Report of the Media Violence Commission

Media Violence Commission, *International Society for Research on Aggression* (ISRA)

Editor's Note: In December, 2011, the International Society for Research on Aggression appointed a special commission to prepare a report on media violence. Their charge was as follows:

"The ISRA Violent Media Effects Commission is charged with the task of producing a public statement on the known effects of exposure to media violence, based on the current state of scientific knowledge. If the Commission finds sufficient evidence of harmful effects, then the Commission's public statement may include public policy recommendations, keeping in mind that effective policies may well differ across countries because of their different legal and cultural traditions and systems. The statement could be an original statement by the Commission, or could be an endorsement or modification of one or more similar statements offered in recent years by other major scientific bodies and/or groups of scientists who have appropriate expertise in the media violence domain. The statement (if sufficiently brief) or an Executive Summary statement (of a longer, more detailed statement) will be published in ISRA's journal *Aggressive Behavior* and will appear on the ISRA web site. It may also be published in the ISRA *Bulletin.*"

What follows is the final report of the Media Violence Commission, delivered in May, 2012.

This statement was written by a group of internationally recognized active researchers in the field of media violence to summarize current knowledge about the strength of the link between violent media use and aggression, explain the psychological processes by which violent media may increase the risk of aggressive behavior, and offer practical advice on how parents and policy makers can deal with the issue.

VIOLENT MEDIA AND AGGRESSION: WHAT IS THE ISSUE?

The media landscape is ever changing, with new technologies resulting in greater interactivity on smaller, graphically superior, and computationally more powerful devices. These new technologies are tremendous resources for learning and knowledge acquisition at a rate unparalleled in the past. Unlike traditional media (such as broadcast TV), these new technologies, in combination with an Internet connection, give children and adolescents new ways of playing games as well as access to more diverse forms of visually stimulating content than ever before (Donnerstein, 2011). Access to such content has many benefits, but it also carries risks. Youth can now download, view, play, and listen to violent material any time of day or night, often from the privacy of their own rooms, and with little supervision from their parents. With new technologies, the opportunities for viewing violent content, which was once relegated to more public spaces (such as the neighborhood, the movie theater, or the living room), have become increasingly private.

For other media contents unrelated to violence, it is widely accepted that what people see in the virtual reality of the media has an effect on their behavior in the real world. For example, the multibillion dollar advertising industry flourishes on the assumption that showing people media advertisements will make them more likely to buy the advertised product. Airlines train prospective pilots on flight simulators to teach them virtual flying skills before allowing them to fly a real plane. Limiting sexually explicit material from being shown at times when children might be watching reflects the belief that such media contents adversely affect young people's development. These examples show that media contents of different sorts are accepted to have an impact on how people feel, think, and act in real life. However, there seems to be more reluctance to accept the conclusion that depictions of violence in the media have a similar capacity to influence people's behavior in the real world, in particular their readiness to engage in aggressive behavior.

Of course, watching a violent movie does not normally lead people to assault another person when they leave the cinema. Nor is it true that avid players of highly violent video games often end up as violent criminals. No respectable researchers in this area would make such claims.

Rather, the issue is whether watching violent movies and shows or interactively engaging in violent games in a virtual world increases the odds that people may engage in aggressive behavior in a variety of forms, both in the short term and in the long term.

MEDIA VIOLENCE AS A RISK FACTOR FOR AGGRESSION?

No single risk factor causes a child or adolescent to act aggressively. Instead, it is the accumulation of risk factors that leads to an aggressive act (Berkowitz, 1993; Eron, Huesmann, Lefkowitz, & Walder, 1974). Although no individual risk factor may be necessary or sufficient to cause aggressive behavior on its own, each factor increases the likelihood of aggression, especially in response to some provocation. This model is known as the risk and resiliency model. After taking into consideration numerous characteristics of the child and the environment, including risk and protective factors, research clearly shows that media violence consumption increases the relative risk of aggression, defined as intentional harm to another person that could be verbal, relational, or physical.

WHAT IS THE EVIDENCE?

Over the past 50 years, a large number of studies conducted around the world have shown that watching violent television, watching violent films, or playing violent video games increases the likelihood for aggressive behavior (Anderson et al., 2003; Bushman & Huesmann, 2006; Huesmann, 2007; Huesmann & Kirwil, 2007). This is true across studies using different methods, coming from different countries, and covering different time periods.

Many experimental studies, with people assigned randomly to be exposed to violent or nonviolent media, have demonstrated that violent media cause an increased probability of aggression in the short term (Anderson et al., 2004; Anderson & Dill, 2000; Bandura, Ross, & Ross, 1961; Bartholow, Sestir, & Davis, 2005; Bjorkqvist, 1985; Josephson, 1987; Leyens, Camino, Parke, & Berkowitz, 1975). Many cross-sectional surveys have shown that people who are regularly exposed to more violent media have an increased probability of behaving more aggressively in real life. A smaller set of longitudinal studies has shown that children who grow up constantly exposed to violent media have a greater risk of behaving aggressively in real life as adolescents and adults (Anderson et al., 2008; Eron et al., 1972; Huesmann, Moise-Titus, Podolski, & Eron, 2003; Milavsky, 1982; Slater, Henry, Swaim, & Anderson, 2003). Of course, as in all behavioral or medical research, some studies show effects and some studies do not. To determine how robust effects are, it is best when results from all types of studies are aggregated by meta-analyses: Meta-analysis is a mathematical method for combining multiple scientific studies on a topic together, including those that demonstrate an effect and those that do not, to test whether the effect really exists when all studies are considered.

More than 15 meta-analyses have been published examining the links between media violence and aggression. There are two fascinating aspects of these meta-analyses. First, although they vary greatly in terms of how many studies they include and what media they focus on, they find very similar results (Anderson et al., 2010; Bushman & Huesmann, 2006; Comstock & Scharrer, 2003; Ferguson, 2007; Paik & Comstock, 1994). Second, although they find almost identical effect sizes (as illustrated by the three recent analyses in Table I), some of these researchers interpret the effect as unimportant whereas others interpret them as highly important. The empirically defined effect sizes are in the small to moderate range, and it is normal for scientists to differ in their interpretations of the importance of a given effect size. These differences in interpretation do not, however, diminish the fact that all the meta-analyses show that greater media violence viewing statistically predicts greater aggression by the viewer.

The results of all of these meta-analyses show that exposure to media violence can increase not only aggressive behavior in a variety of forms, but also aggressive thoughts, aggressive feelings, physiological arousal, and decrease prosocial behavior. The effects of media violence can be different for different people, and can be very subtle, especially when examined over the course of a person's lifetime. Media violence effects have been found in all types of media examined (TV, movies, video games, music, cartoons, etc.) (Anderson et al., 2003; Kirsh, 2012). The effects are remarkably consistent regardless of the type of medium, age, gender, or where the person lives in the world. It is for this reason that scientific bodies such as the American Medical Association,

TABLE I. Effects of Media Violence on Aggression and Prosocial Behavior as Documented by Meta-analyses

	Bushman and Huesmann (2006) TV, movies, video games, music, and comic books	Ferguson (2007) Video games (Experimental studies)	Anderson et al. (2010) Video games (Experimental, cross-sectional, and longitudinal studies)
Number of independent samples	431	14	381
Number of participants	68,463	1,189	130,296
Aggressive thoughts	.18	.25	.16
Physiological arousal	.26	.27	.14
Aggressive feelings	.27	–	.14
Aggressive behavior	.19	.29	.19
Prosocial behavior	−.08	−.30	−.10

the American Academy of Pediatrics, the American Psychiatric Association, and the American Psychological Association (among others) have all concluded that "the data point overwhelmingly to a causal connection between media violence and aggressive behavior" (American Academy of Pediatrics, 2000). A large body of research accumulated since then corroborates this conclusion.

It is important to note, however, that these conclusions are about *aggressive* behavior, not *criminally violent* behavior (Coyne et al., 2008). Very few studies have looked at the effects on serious criminally violent behavior, and the existing evidence (and theory) suggests that the effect on criminally violent behavior, while significant for males (Huesmann, 1986; Huesmann et al., 2003), is smaller than the effect on general aggression (Savage & Yancey, 2008).

WHY DO PEOPLE FIND IT SO HARD TO BELIEVE MEDIA VIOLENCE MAY BE HARMFUL?

Though an extensive theory-based body of literature—including many replications and a number of studies using "best practices" methodologies—suggests that media violence consumption increases aggression, there is a persistent tendency, even among some educated people, to deny media violence effects (Anderson, Gentile, & Dill, 2012).

One reason people sometimes disbelieve media violence effects is that they mistakenly think that media violence effects must be immediate and severe (e.g., playing a violent video game and then immediately shooting someone) or else they are nonexistent. In truth, media violence effects usually take less dramatic and instantaneous forms (e.g., a child being more defiant and disrespectful with increased media violence exposure (Dill, 2009); or an adult being less helpful to others (Bushman & Anderson, 2009)). Furthermore, if one has a vested interest in violent media (e.g., one creates or uses violent media), cognitive dissonance and the need to maintain a positive self-image motivates the denial of media violence effects (Bushman & Huesmann, 2012).

HOW DOES MEDIA VIOLENCE WORK?

Short-Term Effects

When children (and adults) experience something new, such as a novel color or object or feeling, a cluster of cells in the brain is allocated to recognize that thing again and differentiate it from other things we know. These "nodes" are activated whenever we experience that thing another time. Importantly, when two things are experienced together, they start to become "wired" together (such as a rose and its distinctive smell). Things that we experience together frequently become more and more strongly linked in our neural network of known concepts, feelings, and memories. Eventually, activating one node partially activates the other, a process called *spreading activation*. Consequently, even in very young children, a lot of different indicators of aggression and violence have neural paths linking them (guns and fighting, verbal insults and hitting, etc).

As a result, any time a person is exposed to a violent scene, the resulting activation of nodes spreads out to linked nodes and activates them, at least a little. This neural process is called *priming*. (Huesmann, 2007; Huesmann & Kirwil, 2007; Jo & Berkowitz, 1994). When nodes associated with a behavioral tendency are primed, it makes it more likely (but not certain) that the behavior will occur. This behavior is more likely to occur if other stimuli simultaneously prime the node (Jo & Berkowitz, 1994). For example, studies show that, if a person is insulted by another person, the mere sight of a gun can push that insulted person over the threshold to retaliate aggressively against the provoker (Berkowitz & LePage, 1967). The priming effect of the gun, combined

with the activating effect of the insult on the node for that particular aggressive behavior, pushes its activation over the threshold, thus resulting in aggression. Similarly, exposure to media violence primes all sorts of nodes associated with aggression. If other priming events or provocations occur at about the same time, aggression can ensue.

The other important neural process that causes a person's observation of violence to be followed in the short run by an increased risk of aggressive behavior is *mimicry* (Huesmann, 2007; Huesmann & Kirwil, 2007). Humans, like a number of other primates, are wired in to mimic others' behaviors. Humans have specialized neurons, called mirror neurons, that probably promote such mimicry. A particular mirror neuron fires whenever a particular behavior, for example, hitting, is performed or observed. Although there is much still to be learned about the neurophysiology of the mimicry process in humans, it is clear that people, and particularly young children, tend to mimic whatever they see others doing. We are fortunate to have this mimicry mechanism, as it promotes the rapid acquisition of all sorts of important skills. However, when what is observed is aggressive behavior, it also promotes aggressive behavior by the observer.

Longer Term Effects

Often in life, a complex array of sensations, feelings, and concepts are activated together in certain circumstances, and these become linked together in a complex knowledge structure in our brain called a schema or *script* (e.g., knowledge about what a supermarket is, where the groceries are likely to be, relevant memories and feelings, and a script for how to behave). These knowledge structures, once activated, are key determinants of behavior, and may influence what we do outside of our conscious awareness (Huesmann, 2007; Huesmann & Kirwil, 2007).

Many schemas, scripts, and feelings are undoubtedly consequences of human evolution (e.g., fear of being alone, scripts linking anger to aggression). However, crucially, our neural networks and the knowledge structures within them are modified and shaped through learning from our experiences with the world around us as we grow up. Parents and peers are important elements in this world, but for today's child, the mass electronic media is another influence that many children experience a lot. Just as with parents or peers, being with media is enough to guarantee the learning of scripts, schemas, and beliefs from it. Importantly, the content of the media determines what is learned. When that media is educational or carries messages about caring and helpful behavior, the child's developing neural network will reflect that input. However, if the content is violent, the developing neural network will also reflect that input. With media, the content is crucial.

Learning. Ultimately, the effects of violent content are learning effects in the brain. The human brain, like a few other primate brains, is uniquely wired to imitate what humans see being done. Imitation occurs in infants, in toddlers, in children, and in adults, but young children are particularly susceptible to imitate what they see. It is not an exaggeration to say, "Children see, and children do." Furthermore, imitation in humans (more generally called observational learning) goes far beyond simple mimicry. Children make inferences about what they see being done and develop normative beliefs about the appropriateness of specific behaviors. If they see someone solving a social problem by behaving aggressively, they store away in their memory a script for behaving that way and a belief that it is acceptable to behave that way. Much later they are more likely to behave the same way if they decide to use the script (Huesmann, 2007; Huesmann & Kirwil, 2007).

Aside from being sources for imitation, violent images such as scenes in movies or games or pictures in a comic book act as triggers for activating aggressive thoughts and feelings already stored in memory. If these aggressive thoughts and feelings are activated over and over again by repeated exposure to media violence, they become chronically accessible, and thus more likely to influence behavior. One may also become more vigilant for hostility and aggression in the world, and therefore begin to feel that some ambiguous actions by others (such as being bumped in a crowded room) are deliberate acts of provocation.

Media characters are attractive role models, especially if their violent actions on the screen are presented as justified and socially acceptable. If the violent content is rewarded and seen as "fun," then aggression concepts will be classically conditioned with positive feelings. These will likely result in changes to attitudes and beliefs about aggression, such as seeing aggression as a more acceptable response to provocations. Changes to thoughts and feelings can result in changes in behavior, but not necessarily in a mechanistic way—more by changing the odds that a provocation will be met with an aggressive response.

Video games in particular are excellent teachers. They use many of the same techniques that the best teachers use, which is why educational video games are so effective. Games teach whatever the content is, so math games

can teach positive attitudes about math, if the game is fun, as well as specific math skills. In the same way, violent games can teach aggressive attitudes. Importantly, if teachers wish to teach for transfer to the real world, they teach the same underlying skill in multiple ways. Similarly, when gamers play many different types of violent games (controlling for overall amount of violent gaming), aggressive attitudes and behaviors appear to transfer more easily to the real world (Gentile & Gentile, 2008). With violent video games, there is still another subtle process. After you first try something, one of the best ways to learn to do it well is to repeat it, and if you repeat violent actions in a game over and over, it will result in more and more changes to the brain that make behaving that way more likely.

Desensitization to violence.   Another reason why playing violent video games or watching violent films and TV increases the risk for the viewer behaving more aggressively is because the viewer or player becomes emotionally "desensitized" to the violence. Media researchers have known for a long time that desensitization to violence is an outcome of exposure to media violence. Desensitization can be broadly defined as the reduction or elimination of cognitive, emotional, physiological, and ultimately behavioral responses to a stimulus. Desensitization is a common and protective experience in everyday life. As humans, we are simply not capable of prolonged arousal to any specific event, whether happy (like a child's success) or disturbing (like a school shooting).

Desensitization to violence disrupts the process of moral evaluation because the desensitized individual will not perceive or respond to the cues that typically would initiate evaluative processes (Funk 2005; Huesmann, 2007; Huesmann & Kirwil, 2007). Therefore, negative actions may occur without consideration of their moral implications, or a needed prosocial action may not be initiated (Bushman & Anderson, 2009). Emerging research identifies a link between exposure to media violence and desensitization, as measured in psychophysiological and behavioral research, over both the short and the long term (Bailey, West, & Anderson, 2011; Krahé et al., 2011; Strenziok et al., 2011).

WHAT ACTION SHOULD BE TAKEN?

Parental Monitoring

It is getting harder and harder for parents to monitor their children's media use, primarily because of increasing access to portable media devices. However, studies have shown that parents can go a long way toward monitoring their children's access to violent media, and importantly, toward teaching their children to be critical viewers of the media, both of which may lessen the impact of media violence effects (Nathanson, 2003).

We recommend that parents know what media their children and adolescents are using. Rating systems often provide too little detail about media content to be helpful, and in any case are no substitute for parents' watching, playing, or listening to the media their children use. Parents can also set limits on screen use (The American Academy of Pediatrics recommends no screen time for children under 2 and no more than 1–2 hr total screen time per day for children/youth 3–18), and that parents discuss media content with their children to promote critical thinking when viewing. Schools may help parents by teaching students from an early age to be critical consumers of the media and that, just like food, the "you are what you eat" principle applies to healthy media consumption (Warburton, 2012).

Public Policy Implications

Most public policy has focused on restricting children's access to violent media, an approach that has significant political and legal challenges in many countries. It would be more fruitful to put efforts into improving media ratings, classifications, and public education about the effects of media on children. Several studies have demonstrated that the current age-based ratings favored by most countries have serious validity problems (Gentile, Maier, Hassonde, & Bonnetti, 2011). In addition, they may act as magnets to attract children to violent media (Nije Bijvank, Konijn, Bushman, & Roelofsma, 2009). Therefore, ratings could be greatly improved, and if linked to increased public education about why it is important to use ratings, this could be greatly beneficial.

CONCLUDING COMMENTS

One conclusion appears clear-extreme conclusions are to be avoided. Not every viewer or player will be affected noticeably, but from understanding the psychological processes involved, we know that every viewer or player is

affected in some way. Some commentators have argued that violent media, especially violent video games, are the primary cause of school shootings. Other commentators have argued that there is no good evidence of any harmful effects of violent media, usually based on the results of one or two studies. Neither extreme is supported by the vast body of research in this domain. What is clear is that exposure to media violence is one risk factor for increased aggression in both the short run and the long run.

FURTHER READING

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Appendix I

Members of the Special Commission on Media Violence Effects

Prof. Barbara Krahé (University of Potsdam, Germany, Chair)
Prof. Leonard Berkowitz (University of Wisconsin, USA)
Prof. Jeanne H. Brockmyer (University of Toledo, USA)
Prof. Brad J. Bushman (Ohio State University, Columbus, USA)
Dr. Sarah M. Coyne (Brigham Young University, USA)
Prof. Karen E. Dill (Fielding Graduate University, USA)
Prof. Edward Donnerstein (University of Arizona, Tucson, USA)
Prof. Douglas A. Gentile (Iowa State University, Ames, USA)
Prof. L. Rowell Huesmann (University of Michigan, Ann Arbor, USA)
Prof. Steven J. Kirsh (State University of New York, Geneseo, USA)
Dr. Ingrid Möller (University of Potsdam, Germany)
Dr. Wayne Warburton (Macquarie University, Sydney, Australia)