



## THE ROLE OF MEDIA VIOLENCE IN VIOLENT BEHAVIOR

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■ **Abstract** Media violence poses a threat to public health inasmuch as it leads to an increase in real-world violence and aggression. Research shows that fictional television and film violence contribute to both a short-term and a long-term increase in aggression and violence in young viewers. Television news violence also contributes to increased violence, principally in the form of imitative suicides and acts of aggression. Video games are clearly capable of producing an increase in aggression and violence in the short term, although no long-term longitudinal studies capable of demonstrating long-term effects have been conducted. The relationship between media violence and real-world violence and aggression is moderated by the nature of the media content and characteristics of and social influences on the individual exposed to that content. Still, the average overall size of the effect is large enough to place it in the category of known threats to public health.

### INTRODUCTION

One of the notable changes in our social environment in the twentieth century is the advent and saturation of mass media. In this new environment, radio, television, movies, videos, video games, and computer networks have assumed central roles in our daily lives. For better or for worse, the mass media are having an enormous impact on our values, beliefs, and behaviors. Unfortunately, the consequences of one particular element of the mass media exposure has particularly detrimental effects on viewers' and others' health. Research evidence has accumulated over many years that exposure to violence on television and in video games increases the risk of violent behavior on the viewer's part just as growing up in an environment filled with real violence increases the risk of violent behavior. In this review we critically assess the research evidence that leads us to this conclusion, and we lay out the psychological theory that explains why exposure to violence has detrimental effects for both the short term and long term. Finally, we also compare the size of the media violence effect with some other well-known threats to public health to estimate how important a threat it should be considered.

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## BACKGROUND

Before reviewing the research literature, however, we must emphasize several points. First, the weight of the evidence indicates that violent actions seldom result from a single cause; rather, multiple factors converging over time contribute to such behavior. Accordingly, the influence of the violent mass media is best viewed as one of the many potential factors that influence the risk for violence. No reputable researcher is suggesting that media violence is “the” cause of violent behavior.

Second, a developmental perspective is essential to an adequate understanding of how media violence affects youthful conduct and to the formulation of a coherent public health response to this problem. Most youth who are aggressive and engage in some forms of antisocial behavior do not go on to become violent teens and adults (79). Still, research has shown that a significant proportion of aggressive children are likely to grow up to be aggressive adults (59) and that seriously violent adolescents and adults were often highly aggressive and even violent as children. The best single predictor of violent behavior in older adolescents, young adults, and even middle-aged adults is the occurrence of aggressive behavior in childhood (57). Thus, influences, such as exposure to media violence, that promote aggressive behavior in young children can contribute to increasingly aggressive and ultimately violent behavior many years later.

Third, it is important to avoid the error of assuming that small statistical effects necessarily translate into small practical or public health effects. There are many circumstances in which statistically small effects have large practical consequences, especially when small effects accumulate over time and over large proportions of the relevant population. With such accumulation, even small statistical effects of media violence on aggressive behavior can have important social consequences. Many medical scientists have avoided the problem of underestimating the public health importance of small effects by translating their findings into death rates for the entire U.S. population, but behavioral scientists have not traditionally done this type of population-rate translation. Thus, people are frequently shocked to learn that the effects of some environmental contaminants on behavior and mental health can be as large or larger than the effects of other contaminants on physical health (e.g., 28).

Finally, the case against media violence, like the case against other potential public health threats, must be made by integrating the evidence from multiple approaches to research. Cross-sectional survey studies in which the amount of media violence to which a person is exposed is correlated with their propensity to behave aggressively have high external validity in determining whether exposure to violence and violent behavior are related, but they say little about the causal process involved. True experiments, in which participants are randomly assigned to conditions experiencing different doses of violence, provide the best evidence for causation, but they often lack external validity or generalizability. However, out of ethical necessity, these experiments generally have not examined effects of

the most serious types of physical aggression and have not examined the long-term effects of exposure to violence. Longitudinal studies can test in an externally valid manner whether long-term exposure to violence has effects, whether childhood exposure is related to adult aggression, and whether it is more plausible to believe that violent behavior stimulates exposure to violence or that exposure to violence stimulates violent behavior. All three types of research should be integrated in reaching any conclusion.

## DEFINITIONS AND DISTINCTIONS

Before proceeding, it is important to define two terms clearly: media violence and violent behavior. Different people have used different definitions of these terms at different times. For this review, we define media violence as visual portrayals of acts of physical aggression by one human against another. This definition of media violence does not include off-screen poisonings that might be implied, but rather it refers to visually portrayed physically aggressive acts by one person against another. This definition has evolved as theories about the effects of media violence have evolved and represents an attempt to describe the kind of violent media presentation that is most likely to teach the viewer to be more violent. Movies and programs depicting violence of this type were common 20 years ago, and they are common now: *Dirty Harry*, *The Godfather*, *Mad Max*, *Cliffhanger*, *True Lies*, *Pulp Fiction*, *Kill Bill*, etc. The list is endless.

The definition adopted for violent behavior can also be important for how the empirical research is interpreted. Most researchers studying media effects on behavior have focused on what they call aggressive behavior. The accepted definition states that aggressive behavior refers to an act intended to injure or irritate another person. The act could be physical or nonphysical. This includes many kinds of behavior that do not seem to fit the commonly understood meaning of violence. Hurling insults and spreading harmful rumors fit the definition. Of course, the aggressive behaviors of greatest concern to society clearly involve physical aggression. However, physical aggression may range in severity from acts such as pushing or shoving to more serious physical assaults and fighting, even extending to violent acts that carry a significant risk of serious injury. We use the term violent behavior in this review to describe more serious forms of physical aggression that pose a significant risk of serious injury to victims.

Violent and aggressive behaviors are best viewed as falling on a continuum of severity. As described above, a very strong correlation exists between mildly aggressive behavior and the risk for seriously aggressive or violent behavior later in life (59). Furthermore, significant evidence suggests that the display of aggressive thinking or aggressive emotions is a valid predictor of risk for violence (5). Consequently, studies investigating any of these types of aggression can be valuable.

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## THE KEY EMPIRICAL STUDIES

### Violence on Television and in Films

Most research on the impact of media violence on violent and aggressive behavior has focused on violence in fictional television and film. This is not surprising given the prominence of violent content in these media and the prominence of television and film in modern life—children in the United States spend an average of between three and four hours per day viewing television (34). The accumulated body of research is consistent and clear—television violence causes an increase in violent and aggressive behavior.

**EXPERIMENTS** Generally, experiments have demonstrated that exposing people, especially children and youth, to violent behavior on film and TV increases the likelihood that they will behave aggressively immediately afterwards (for reviews see 28, 84). In the typical paradigm, randomly selected individuals are shown either a violent or nonviolent short film and are then observed as they have the opportunity to aggress—for children, this generally means playing with other children, and for adults, it generally means participating in an activity involving the infliction of punishment on what they believe is another research participant.

Children in such experiments who see the violent film clip behave more aggressively immediately afterward than do those viewing the nonviolent clip (10, 24, 69). For example, Josephson (69) randomly assigned 396 seven- to nine-year-old boys to watch either a violent or a nonviolent film before they played a game of floor hockey in school. Observers who did not know what movie any boy had seen recorded the number of times each boy physically attacked another boy during the game. Physical attack was defined as hitting, elbowing, or shoving another player to the floor, as well as tripping, kneeing, and other assaultive behaviors that would be penalized in hockey. For some children, the referees carried a walkie-talkie, a specific cue that had appeared in the violent film, which was expected to remind the boys of the movie they had seen earlier. For boys rated by their teacher as frequently aggressive, the combination of seeing a violent film and seeing the movie-associated cue stimulated significantly more assaultive behavior than any other combination of film and cue.

Parallel effects have been observed among older adolescents and young adults. Those who watch the violent clips tend to behave more aggressively than do those who view nonviolent clips. In a typical experiment, a randomly selected group of adults viewed violent or nonviolent television content before being asked to play a game against another research participant. During the course of the game, participants have the opportunity to blast their opponent with unpleasant noise and are allowed to vary the volume and duration of the noise. Those who view violent television content consistently select higher volume and greater duration than do those who view nonviolent clips (26). The same pattern holds true for thoughts and beliefs, as well. African American adolescent girls who viewed

violent music videos were more accepting of dating violence than were those who watched no videos (66). For men, watching violent videos has been found to cause endorsement of violent behavior in response to conflict (67), increasingly adversarial sexual beliefs (85), and greater acceptance of antisocial behavior in general (51).

In experiments like this, causal effects have been demonstrated for children and adults, for males and females, and for people who are normally aggressive and those who are normally nonaggressive. In these well-controlled laboratory studies, the observation of the violent television or film content is clearly causing the changes in behavior. In and of itself, however, this evidence is insufficient to demonstrate that violent television content poses a true threat to public health; such would be the case only if these causal relationships also exist in the world outside the laboratory. Does media violence cause real aggression in the real world?

**CROSS-SECTIONAL AND LONGITUDINAL STUDIES** Empirical cross-sectional and longitudinal studies of children and youth behaving and watching media in their natural environments strongly support an affirmative answer to these questions. Although cross-sectional and longitudinal nonexperimental studies cannot establish causation, when coupled with the results from experiments, the results from these kinds of studies provide strong support for extending the causal conclusion demonstrated by the experiments.

The great majority of competently done one-shot survey studies have shown that children who watch more media violence on a daily basis behave more aggressively on a daily basis (84). The relationship is less strong than that observed in laboratory experiments, but it is nonetheless large enough to be socially significant; the correlations obtained are usually between 0.15 and 0.30, which, as Rosenthal (92) points out, translates into a change in the odds of aggression from 50/50 to 65/35—not a trivial change when confronting life-threatening behavior. Moreover, the relation is highly replicable even among researchers who disagree about the reasons for the relationship (e.g., 59, 78) and across countries (56).

Complementing these one-time survey studies are the longitudinal real-world studies that have shown correlations over time of childhood viewing of media violence with later adolescent and adult aggressive behavior (39, 62, 68, 78, 94; for reviews see 60, 61). Analysis of longitudinal data has also shown that early habitual exposure to media violence in middle childhood predicts increased aggressiveness, even controlling for early aggressiveness. In contrast, behaving aggressively in childhood has not been shown to predict higher subsequent viewing of violence, making it implausible that the correlation between aggression and violent media use was due to aggressive children becoming inclined to watch more violence (39, 57).

For example, in a study of children interviewed each year for three years as they moved through middle childhood, Huesmann & Eron (56, 59) found increasing

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rates of aggression for both boys and girls who watched more television violence even when controlling for initial aggressiveness and many other background factors. Children who identified with the portrayed aggressor and those who perceived the violence as realistic were especially likely to show these observational learning effects. A 15-year follow-up of these children (56) demonstrated that those who habitually watched more TV violence in their middle childhood years grew up to be more aggressive young adults. For example, among children who were in the upper quartile on violence viewing in middle childhood, 11% of the males had been convicted of a crime (compared with 3% for other males), 42% had “pushed, grabbed, or shoved their spouse” in the past year (compared with 22% of other males), and 69% had “shoved a person” while angry in the past year (compared with 50% of other males). For females, 39% of the high-violence viewers had “thrown something at their spouse” in the past year (compared with 17% of other females), and 17% had “punched, beaten, or choked” another adult while angry in the past year (compared with 4% of the other females). These effects were not attributable to any of a large set of child and parent characteristics including demographic factors, intelligence, and parenting practices.

Another recent longitudinal study found similar bi-directional longitudinal effects for children moving from middle childhood into adolescence. Slater and colleagues (94) obtained self-reports of violence viewing and aggressive thoughts, beliefs, and behaviors at four times between the middle of sixth grade and the middle of eighth grade. Growth curve analyses reveal significant effects of both contemporaneous and prior violence viewing on aggression, but use of violent media was predicted only by contemporaneous aggression and not by prior aggression.

A few longitudinal studies have been described by some reviewers as yielding data counter to the hypothesis that media violence causes aggression; however, closer inspection of most of these studies reveals that their results are not discrepant, but simply do not strongly support the hypothesis (for reviews see 60, 63). When one combines the evidence from experimental studies, cross-sectional field studies, and longitudinal studies with the theoretical bases that have emerged for explaining how children are influenced by what they observe, the conclusion seems clear. Exposure to violence in the media or anywhere else in the environment (48) is a substantial risk factor for serious aggressive behavior in the short and long terms.

### Studies on Television News Violence

Not all violence on television occurs in fictional formats, however. The news is often filled with descriptions of violence and its aftermath. Does this type of violent media content encourage imitative behavior? It is possible, but little research is available. A study by Berkowitz & Macaulay (22) clearly showed a jump in the number of violent crimes, but not property crimes, after several high-profile murder cases in the early and mid-1960s. But the one other well-known study in this

area—Phillips's (88) finding of increases in violent crimes 3 and only 3 days following televised prizefights—has never been widely accepted because of the lack of a plausible theory.

Some of the best evidence of a violence effect for news is found in studies of the so-called Marilyn Monroe effect—that highly publicized suicides are followed by an increase in suicides among the populace over the course of about two weeks (86, 87, 93, 95). Collectively, the studies on this relationship suggest that news coverage of suicide produces a 2.5% increase in actual suicides (96). Interestingly, a two-week duration for the effects of another media process dealing with publicity about violence have also been reported.

### Studies of Violent Video Games

Although the effects of violent television and film have received the most research attention, violence in video games also causes an increase in aggression (4, 6). This finding has strong public health implications for a number of reasons—children are spending an increasingly large amount of time playing video games, most of which contain violence. Video game units are now present in 83% of homes with children (91a), with no socioeconomic differences in video game unit ownership. In 2004, children spent 49 min per day playing video games, and on any given day, 52% of children ages 8–18 years play video games (91a). Video game use peaks during middle childhood with an average of 65 min per day for 8–10-year-olds and declines to 33 min per day for 15–18-year-olds (91a). And most of these games are violent; 94% of games rated (by the video game industry) as appropriate for teens are described as containing violence, and ratings by independent researchers suggest that the real percentage may be even higher (50a). Even among games rated “E” (appropriate for everyone), 64% were found to depict intentional violence (96a). No published study has quantified the violence in games rated “M” for mature—presumably, these are even more likely to be violent. Furthermore, because the children playing these games are active participants rather than observers, they may be at increased risk of becoming aggressive themselves.

**EXPERIMENTS** As with television, numerous randomized experiments have demonstrated that playing violent video games can produce an increase in aggressive behavior in the short term. In a typical study, children or young adults are randomly assigned to play violent or nonviolent video games and then are observed when given an opportunity to be aggressive. Most of these studies have found that the violent game significantly increased aggressive behavior. For example, Irwin & Gross (65) assessed physical aggression (e.g., hitting, shoving, pinching, kicking) between boys who had just played either a violent or a nonviolent video game. Those who had played the violent video game were more physically aggressive toward peers. Other randomized experiments have measured college students' propensity to be physically aggressive after they had played (or not played) a violent

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video game. For example, Bartholow & Anderson (16) found that male and female college students who had played a violent game subsequently delivered more than two and a half times as many high-intensity punishments to a peer as those who played a nonviolent video game. Other studies have found similar effects using a wide array of measures to assess aggressive thoughts and beliefs (5, 7, 30, 70).

Other experiments show that it is the violence in video games, not the excitement that playing them evokes, that produces the increase in aggression. Several randomized experiments have tested the effects of video games specifically selected to differ in violent content but not in arousal or affective properties. When violent and nonviolent games matched in difficulty and enjoyment are employed in the same study, the violent games significantly increase aggressive behavior; the nonviolent games do not (3).

**CROSS-SECTIONAL SURVEYS** As with violent television, this causal evidence has been bolstered by cross-sectional surveys measuring the correlation between aggression and time spent playing violent video games. For example, Anderson & Dill (7) created a composite measure of recent exposure to violent video games and correlated it with college students' self-reported acts of aggressive delinquent behavior in the past year (e.g., hitting or threatening other students, attacking someone with the idea of seriously hurting or killing him or her, participating in gang fights, throwing objects at other people). The overall correlation between exposure to violent video games and violent behavior was significant even after controlling for antisocial personality, gender, and total time spent playing any type of video game. Similarly, Gentile et al. (45) obtained a significant, moderate correlation between time playing violent video games and physical fights among eighth and ninth graders.

**LONGITUDINAL SURVEYS** No published longitudinal surveys have focused specifically on effects of violent video games on aggression. However, two recent longitudinal studies have linked such games to increases in aggression. The first found that, for middle-school children, media-violence exposure, including action movies, video games, and viewing violent Internet sites, at one point in time was positively (and statistically significantly) related to aggressive thoughts, actions, and values at a later point in time even after statistically controlling for earlier aggressiveness and various other aggression-related variables (94). As with most television studies, the longitudinal effect of aggressiveness on later use of violent media was not statistically significant. The second longitudinal study surveyed Japanese fifth and sixth graders at two points in time, four to five months apart, and found that exposure to video games in general was positively (and significantly) related to later levels of violent physical behavior after controlling for earlier violent behavior (64). Although neither of these longitudinal studies allows a clear conclusion about the effects of violent video games on aggression, they are strongly suggestive.

## THEORETICAL EXPLANATIONS FOR MEDIA VIOLENCE EFFECTS

The reviewed empirical data present a compelling picture that exposure to media violence increases risk for aggressive and violent behavior in the observer. To understand the role of this relationship in terms of public health, an understanding of why and how violent media cause aggression is vital. Furthermore, theories that explain this relationship should apply equally well to the effects of observation of violence in the real world—among the family, among peers, and within the community. Substantial empirical research has accumulated to show that observation of real-world violence in any of these venues increases the risk for engaging in violence (47, 48).

First, somewhat different processes seem to cause short-term content effects and long-term content effects, and both of these processes are distinct from the time-displacement effects that engagement in media may have on children. Time-displacement effects refer to the role of the mass media (including video games) in displacing other activities in which the child might otherwise engage, which could change the risk for certain kinds of behavior, e.g., replacing reading, athletics, etc. We focus here on the effects of violent media content, and thus we do not address time-displacement effects, although they may well be important.

### Short-Term Effects

Most theorists would now agree that the short-term effects of exposure to media violence are mostly due to (a) priming processes, (b) excitation processes, and (c) the immediate imitation of specific behaviors (28, 54, 55). Priming is the process through which spreading activation in the brain's neural network from the locus representing an external observed stimulus excites another brain node representing a cognition, emotion, or behavior (18). The external stimulus can be inherently linked to a cognition, e.g., the sight of a gun is inherently linked to the concept of aggression (21), or the external stimulus can be something inherently neutral like a particular ethnic group (e.g., African Americans) that has become linked in the past to certain beliefs or behaviors (e.g., welfare) (97). The primed concepts make behaviors linked to them more likely. When media violence primes aggressive concepts, aggression is more likely.

**AROUSAL** To the extent that mass media presentations arouse the observer, aggressive behavior may also become more likely in the short run for two possible reasons: excitation transfer (25, 102) and general arousal (18, 43). First, a subsequent stimulus that arouses an emotion (e.g., a provocation arousing anger) may be perceived as more severe than it is because some of the emotional response stimulated by the media presentation is misattributed as due to the provocation transfer (25, 102). For example, immediately following an exciting media presentation, such excitation transfer could cause more aggressive responses to provocation.

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Alternatively, the increased general arousal stimulated by the media presentation may simply reach such a peak that inhibition of inappropriate responses is diminished, and dominant learned responses are displayed in social problem solving, e.g., direct instrumental aggression.

**IMITATION** The third short-term process, imitation of specific behaviors, can be viewed as a special case of the more general long-term process of observational learning (11, 55). In recent years, evidence has accumulated that human and primate young have an innate tendency to imitate whomever they observe (29, 77, 91, 100). Observation of specific social behaviors around them increases the likelihood of children behaving exactly that way (10, 14, 15, 101). As children observe violent behavior, they are prone to imitate it.

### Long-Term Effects

Long-term content effects, in contrast, seem to be due to (a) more lasting observational learning of cognitions and behaviors and (b) activation and desensitization of emotional processes. According to social cognitive models (8, 55), observational learning influences behavior not only in the short term after a behavior is observed but also in the long term. The social scripts acquired through observation of family, peers, community, and mass media become more complex, abstracted, and automatic in their invocation (54, 55). During this period, children's social cognitive schemas about the world around them are also elaborated. For example, extensive observation of violence has been shown to bias children's world schemas toward attributing hostility to others' actions (36, 46). Such attributions in turn increase the likelihood of children behaving aggressively (35, 37). As children mature further, normative beliefs about which social behaviors are appropriate become crystallized and begin to act as filters to limit inappropriate social behaviors (58). These normative beliefs are influenced in part by children's observation of the behaviors of those around them including behaviors observed in the mass media (48, 49, 61).

Long-term socialization effects of the mass media are also increased quite likely by the way the mass media and video games affect emotions. Through classical conditioning, fear, anger, or general arousal can become linked with specific stimuli after only a few exposures (31, 32, 53, 90). These emotions influence behavior in social settings away from the media source through stimulus generalization. A child may then react with inappropriate anger or fear in a novel situation similar to one that the child has observed in the media.

At the same time, repeated exposures to emotionally activating media or video games can lead to habituation of certain natural emotional reactions, or "desensitization." Behaviors observed by the child viewer that might seem unusual at first start to seem more normative after the behaviors are viewed many times. Emotions experienced automatically by child viewers in response to a particular scene decline in intensity after many exposures. For example, most humans seem to have an innate negative emotional response to observing blood, gore, and violence. In-

creased heart rates, perspiration, and self-reports of discomfort often accompany such exposure (33, 80). However, with repeated exposure to violence, this negative emotional response habituates, and the child becomes desensitized. The child can then think about and plan proactive aggressive acts without experiencing negative affect. Consequently, proactive aggression becomes more likely. The body of research on observational learning shows that scripts, world schemas, and normative beliefs about behaviors can all be acquired from observations without viewer awareness and with little effortful cognition. Similarly, desensitization of emotional responding does not require effortful cognition. One of the insidious facts about socialization by the mass media is that much of the socialization process happens without children being aware of what is happening.

## MODERATORS OF MEDIA EFFECTS

Obviously, not all observers of violence are affected equally at all times by what they observe. Research has shown that the effects of media violence on children are moderated by situational characteristics of the presentation, including how well it attracts and sustains attention, personal characteristics of the viewer including one's own aggressive predispositions, and characteristics of the physical and human context in which the children are exposed to violence. Of course, these factors all interact with each other. For example, how realistic a violent scene will seem to a child depends on the form and content of the scene, the child's experiences and propensities to accept what one sees, and probably other viewers present when the child observes the scene.

### Media Content Characteristics

Presentations that do not attract a minimum level of attention will have little influence on a child. Although effects can occur through peripheral processing without cognitive resources being devoted to processing the material in a presentation, they cannot occur without a minimum level of viewer attention (12). Consequently, form and content factors that attract children's attention are very important in determining the magnitude of effects that presentations will have. Factors that facilitate attention in young children appear to include rapid movement, bright colors, and loud noises (2, 89), traits often characteristic of violent scenes. Of course, video games inherently combine these form elements with demands on cognitive resources, whereas TV programs and movies vary more on this dimension.

Even if a scene grabs a child's attention, not all violent portrayals pose the same risk to viewers (99). A variety of studies—primarily laboratory investigations involving children and young adults—indicate that how violence or aggression is presented can alter its meaning for the audience and may moderate viewers' behavioral, cognitive, and emotional reactions.

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**PORTRAYED JUSTIFICATION AND CONSEQUENCES OF THE AGGRESSION** According to observational-learning theory, when violence is portrayed as justified, viewers are likely to come to believe that their own aggressive responses to a perceived offense are also appropriate, so they are therefore more apt to behave aggressively. Findings from experiments that varied the extent to which the observed violence was justified have demonstrated that seemingly warranted media violence indeed increases aggression (17, 20, 23, 44). Theoretically, rewarding perpetrators for their aggression should also raise the likelihood that viewers will model the aggressive act, and indeed, media portrayals in which violence is rewarded have increased the risk that viewers will behave aggressively (13–15, 72). Nor is an explicit reward necessary; seeing unpunished media violence may also enhance learning of aggressive thoughts and behaviors (98).

Although explicit portrayal of blood, gore, or other painful consequences might be expected to dissuade viewers from aggression, research has generally suggested that such portrayals may increase aggressiveness on the part of the viewer. Repeated exposure to such negative consequences can lead to desensitization to future scenes of blood and gore and to pain expressed by victims. Such habituation may effectively remove the punishing nature of consequences of media aggression. Empirically, viewers who show less negative emotional reactions to viewing violence are more likely to behave aggressively than those who show more negative reactions (71, 80).

**PERCEPTIONS OF REALISM AND IDENTIFICATION WITH AGGRESSIVE TV CHARACTERS** Observational-learning theory suggests that children who identify fairly strongly with an aggressive character or perceive a violent scene as realistic are especially likely to have aggressive ideas primed by the observed violence, to imitate the character, or to acquire a variety of aggressive scripts and schemas. When people are led to identify with a character by imagining themselves as the protagonist in a violent film, the aggression-inducing effects of viewing the film are enhanced (57, 73). Viewers are more likely to identify with and be influenced by an aggressive character portrayed as similar to themselves (e.g., in age, gender, and race; 11, 12). However, the perpetrator's overall attractiveness, power, and charisma may be more important than any of these personal attributes by themselves. For example, in the early 1970s, African American children imitated the behavior of White male actors more than African American actors (82).

Also, realistic portrayals are more likely to increase viewers' aggression than those presented in a more fictionalized or fantastic fashion (9, 19, 41, 52, 56, 82). In longitudinal research, Huesmann and colleagues (56, 57) found that children who thought that violent shows they watched were telling about life "just like it really is" or who identified with aggressive TV characters had relatively high average scores on a measure of physical and verbal aggression one year later and scored higher on a composite measure of (physical, verbal and indirect, or relational) aggressiveness 15 years later. Those most at risk to behave aggressively

were males who both watched violence and identified with violent characters. For those who already have a well-developed conception of the world around them as nonviolent, material that contrasts too much with their existing conception will have less effect than will material that they can assimilate into their world schemas (74).

### Viewer Characteristics

Many viewer characteristics have been hypothesized as moderators of how people interpret and react to violent media content. For example, developmental theory suggests that younger children, whose social scripts, schemas, and beliefs are less crystallized than those of older children, should be more sensitive to this influence. Observational-learning theory suggests that the viewers' age and gender can influence the extent to which they identify with the depicted aggressive characters, which may in turn influence learning and enactment of the observed aggression. Relatively low intellectual competence might exacerbate the effects of exposure when the story plots are fairly subtle and complicated. A high level of aggressiveness might result in an enhanced susceptibility to media-violence effects by affecting the perception of violence in the observed scenes.

**AGE AND GENDER OF VIEWER** Paik & Comstock (84) reported an inverse relationship between viewers' age and the magnitude of the effect of TV violence on aggression and other antisocial behaviors. In other words, as several developmental psychologists had theorized, the media-violence effect was largest in the youngest age group (younger than 5 years old). However, the moderating influence of age was found to be quite complicated; the effect size did not decrease consistently as age increased. This is likely because different measures of aggression are generally used when studying different aged groups. Aggressive behavior is often used as an outcome measure for children, whereas measures of aggressive thoughts are often used for college students and adults. In one of the two longitudinal investigations that used the same behavioral measure of aggression on the same participants at different ages, the longitudinal effect of media violence on aggressive behavior was significant for children (age 8) but nonexistent for young adults (age 19) (39). To further complicate matters, the recent study by Johnson et al. (68) found a larger longitudinal effect of television viewing on assault and fighting behavior at age 30 than at earlier ages (ages 16 or 22).

Media violence affects both males and females. Although some early studies in the United States and some studies in other countries found stronger relations between media-violence viewing and aggression for boys than for girls (e.g., 39), more recent investigations seem to show mostly similar effects (84). For example, in their recent study of children growing up between 1977 and 1995, Huesmann et al. (57) reported similar effect sizes for males and females older than 15. However, there were some gender differences in the kinds of aggression associated

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with early childhood exposure to media violence. For example, early exposure to violence predicted increased use of indirect aggression (e.g., telling lies to get colleagues in trouble) among adult females but not males; early exposure to media violence had a stronger relation to physical aggression among adult males compared with females. These differences, as well as the shift in effects over time, are probably partly due to the different and changing ways men and women are depicted in the media and partly due to the way society views aggression enacted by women and girls.

**AGGRESSIVENESS OF VIEWER** Individuals who are characteristically more aggressive than their peers are likely to have multiple risk factors predisposing them toward aggressive behavior. Existing research indicates that one of these risk factors may be a lower threshold for a media-violence-induced activation of aggressive behavior. Studies of violent television, film, and video games (e.g., 7, 26, 27, 42, 69) have found that highly aggressive individuals show greater effects (on aggressive behavior, attitudes, emotions, and beliefs) of exposure to media violence than their relatively less aggressive counterparts. Children at the greatest risk to become very aggressive are those who both were initially aggressive and watched relatively high amounts of TV violence (38, 39). This does not mean that the relatively nonaggressive individual is unaffected by violent portrayals. Several studies have also shown significant effects of media violence on later aggression among children with low levels of earlier aggression (e.g., 3, 7, 39).

Bandura's (10) concept of "reciprocal determinism" helps to make sense of some of these findings. Different types of people seek out different types of media content but then are also affected differently by the content. Thus, children with strongly aggressive predispositions may be especially attracted to viewing violent media, perhaps because it helps them justify their own behavior (26, 40, 50, 57, 83), but, as noted, they may also be more likely than other children to be influenced by such exposure. For example, they may perceive the violence as more normative and may identify more with the violent characters. Along these lines, studies focusing on sexually violent media have shown that young men who are at a relatively high risk for sexual aggression are more likely to be attracted to and aroused by sexually violent media (e.g., 75) and may be more likely to be influenced by exposure to such violent media than those men who are at a low risk for sexual aggression (e.g., 76). Finally, experiments and longitudinal studies have shown that aggressive youths' attraction to violent media cannot explain away the effect of the violent media on those youths. Rather, their attraction is an added risk factor that increases the likelihood that they will be affected by the violence they observe.

**INTELLIGENCE OF THE VIEWER** There is no clear theoretical prediction about the role of viewers' intelligence on the effect of media violence. On the one hand, children of lower intellectual ability watch more television and see more television

violence (see 34) than do children of higher intelligence. On the other hand, children of higher intelligence usually learn more rapidly, through either conditioning or observational learning, so one might expect them to be influenced more. The existing empirical research provides little support for either position. There is little evidence that either high or low intelligence exacerbates media-violence effects (see 39, 56, 57).

## Social Environment

**INFLUENCE OF NEIGHBORHOOD AND SOCIOECONOMIC STATUS** The effect of media violence on aggression is essentially the same for low- and high-socioeconomic status (SES) children. Low-SES children on average watch more television and television violence than do high-SES children (34), but the SES link to television viewing does not account for the overall association between viewing media violence and perpetrating aggression among youth (57). However, the generally high dose of media violence given to low-SES children is yet another risk factor for adulthood violence in this population.

**INFLUENCE OF PARENTS** From a theoretical standpoint, parents have the potential to be important moderators of the effects of media violence on children. Children and adolescents form attitudes and beliefs and take action as a result of their exposure to media content, but they may also discuss what they see with others—especially parents and friends—and their responses may be shaped ultimately by these interpersonal interactions. Singer & Singer (93a, 93b) proposed that when parents take an active mediating approach toward television viewing by their children—including commenting regularly and critically about realism, justification, and other factors that could influence learning—children are less likely to be negatively influenced by media content. Recent research has provided support for this view; Nathanson (81) found that children whose parents discuss with them the inappropriateness of television violence or restrict access to violent television shows report lower aggressive tendencies than do children whose parents do not discuss television violence or restrict access to violent television shows. Other findings suggested that either type of parental intervention may decrease the importance children give to violent TV, which in turn may lower children's aggressive attitudes.

## IS MEDIA VIOLENCE A PUBLIC HEALTH THREAT?

This review has presented compelling evidence that short-term exposure to media violence stimulates more aggressive and violent behavior in the young viewer immediately and that long-term exposure leads to the acquisition of social cognitions (scripts, world schemas, attitudes, and beliefs) that increase the risk of aggressive and violent behavior in the observers of media violence beyond childhood.

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The psychological processes through which this happens are well understood by researchers. Many within-person and within-situation factors that exacerbate or mitigate this effect have been identified. However, one valid remaining question would be whether the size of this effect is large enough that one should consider it a public health threat.

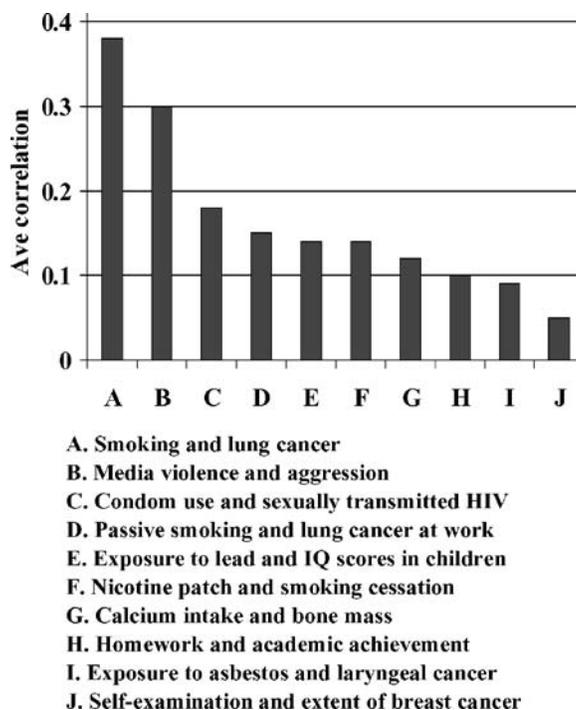
We argue that the answer is yes. We base this argument on two calculations. First, according to the best meta-analyses (4, 84), the long-term size of the effect of exposure to media violence in childhood on later aggressive or violent behavior is about equivalent to a correlation of 0.20 to 0.30. Although some researchers may argue that this explains only 4%–9% of the individual variation in aggressive behavior, as several scholars have pointed out (1, 92), percent variance explained is not a good statistic to use when predicting low probability events with high social costs. After all, effects of such size can have real social significance (92). As Rosenthal (92) has pointed out, a correlation of 0.3 with aggression translates into a change in the odds of aggression from 50/50 to 65/35—not a trivial change when one is dealing with life-threatening behavior. Moreover, the relation is highly replicable even across researchers who disagree about the reasons (e.g., 59, 78) and across countries (56).

Second, one should compare the size of the effects of media violence on public health with that of other recognized threats. We do such a comparison in Figure 1 (28). The average obtained correlation for the relation between exposure to media violence and aggression is compared with the average correlation between smoking and lung cancer, condom use and sexually transmitted HIV, exposure to lead and IQ scores, exposure to asbestos and laryngeal cancer, and many others. As one can see, the average obtained correlation between exposure to media violence and aggression is greater than all the others except the correlation between smoking and lung cancer. If the other correlations displayed are large enough for us to consider those environmental pollutants as threats to public health, we should also consider media violence a threat to public health.

Perhaps one of the best parallels is the relation between smoking and lung cancer. Not everyone who smokes gets lung cancer, and not everyone who gets lung cancer was a smoker. Smoking is not the only factor that causes lung cancer, but it is an important factor. Similarly, not everyone who watches violent television becomes aggressive, and not everyone who is aggressive watches violent television. Watching violent TV programs is not the only factor that causes aggression, but it is an important factor.

## SUMMARY

Media violence poses a threat to public health inasmuch as it leads to an increase in real-world violence and aggression. Research clearly shows that fictional television and film violence contribute to an increase in aggression and violence,



**Figure 1** The relative strength of known public health threats.

both in the short term and across the lifespan. Television news violence also contributes to increased violence, principally in the form of imitative suicides and acts of aggression. Video games are clearly capable of producing an increase in aggression and violence in the short term, although no long-term longitudinal studies capable of demonstrating long-term effects have been conducted. The relationship between media violence and real-world violence and aggression is moderated by the nature of the media content and characteristics of and social influences on the individual exposed to that content. Still, the average overall size of the effect is large enough to place it in the category of known threats to public health.

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