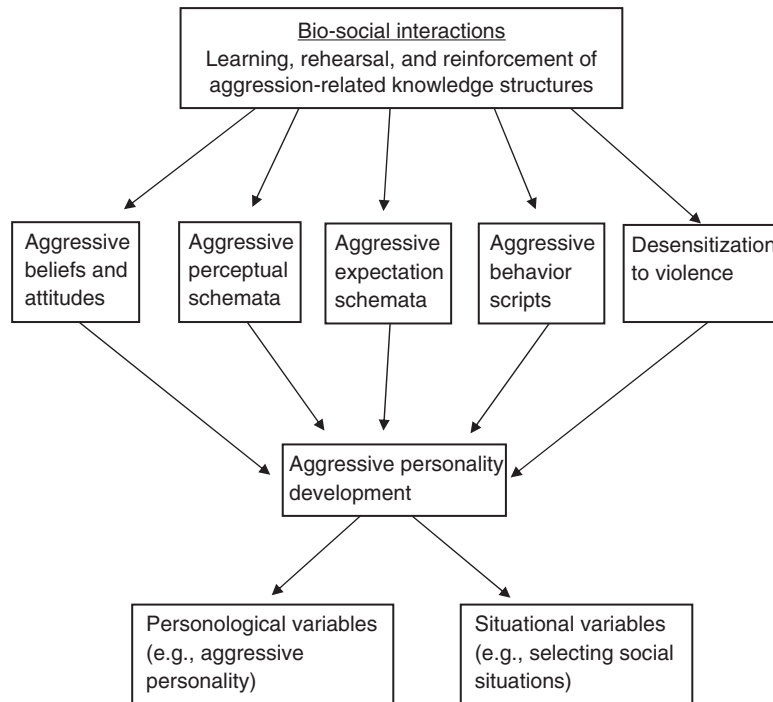


Figure 2 Long-term processes within the GAM.

violence use, leading to significant long-term decrements in frequency of prosocial behavior. For example, habitual media violence use is negatively associated with empathy and helping among children both cross-sectionally and longitudinally (Anderson *et al.*, 2007a,b; Gentile *et al.*, 2009; Prot *et al.*, 2014).

Risk Glorification

In addition to glorifying violence, violent media often glorify other risk-taking behaviors, such as risky driving, binge drinking, smoking, and risky sexual behaviors. Positive portrayals of risk taking are frequent in advertisements, television shows, movies, music lyrics, and video games (Fischer *et al.*, 2011). A number of recent studies show that exposure to risk-glorifying media increases both risk-taking inclinations and actual risk-taking behaviors. For example, frequency of playing racing video games is positively correlated with competitive driving and frequency of car accidents (Fischer *et al.*, 2007). Exposure to alcohol use in movies is related to early onset of drinking and binge drinking among adolescents (Hanewinkel *et al.*, 2007; Sargent *et al.*, 2006). Similar effects have been found for smoking (Wills *et al.*, 2009). Exposure to sexual content in different media (television, movies, music, and internet) predicts earlier initiation of sexual activity among adolescents (Pardun *et al.*, 2005). Exposure to violent X-rated material predicts increased sexually aggressive behaviors (Ybarra *et al.*, 2011). In all of the prediction studies mentioned, earlier levels of risk behavior were statistically controlled, suggesting that the risk-glorification media serve as another causal risk factor. In sum, risk glorification in the media has been found to lead to increased risk taking in real life across a broad range of specific risk behaviors and media types.

Sex and Violence Effects

Portrayals of sex in the media do not always lead to negative outcomes. In fact, when such portrayals contain accurate information and socially responsible messages, they can effectively teach youth about sexuality and promote responsible sexual behaviors (e.g., Brodie *et al.*, 2001; Collins *et al.*, 2003). However, negative consequences emerge when sexual content is coupled with aggression and violence. Exposure to pornography that depicts sexual aggression has been linked to aggressive attitudes and sexually aggressive behavior toward women in a number of studies (e.g., Linz and Malamuth, 1993; Malamuth *et al.*, 2012; Ybarra *et al.*, 2011). For example, after viewing pornography portraying a woman eventually enjoying a rape, men demonstrate more acceptance for rape myths and are more likely to behave aggressively toward a female target (Linz and Malamuth, 1993). Furthermore, viewing sexual violence leads to desensitization and decreased empathy toward domestic violence victims (Mullin and Linz, 1995). It is important to note that detrimental effects of violent pornographic images are equivalent to those of nonsexual violent images, whereas nonviolent pornography does not lead to such effects (e.g., Linz *et al.*, 1987). These findings suggest that it is the violent content that is most responsible for increasing the risk of aggression against women, not the sexual content.

Violent Stereotype Depictions

Mass media do not just present distorted depictions of aggression and violence – such depictions are frequently coupled with distorted portrayals of different social groups. Research concerning stereotyping in violent media has mainly focused

on two types of group stereotypes: gender stereotypes and racial stereotypes.

Both males and females are often stereotypically portrayed in television shows, movies, and video games. In television shows, females are often shown as emotional, warm, and affectionate. In contrast, males are shown as independent, assertive, and aggressive (Thompson and Zerbino, 1995). Female video game characters are commonly depicted as attractive and hypersexualized, whereas male characters are portrayed as muscular, dominant, and aggressive (Beasley and Collins-Standley, 2002; Dill and Thill, 2007; Stermer and Burkley, 2012). Do such stereotypical portrayals significantly influence viewers? Research shows that exposure to gender stereotypes in the media significantly affect consumers' attitudes and behaviors. For example, children who are exposed to gender stereotypes on television are more likely to endorse gender stereotypes in real life (e.g., Eisenstock, 1984). Playing violent video games that contain sex-typed characters correlates with rape myth acceptance and negative attitudes toward women (Dill, 2009). Exposure to stereotypical portrayals of gender in the media has been associated with sex-typed behaviors (Oppliger, 2007).

Racial and ethnic minority groups are also frequently stereotyped in the media. For example, African American characters in television shows and video games are often associated with social problems, crime, and violence (Abraham, 2003; Dixon, 2008; Dunlop, 2007). Arab characters are often linked with violence and terrorism, supporting the unrealistic belief that 'all Arabs and Muslims are terrorists' (Shaheen, 2009; Van Buren, 2006). Research shows that such distorted representations have significant effects on consumers' attitudes and behaviors toward racial and ethnic minority groups. For example, exposure to negative stereotypes of African Americans in the media significantly affects attitudes toward African Americans in general (Mastro and Tropp, 2004). Playing a video game that portrays Arab as terrorists increases players' anti-Arab bias and perceptions of Arabs as aggressive (Saleem and Anderson, 2013).

Conclusions

Despite the now insurmountable evidence regarding the negative influences of violent media, such findings are continuously underreported in news media (Bushman and Anderson, 2001). Further, a small, but vocal group of researchers have made claims against the effects that violent media has on youth (Ferguson and Kilburn, 2010; Ferguson, 2013). Despite numerous and thorough replies to criticisms (Bushman et al., 2010; Sacks et al., 2011; Huesmann, 2010), such claims continue to be made and effectively muddy the waters of what is an empirically clear research finding. Scientific dissent is often encouraged in any research literature and can be an important force for refining scientific conclusions. However, when criticisms have been addressed and arguments continue despite consistent evidence, such discourse can serve to undermine important public policy decisions and confuse parents in need of guidance. The authors hope that this article helps readers to understand the true effects of media violence on aggression and other important outcomes, and enables

more informed parent, caregiver, and consumer choices in entertainment media and recreational activities.

See also: Aggression. Children and Adolescents: Television, Computers, and Media Viewing

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