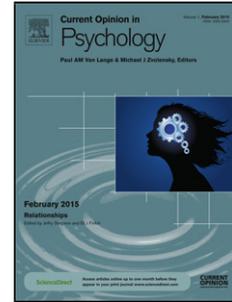


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The Effects of Violent Media Content on Aggression

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Highlights

- Converging evidence demonstrates the existence of media violence effects
- Recent studies investigate the mechanisms underlying media violence effects
- Recent findings shed light on the complexities of media violence effects
- Diverging results illustrate the need for more fine-grained investigations

Abstract

Decades of research have shown that violent media exposure is one risk factor for aggression. This review presents findings from recent cross-sectional, experimental, and longitudinal studies, demonstrating the triangulation of evidence within the field. Importantly, this review also illustrates how media violence research has started to move away from merely establishing the existence of media effects and instead has begun to investigate the mechanisms underlying these effects and their limitations. Such studies range from investigations into cross-cultural differences to neurophysiological effects, and the interplay between media, individual, and contextual factors. Although violent media effects have been well-established for some time, they are not monolithic, and recent findings continue to shed light on the nuances and complexities of such effects.

The Effects of Violent Media Content on Aggression

Digital media are a ubiquitous part of modern life. It is therefore worth asking whether the continuous exposure to media affects people, especially whether there is a potential for it to have harmful effects. Since at least the 1950s, researchers have hypothesized that this may be the case when it comes to violent media, in that early studies have tied this type of media exposure to heightened aggression [1–3]. Since then, hundreds of studies, including several prominent meta-analyses [4–6*], have supported the hypothesis that violent media consumption increases the risk of aggressive thoughts, feelings, appraisals, and behavior. This consistency has led several prominent public health organizations (e.g., the American Medical Association, the American Academy of Pediatrics, two U.S. Surgeons General, the American Psychological Association) to conclude that media violence is one causal risk factor for aggression. Despite this overall consistency and the general scientific consensus, it is important to not assume that we know everything or that there is no reason for skepticism [7,8]. The scientific view should always be open to new information.

In this review, we present recent findings from the psychological literature on media effects. We survey evidence from cross-sectional studies, experiments, longitudinal studies, and meta-analyses, illustrating how they continue to converge on the conclusion that violent media is one of many risk factors for aggression. Perhaps more importantly, we also illustrate that, despite violent media effects being well-established, there is still much to be learned when it comes to refining our understanding of these effects, their mechanisms, and the factors that may influence them.

Cross-Sectional Studies

The most straightforward of research designs, cross-sectional media violence studies usually involve surveys that assess, at minimum, violent media consumption and aggression. Classic examples of such studies can be found in the 1972 U. S. Surgeon General's report on the impact of televised violence [3,9]. Surveys within this report revealed that those who viewed more violent television shows were also more likely to be aggressive, even after controlling for a variety of demographic variables. Decades later, researchers find the same relationship between violent media content and aggression, regardless of the specific type of medium. Illustrating this point, a

recent survey of more than 5,000 American children and their parents found that even after controlling for mental health and exposure to real-world violence, violent television, video game, and music consumption were all still associated with children's aggressive behavior [10]. Such studies illustrate both the robustness of the effect over time and across media formats.

Other studies demonstrate that media violence effects are not limited to a single culture; similar effects have been shown across a variety of cultures (e.g., Belgian [11], Mexican American [12], and South Korean [13] samples). Even in regions experiencing considerable turmoil, the effects of violent media can be found: A survey of elementary school children in Beirut, Lebanon, found that violent media consumption was associated with pro-violence attitudes above and beyond the impact of real-world violence exposure [14**].

Recent studies have begun to investigate the cognitive and neurophysiological factors that might underlie these effects. Such studies look at the differences between players of violent games and non-gamers, or players of non-violent games. In one such study, for example, violent gamers not only showed higher levels of trait aggression than non-gamers, but they were also faster and more accurate in responding to fearful expressions while being less accurate in recognizing disgusted faces [15]. In another study, habitual players of violent games showed less fMRI activity in emotion centers of the brain when playing a violent game than did habitual players of non-violent games [16]. Studies such as these illustrate how recent research is moving beyond the question of *whether* violent content effects exist to focus instead on the mechanisms explaining *how* these effects operate.

Experimental Studies

Unlike cross-sectional studies, which can only show associations among variables, experimental studies allow researchers to rigorously test hypotheses about causal mechanisms. Together with cross-sectional studies, experimental studies provide strong converging evidence that violent content is a risk factor for aggression. The earliest experiments found that children who watched a violent film were more aggressive than those who did not [1] and became more desensitized to the display of real-life aggression [17], regardless of whether the filmed violence was fantasy or real [18].

Recent experimental studies have found similar effects, both when evaluating aggression in interactive setups and when assessing desensitization in a physiological manner. In one such study, participants randomly assigned to play a violent shooter game showed decreased pupillary dilation – a measure of involuntary emotional responsiveness – in response to negative images relative to participants randomly assigned to play an exciting, but non-violent racing game [19]. In addition, participants who played the violent game subsequently also behaved more aggressively during a competitive task than participants who had played the exciting racing game. Other researchers found that children who played a violent video game had more aggressive thoughts and experienced higher cortisol levels compared to those who played an equally exciting, but non-violent video game [20]. For boys, playing the violent game also led to increased cardiovascular arousal. Taken together, studies such as these provide converging evidence with earlier research that violent media have physiological, cognitive, and behavioral effects on consumers.

Experimental studies have also begun to move beyond the question of whether violent content effects exist to focus on questions regarding the mechanisms underlying such effects and the factors that amplify them. For example, one Singaporean study found that differences in player traits and game input devices may affect the relation between violent gameplay and post-game aggression [21]. The researchers in this study found that a naturalistic input device capturing player body movements led to greater aggressive thought activation than a traditional controller. This was true, however, only for players high in trait hostility. Another experiment found that the interplay of player-level traits (e.g., gaming experience, competitiveness), game-level variables (e.g., input device), and gameplay experience variables (e.g., immersion, enjoyment) can influence the extent to which violent content affects post-game aggression [22*]. In another study, the stimulation of a brain region involved in self-regulation (the right ventrolateral prefrontal cortex) reduced the effects of violent game play on unprovoked aggression [23]. Other research has suggested that the social context in which a game is played (i.e., solo, cooperative, competitive) can affect, and even eliminate, violent content effects [24**]. In this study, playing violent video games cooperatively with others led to levels of aggression comparable to a no-play control condition and to less aggressive behavior than either competitive play with others or solo play. These studies illustrate that, as a risk factor for aggression, violent media content is nuanced and complex.

Longitudinal Studies

Longitudinal studies are uniquely suited to testing whether exposure to violent media content can have long-term effects on consumers. Findings from such studies largely converge with those of cross-sectional and experimental studies in showing that violent media are a risk factor for aggression months, years, and even decades later [2,25,26]. Recently, researchers have found that even in early childhood, media violence exposure can have long-term effects, manifested as aggressive behavior and emotional reactivity one year later [27*]. Such studies, paired with cross-sectional and experimental research, provide a methodological triangulation that can help researchers answer the question of whether causal, short- and long-term, violent content effects exist.

Recent longitudinal studies have also begun to pursue deeper questions about media violence effects. One study investigated whether the way researchers assess violent content in media would influence the results of such studies [28]. Comparing user ratings, expert ratings, and agency ratings in a sample of nearly 6,000 children from three countries, results showed that it made little difference how violent content was assessed. Across samples, and controlling for non-violent gameplay, violent video game use at the beginning of the study was associated with higher levels of self- and teacher-reported aggression and with endorsing more positive beliefs about aggression at the end of the study. One study of 3000 children across 2 years found that violent game play predicted changes in three types of aggressive thinking, which preceded changes in aggressive behavior [29*]. Other studies have assessed the effects of specific aggressive content: In one study, researchers found that exposure to relationally aggressive media was associated with subsequent relational aggression, but not physical aggression [30]. In fact, researchers have begun to look beyond aggression altogether, considering other possible interpersonal outcomes of violent media exposure. In a study of nearly 600 German adolescents, researchers found that exposure to violent video games at the start of the study led to reduced interpersonal trust at the end of the study [31]. Studies such as these advance our understanding of violent content effects by addressing methodological questions and by opening our eyes to a broader range of possible outcomes associated with violent media exposure.

Meta-Analyses

Meta-analyses are particularly useful for answering questions regarding the overall existence of violent media effects in that they combine data from multiple studies, testing the pooled data for the presence and magnitude of such effects. Over the years, meta-analyses have shown that exposure to violent media content is associated with higher levels of aggression, typically yielding small to moderate effect sizes [4–6*]. Mirroring the trend among individual studies, recent meta-analyses have moved away from simply asking whether violent media effects exist and have instead focused on more specific questions. One such analysis of 37 studies looked at the impact of violent media on hostile appraisals [32], finding small to moderate relations between violent media exposure and hostile appraisals; a link that tended to be more prominent among older participants. Interested in how media affects specifically younger people, another recent meta-analysis investigated the link between violent media exposure and aggression in children and adolescents [33]. Results revealed a small, bivariate association between the use of violent video games and increased aggression in this age group. Again, such findings point towards possible mechanisms and restraining factors associated with violent media effects. Overall, meta-analytical results confirm statistically significant associations between violent media exposure and aggressive behavior and cognitions.

Alternative Explanations

To be sure, not every media violence study and scholar arrive at the same conclusions. Some have suggested alternative explanations; others dispute the existence of media effects altogether. Speaking to the former, for example, one longitudinal study of German adolescent gamers found evidence suggesting that instead of violent gameplay leading to subsequent aggressive behavior, the reverse was true: Those who were already more aggressive subsequently exposed themselves to more violent media [34]. Speaking to the latter point, a meta-analysis found that the link between violent media exposure and aggression in youth was much weaker, albeit statistically significant, when controlled for factors such as gender, personality traits, and family-related variables [33]. However, methodological issues regarding this specific meta-analysis have been noted [7]. Another study, involving Dutch teenagers, found a cross-sectional relationship between violent video games and aggression, but no longitudinal effect of violent

game use on aggression one year later [35]. Rather than dismissing these results or, alternatively, concluding from them that other media violence studies must be incorrect, researchers would do well to instead work to reconcile such findings with what the preponderance of evidence finds, working to understand whether such studies constitute important limitations or boundary conditions of violent content effects.

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Summary

Decades of media violence research have shown that violent media content is one risk factor for aggression. Thus, researchers can be fairly confident in the converging evidence provided by cross-sectional, experimental, and longitudinal studies and the meta-analytical reviews based on them, which show violent content effects to be modest, but present.

More importantly, however, this review illustrates that researchers are expanding the focus of this topic. New questions are arising concerning the impact of factors ranging from cross-cultural and individual differences to the media experience and content itself. Indeed, researchers have found analogous media effects regarding the link between prosocial content and increased prosocial thoughts, feelings, and behavior [6*,36,37**], providing converging evidence for a content-outcome link. Researchers are continuously delving deeper into questions about the psychological and physiological mechanisms underlying these effects, as demonstrated by neurophysiological studies and studies of the subtle cognitive changes that violent media may have on consumers. Given the recent developments within the literature, it seems clear that the future of media violence research lies in the continued disentanglement of media violence effects through more fine-grained examinations of these effects, their mechanisms, boundary conditions, and the interplay between person, game, and contextual factors. It is important to neither dismiss

the effects as unimportant nor to panic as if they were monolithic. Media violence constitutes one risk factor among many, although, unlike other risk factors (e.g., bullying, poverty, genetics), it is one that can be easily influenced. For this reason, it is important for researchers to continue studying media violence effects and to provide the scientific evidence to the public.

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- A meta-analysis of 98 separate studies, testing whether there is a relation between violent and prosocial video game play and aggressive and prosocial behavior. The results showed a modest positive relation between violent game play and aggression-related outcomes and a modest negative relation between violent game play and prosocial outcomes. The opposite was true for prosocial video game play. This is the first meta-analysis of prosocial video game effects. The results provide strong evidence for a content-outcome link when it comes to video game effects.
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This cross-sectional study of 207 school children in Beirut found that exposure to violent TV, video game, and internet content was positively associated with pro-violence attitudes. This relationship persisted for the case of violent television and marginally so for violent video games after controlling for exposure to traumatic violence, indirect violence, and physical/verbal abuse. This study not only provides evidence of violent media effects in a non-Western culture but also shows that media violence may uniquely predict aggressive cognition above and beyond exposure to real-world aggression in an area affected by considerable violence and turmoil.

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In a study of 488 undergraduate students, participants were randomly assigned to play a first-person shooter game with a traditional controller or with a gun controller. They completed numerous measures of individual differences (e.g., prior experience with first person shooter games, competitiveness), gameplay phenomenology (e.g., perceived realism, immersion, enjoyment), and affective responses (e.g., frustration, state aggression). The results of a path analysis suggest that factors like controller type and prior game experience impact experienced realism and immersion which, in turn, contribute to game enjoyment and, ultimately, state aggression. The study is one of the first to assess and model the complex relationships between numerous player-level and game-level mechanisms in a single study.

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Two experiments show that cooperative game play decreases violent video game effects on subsequent aggressive behavior to such an extent that cooperative gamers' level of aggression is not different from the level of aggression observed in people who did not play a violent game. These experiments are among a small, but growing number of studies suggesting that cooperative play can offset or reduce various violent content effects.

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In this study, 194 infants were followed from 6 months of age to 18 months of age and assessed with regard to their television exposure, and a range of behavioral and emotional problems. Controlling for age, gender, SES, and temperament, increased television exposure over time and exposure to adult TV content at six months was associated with a range of concerns, such as pervasive developmental problems, oppositional defiant problems, and aggressive behavior. The study is one of very few longitudinal studies looking at the effects of age-inappropriate media content on infant behavior.

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Employing latent growth modeling, this study found that long-term effects of violent game play on aggressive behavior are mediated primarily by changes in aggressive cognitions (normative beliefs about aggression, hostile attribution bias, aggressive fantasizing). This was true regardless of gender, age, prior level of aggressiveness, and parental monitoring.

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Explored the associations between the use of prosocial media and helping, investigating the effects of theoretically relevant mediators and moderators. Study 1, a cross-sectional study of an international sample, containing participants from seven countries, found that prosocial media use was positively related to helping. In study 2, 2-year longitudinal data was collected from over 2000 Singaporean children and adolescents. Latent growth modeling showed that both violent and prosocial video game use influenced prosocial behavior, which was partially mediated by changes in empathy.