Psychological Bulletin
2010, Vol. 136, No. 2, 179–181

0033-2909/10/$12.00 DOI: 10.1037/a0018567

Nailing the Coffin Shut on Doubts That Violent Video Games Stimulate Aggression: Comment on Anderson et al. (2010)

L. Rowell Huesmann
University of Michigan

Over the past half century the mass media, including video games, have become important socializers of children. Observational learning theory has evolved into social–cognitive information processing models that explain that what a child observes in any venue has both short-term and long-term influences on the child's behaviors and cognitions. C. A. Anderson et al.'s (2010) extensive meta-analysis of the effects of violent video games confirms what these theories predict and what prior research about other violent mass media has found: that violent video games stimulate aggression in the players in the short run and increase the risk for aggressive behaviors by the players later in life. The effects occur for males and females and for children growing up in Eastern or Western cultures. The effects are strongest for the best studies. Contrary to some critics' assertions, the meta-analysis of C. A. Anderson et al. is methodologically sound and comprehensive. Yet the results of meta-analyses are unlikely to change the critics' views or the public's perception that the issue is undecided because some studies have yielded null effects, because many people are concerned that the implications of the research threaten freedom of expression, and because many people have their identities or self-interests closely tied to violent video games.

Keywords: violence, video games, aggression, media, meta-analysis

The emergence of the mass visual media as a fundamental element of most children's socialization experiences has been one of the most dramatic changes in child rearing that has occurred in the past 100 years. Children no longer "see" only those in their own family, neighborhood, community, and culture. They are exposed at a very young age to the looks, behaviors, and beliefs of a wide variety of others behaving in a wide variety of manners. Inevitably, these mass media exposures contribute to a child's socialization (Dubow, Huesmann, & Greenwood, 2006), just as exposures to family, peers, and community contribute.

A primary process in such socialization is observational learning (Bandura, 1973), taken in its broadest sense. Children and adolescents mimic what they see in the short run (Meltzoff & Moore, 1977) and acquire complicated scripts for behaviors, beliefs about the world, and moral precepts about how to behave in the long run from what they observe (Huesmann, 1988, 1997; Huesmann & Kirwil, 2007). It requires a tortuous logic to believe that children and adolescents are affected by what they observe in their living room, through the front window of their house, in their classroom, in their neighborhood, and among their peers but are not affected by what they observe in movies, on television, or in the video games they play. Yet many have argued just such a view in opposition to researchers who conclude that media violence stimulates aggression. Furthermore, the most vociferous opposition has been expressed against conclusions that violent video games might be teaching youths to behave more aggressively.

The meta-analysis by Anderson et al. (2010) is the best yet in proving beyond a reasonable doubt that exposure to video game violence increases the risk that the observer will behave more aggressively and violently in the future. "Increases the risk," of course, does not mean "determines." The probability of behaving aggressively is increased for individuals in the population exposed, but for many exposed individuals no detectable change in behavior will occur. This does not diminish the concern we should have about violent video games as a public health threat. The same statements can be made about most public health threats, including exposure to cigarette smoke and lead-based paint. The probability of lung cancer or intelligence deficits is increased by exposure but is not guaranteed.

Anderson et al. (2010) showed that significant increases in risk for behaving aggressively occur in the short run, after playing a game once, and in the long run, after habitual playing of games. Although in many laboratory studies the aggressive behaviors that become more likely in the short run were relatively mild, in the longitudinal studies the aggressive behaviors showing the greatest increase were those that were most physical. If anything, effects were stronger for more violent than less violent outcomes. As social–cognitive observational-learning theory would predict, playing violent video games had a significant effect on increasing aggressive cognitions and aggressive affect as well as the risk for aggressive behavior. Significant increases in risk for aggression occurred in Western countries and in Eastern countries. Significant increases in risk occurred for males who play violent video games and for females who play violent video games. The meta-analysis provided only very weak evidence, as theory predicts, that effects are stronger for younger game players. However, the variance in ages within a design class (experiment vs. longitudinal) was quite limited (and the Johnson et al. study cited as an example of obtaining long-term effects among older subjects was actually not a study of media violence but of media use). Although predictions from theory and extrapolations from longitudinal research suggest

Correspondence concerning this article should be addressed to L. Rowell Huesmann, Research Center for Group Dynamics, Institute for Social Research, University of Michigan, 426 Thompson Street, Ann Arbor, MI 48106-1248. E-mail: huesmann@umich.edu

that the effects of violent video games should be stronger for younger children, a definitive conclusion about how age moderates the effects of violent video games may need to wait until longer term studies of violent video games that follow children into adulthood are conducted, as has been done with exposure to TV violence (Huesmann, Moise, Podolski, & Eron, 2003).

All of the results in the meta-analysis have more impact because of the high-quality sampling strategy and analysis techniques employed. Anderson et al. (2010) included 136 studies in their meta-analysis; the sampling frame they used is highly inclusive of both published studies and unpublished studies that have made it into computerized databases. This is probably about as exhaustive a sampling of the pre-2009 research literature as one could obtain and far more than that used in any other review of violent video game effects. Of equal importance, instead of simply excluding studies of "poor quality," Anderson et al. did one meta-analysis for the full sample and another for the best practices sample. Both showed significant effect sizes for playing violent video games increasing the risk of behaving aggressively. Especially noteworthy is that the effect sizes were greater for the best practice sample, as one would expect if the effects are real. One should understand that many studies were excluded from the best practices sample not simply because Anderson et al. thought they were methodologically flawed; rather, some of the studies purporting to study this topic did not even assess the playing of violent video games but used the playing of video games in general as a proxy measure for the playing of violent video games.

Despite the seeming conclusiveness of Anderson et al. (2010), it is unlikely to change the expressed views of the many purveyors of violent video games or their ad hominem attacks on researchers like Anderson. Nor will it change the minds of the many psychologically unsophisticated journalists who write glibly in the popular press about this topic; those of the many psychologically unsophisticated popular culture scholars who write about this topic (Jenkins, 2006); or, most disturbingly, those of the few psychologically sophisticated researchers who deny that media violence can have any important psychological effect on the risk for aggressive behavior (e.g., Ferguson & Kilburn, 2009; Freedman, 2002).

Over the course of several decades of debate on the topic of media violence, I have written two chapters and numerous essays to counter the arguments of these psychologist critics (Huesmann, Eron, Berkowitz, & Chaffee, 1991; Huesmann & Taylor, 2003). Generally, I would argue that they eliminate entire segments of research on false grounds (e.g., experiments are artificial and can never study "real aggression"); selectively examine the remaining literature; identify correctly small flaws in studies; magnify those flaws with false logic into indictments of most of the research; uncritically accept the few flawed studies or meta-analyses that show no effects as true indicators of the population; and cite other flawed reviews as facts. Most important, they usually ignore observational learning theory and the general research on imitation. Some of these critics have made valuable contributions in pointing out weaknesses in studies and exaggerations in statements of policy groups (Freedman, 2002). However, the intent has been to dismiss the whole body of research on media violence as incorrect. Of course, these critics have made similar arguments about the publications of the major researchers on video game violence and media violence.

Rather than engage in another round of similar debates, let me suggest that some important individual difference variables may explain a lot of the variance in the debaters' positions. Among those psychologists who have actually done empirical research on the topic of media violence or video game violence and who understand the theory of observational learning, there is great consensus (even before the current meta-analysis was published) that media violence increases the risk for aggressive behavior (Murray, 1984). Among those scholars with a vested interest in video games, either because playing these games is an important part of their identity (e.g., Ferguson; Jenkins) or because they have been funded by the media industry (e.g., Freedman), there is a lasting expressed disbelief that media violence can cause aggressive behavior. Their disbelief seems to be compounded by their failure to grasp observational learning theory. Of course, such disbelief may also be indirectly fueled in all of us by our American distaste for anyone telling us what we should look at or play. Freedom of speech and publication is an essential element of our free society, and any discussion of "inappropriate content" in the mass media inevitably primes our negative reactions to censorship or control on free speech.

Most scientists have seen the flaws in the critiques of psychologists and nonpsychologists alike, but the influence these critiques have had on the general public has unfortunately been substantial. There is a general perception among journalists and the public that the issue of whether media violence causes aggressive behavior is undecided. I doubt that the Anderson et al. (2010) meta-analysis will change that public perception much. The public perception that the issue is undecided is undoubtedly aided by disingenuous presentations by some writers of irrelevant data as if it were relevant. For example, in their comment in this issue Ferguson and Kilburn present a graph showing that sales of video games (violent and nonviolent) have increased over the last 12 years while youth violence has decreased, as if that negative .95 correlation between these 12 time-series points was some evidence that video game violence was not related to youth violence. Of course, the data are completely irrelevant to the theory that kids who play violent video games more are more at risk for aggression; just as data showing that youth crime increased dramatically when TV sales increased are irrelevant to concluding that kids who watch more TV violence behave more aggressively.

Despite my pessimism about the prospects for this meta-analysis changing the views of the "deniers," this meta-analysis represents an important step forward for our knowledge about the causes of aggressive behavior. Not only does it confirm that playing violent video games increases the risk for aggressive behavior in the short run and in the long run, it also adds credence to the social–cognitive theory that has emerged to explain the processes through which passive or interactive media violence causes aggression. About 38 years ago, Jesse Steinfeld, then Surgeon General of the United States, reviewed the research that had been conducted to date on the effects of TV violence on youth behavior. He stated in testimony before Congress, "It is clear to me that the causal relationship between [exposure to] televised violence and antisocial behavior is sufficient to warrant appropriate and immediate remedial action. . . . There comes a time when the data are sufficient to justify action. That time has come" (Steinfeld, 1972, pp. 25–27).

With the evidence provided by Anderson et al. (2010), it would now be fair to make the same statement about violent video games. It is time for the public health establishment to accept the fact that playing violent video games increases the "risk" that the player will behave more aggressively.

References

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., . . . Saleem, M. (2010). Violent video game effects on aggression, empathy, and prosocial behavior in Eastern and Western countries. *Psychological Bulletin, 136,* 151–173.

Bandura, A. (1973). *Aggression: A social learning theory analysis.* Englewood Cliffs, NJ: Prentice-Hall.

Dubow, E. F., Huesmann, L. R., & Greenwood, D. (2006). Media and youth socialization: Underlying processes and moderators of effects. In J. Grusec & P. Hastings (Eds.), *The handbook of socialization* (pp. 404–430). New York, NY: Guilford Press.

Ferguson, C. J., & Kilburn, J. (2009). The public health risks of media violence: A meta-analytic review. *Journal of Pediatrics, 154,* 759–763.

Freedman, J. (2002). *Media violence and its effect on aggression.* Toronto, Ontario, Canada: University of Toronto Press.

Huesmann, L. R. (1988). An information processing model for the development of aggression. *Aggressive Behavior, 14,* 13–24.

Huesmann, L. R. (1997). Observational learning of violent behavior: Social and biosocial processes. In A. Raine, P. A. Brennen, D. P. Farrington, & S. A. Mednick (Eds.), *Biosocial bases of violence* (pp. 69–88). London, England: Plenum.

Huesmann, L. R., Eron, L. D., Berkowitz, L., & Chaffee, S. (1991). The effects of television violence on aggression: A reply to a skeptic. In P. Suedfeld & P. E. Tetlock (Eds.), *Psychology and social policy* (pp. 191–200). New York, NY: Hemisphere.

Huesmann, L. R., & Kirwil, L. (2007). Why observing violence increases the risk of violent behavior in the observer. In D. J. Flannery, A. T. Vazsonyi, & I. D. Waldman (Eds.), *The Cambridge handbook of violent behavior and aggression* (pp. 545–570). Cambridge, England: Cambridge University Press.

Huesmann, L. R., Moise, J., Podolski, C. P., & Eron, L. D. (2003). Longitudinal relations between childhood exposure to media violence and adult aggression and violence: 1977–1992. *Developmental Psychology, 39,* 201–221.

Huesmann, L. R., & Taylor, L. D. (2003). The case against the case against media violence. In D. Gentile (Ed.), *Media violence and children* (pp. 107–130). Westport, CT: Greenwood Press.

Jenkins, H. (2006). The war between effects and meaning: Rethinking the video game violence debate. In D. Buckingham & R. Willett (Eds.), *Digital generations: Children, young people, and new media* (pp. 19–31). Mahwah, NJ: Erlbaum.

Meltzoff, A. N., & Moore, K. M. (1977, October 7). Imitation of facial and manual gestures by human neonates. *Science, 109,* 77–78.

Murray, J. P. (1984). Results of an informal poll of knowledgeable persons concerning the impact of television violence. *Newsletter of the American Psychological Association Division of Child, Youth, and Family Services, 7*(1), 2.

Steinfeld, J. (1972). *Statement in hearings before Subcommittee on Communications of Committee on Commerce* (United States Senate, Serial No. 92–52, pp. 25–27). Washington, DC: United States Government Printing Office.

Received November 30, 2009
Revision received November 30, 2009
Accepted December 1, 2009 ■