Violent Video Games Increase Aggression and Violence

Craig A. Anderson, Ph.D.
Professor of Psychology & Chair, Department of Psychology
Iowa State University of Science & Technology

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U.S. Senator Sam Brownback
Kansas

Professor Craig A. Anderson
Iowa State University

Distinguished Senators, ladies, and gentlemen. I am Craig Anderson, Professor of Psychology and Chair of the Department of Psychology at Iowa State University. I have studied human behavior for over 25 years. My first research publication, in 1979, concerned one potential contributing factor in the outbreak of riots. My first publication on video game violence appeared in 1987. Next month, the American Psychological Association will publish a new research article on video games and violence that I wrote with a colleague of mine (Karen Dill). The article will appear in the Journal of Personality and Social Psychology, the premier scientific outlet for research in social and personality phenomena. I recently wrote the "Human Aggression and Violence" articles for both the Encyclopedia of Psychology and the Encyclopedia of Sociology.

I am very happy to be here to speak with you today about the problems of exposing people, especially young people, to interactive violence, that is, violent video games. Though there are many complexities in this realm of behavioral research, there is one clear and simple message that parents, educators, and public policy makers such as yourselves need to hear: Playing violent video games can cause increases in aggression and violence.

A second message to take away from my report is also very important: There are good reasons to expect that the effects of exposure to violent video games on subsequent aggressive behavior will be

even greater than the well-documented effects of exposure to violent television and movies. I'll return to this point in moment.

TV & Movie Violence: Facts & Relevance

But first, I want to highlight some facts concerning TV and movie violence, many of which were reported to a Senate hearing last year by Professor Rowell Huesmann of the University of Michigan.

Fact 1. Exposure to violent TV and movies causes increases in aggression and violence.

Fact 2. These effects are of two kinds: short term and long term. The short term effect is that aggression increases immediately after viewing a violent TV show or movie, and lasts for at least 20 minutes. The long term effect is that repeated exposure to violent TV and movies increases the violence-proneness of the person watching such shows. In essence, children who watch a lot of violent shows become more violent as adults than they would have become had they not been exposed to so much TV and movie violence.

Fact 3. Both the long term and the short term effects occur to both boys and girls.

Fact 4. The effects of TV and movie violence on aggression are not small. Indeed, the media violence effect on aggression is bigger than the effect of exposure to lead on IQ scores in children, the effect of calcium intake on bone mass, the effect of homework on academic achievement, or the effect of asbestos exposure on cancer.

Why consider the TV and movie violence research literature when discussing video game violence? There are three main reasons. First, the psychological processes underlying TV and movie violence effects on aggression are also at work when people play video games. The similarities between exposure to TV violence and exposure to video game violence are so great that ignoring the TV violence literature would be foolish. Second, the research literature on TV violence effects is vast, whereas the research literature on video game violence is small. Researchers have been investigating TV effects for over 40 years, but video games didn't even exist until the 1970s, and extremely violent video games didn't emerge until the early 1990s. Third, because the TV/movie violence research literature is so mature there has been ample time to answer early criticisms of the research with additional research designed to address the criticisms. Thus, the various shoot-from-the-hip criticisms and myths created by those with a vested interest in creating and selling various kinds of violent entertainment media have been successfully tested and debunked. I'll describe some of the more popular ones in a few moments.

Video Game Violence: Scope & Research

Now, let's consider facts derived from the relatively small research literature that is specifically focused on video games.

Fact 1. Video games are consuming a larger amount of time every year. Virtually all children now play video games. The average 7th grader is playing electronic games at least 4 hours per week, and about half of those games are violent. Even though number of hours spent playing video games tends to decline in the high school and college years, a significant portion of students are playing quite a few video games. In 1998 3.3% of men entering public universities in the United States reported playing video games more than 15 hours per week in their senior year in high school. In 1999 that percentage jumped to a full 4%.

Fact 2. Young people who play lots of violent video games behave more violently than those who do not. For example, in the most recent study of this type exposure to video game violence during late adolescence accounted for 13-22% of the variance in violent behaviors committed by this sample of people. By way of comparison, smoking accounts for about 14% of lung cancer variance.

Fact 3. Experimental studies have shown that playing a violent video game causes an increase in aggressive thinking. For example, in one study young college students were randomly assigned the task

of playing a violent video game (Marathon 2) or a nonviolent game (Glider Pro). Later, they were given a list of partially completed words, such as mu_ _er. They were asked to fill in the blanks as quickly as possible. Some of the partial words could form either an aggressive word (murder) or a nonaggressive word (mutter). Those who had played the violent game generated 43% more aggressive completions than those who had played a nonviolent game.

Fact 4. Experimental studies have shown that playing a violent video game causes an increase in retaliatory aggression. For example, in one study participants were randomly assigned to play either a violent game (Wolfenstein 3D) or a nonviolent game (Myst). Shortly afterwards, they received a series of mild provocations and were given an opportunity to retaliate aggressively. Those who had played the violent game retaliated at a 17% higher rate than those who had played the nonviolent game.

Fact 5. Experimental and correlational studies have shown that playing violent video games leads to a decrease in prosocial (helping) behaviors.

Why Media Violence Increases Aggression & Violence

Why does exposure to violent media increase aggression and violence? There are several different ways in which watching or playing violent media can increase aggression and violence. The most powerful and long lasting involves learning processes. From infancy, humans learn how to perceive, interpret, judge, and respond to events in the physical and social environment. We learn by observing the world around us, and by acting on that world. We learn rules for how the social world works. We learn behavioral scripts and use them to interpret events and actions of others and to guide our own behavioral responses to those events. These various knowledge structures develop over time. They are based on the day-to-day observations of and interactions with other people, real (as in the family) and imagined (as in the mass media). Children who are exposed to a lot of violent media learn a number of lessons that change them into more aggressive people. They learn that there are lots of bad people out there who will hurt them. They come to expect others to be mean and nasty. They learn to interpret negative events that occur to them as intentional harm, rather than as a accidental mistake. They learn that the proper way to deal with such harm is to retaliate. Perhaps as importantly, they do not learn nonviolent solutions to interpersonal conflicts.

As these knowledge structures develop over time, they become more complex and difficult to change. In a sense, the developing personality is like slowly-hardening clay. Environmental experiences, including violent media, shape the clay. Changes are relatively easy to make at first, when the clay is soft, but later on changes become increasingly difficult. Longitudinal studies suggest that aggression-related knowledge structures begin to harden around age 8 or 9, and become more perseverant with increasing age.

The result of repeated exposure to violent scripts, regardless of source, can be seen in several different aspects of a person's personality. There is evidence that such exposure increases general feelings of hostility, thoughts about aggression and retaliation, suspicions about the motives of others, and expectations about how others are likely to deal with a potential conflict situation. Repeated exposure to violent media also reduces negative feelings that normally arise when observing someone else get hurt. In other words, people become desensitized to violence. Finally, exposure to violent media teaches people that aggressive retaliation is good and proper.

Violent Video Games vs. TV & Movies

Earlier, I said that there are good reasons to expect that violent interactive media will have an even stronger effect on aggression and violence than traditional forms of media violence such as TV and movies. These several reasons all involve differences between TV and video games that influence learning processes. The following four reasons all have considerable research support behind them, but have not yet been extensively investigated in the video game domain.

Reason 1. Identification with the aggressor increases imitation of the aggressor. In TV shows and

movies there may be several characters with which an observer can identify, some of whom may not behave in a violent fashion. In most violent video games, the player must identify with one violent character. In "first person shooters," for instance, the player assumes the identity of the hero or heroine, and then controls that character's actions throughout the game. This commonly includes selection of weapons and target and use of the weapons to wound, maim, or kill the various enemies in the game environment. Common weapons include guns, grenades, chain saws and other cutting tools, cars and tanks, bombs, hands, and knives.

Reason 2. Active participation increases learning. The violent video game player is a much more active participant than is the violent TV show watcher. That alone may increase the effectiveness of the violent story lines in teaching the underlying retaliatory aggression scripts to the game player. Active participation is a more effective teaching tool in part because it requires attention to the material being taught.

Reason 3. Rehearsing an entire behavioral sequence is more effective than rehearsing only a part of it. The aggression script being rehearsed is more complete in a video game than in a TV show or movie. For example, the video game player must choose to aggress, and in essence rehearses this choice process, whereas the TV viewer does not have to make any such choices. Similarly, in video games the player must carry out the violent action, unlike the violent TV viewer. Indeed, in many video games the player physically enacts the same behaviors in the game that would be required to enact it in the real world. Some games involve shooting a realistic electronic gun, for instance. Some virtual reality games involve the participant throwing punches, ducking, and so on. As the computer revolution continues, the "realism" of the video game environment will increase dramatically.

Reason 4. Repetition increases learning. The addictive nature of video games means that their lessons will be taught repeatedly. This is largely a function of the reinforcing properties of the games, including the active and changing images, the accompanying sounds, and the actual awarding of points or extra lives or special effects when a certain level of performance is reached.

Myths

I'd also like to comment briefly on a number of myths concerning media violence. Many of these myths have been around for years. Some come from well-intentioned sources that simply happen to be wrong; others are foisted on our society by those who believe that their profits will be harmed if an informed society (especially parents) begins to shun violent TV shows, movies, and video games.

Myth 1. The TV/movie violence literature is inconclusive. Any scientist in any field of science knows that no single study can definitively answer the complex questions encompassed by a given phenomenon. Even the best of studies have limitations. It's a ridiculously easy task to nitpick at any individual study, which frequently happens whenever scientific studies seem to contradict a personal belief or might have implications about the safety of one's products. The history of the smoking/lung cancer debate is a wonderful example of where such nitpicking successfully delayed widespread dissemination and acceptance of the fact that the product (mainly cigarettes) caused injury and death. The myth that the TV/movie violence literature is inconclusive has been similarly perpetuated by self-serving nitpicking.

Scientific answers to complex questions take years of careful research by numerous scientists interested in the same question. We have to examine the questions from multiple perspectives, using multiple methodologies. About 30 years ago, when questioned about the propriety of calling Fidel Castro a communist, Richard Cardinal Cushing replied, "When I see a bird that walks like a duck and swims like a duck and quacks like a duck, I call that bird a duck." When one looks at the whole body research in the TV/movie violence domain, clear answers do emerge. In this domain, it is now quite clear that exposure to violent media significantly increases aggression and violence in both the immediate situation and over time. The TV/movie violence research community has correctly identified their duck.

Myth 2. Violent media have harmful effects only on a very small minority of people who use these

media. One version of this myth is commonly generated by parents who allow their children to watch violent movies and play violent games. It generally sounds like this, "My 12 year old son watches violent TV shows, goes to violent movies, and plays violent video games, and he's never killed anyone." Of course, most people who consume high levels of violent media, adults or youth, do not end up in prison for violent crimes. Most smokers do not die of lung cancer, either. The more relevant question is whether many (or most) people become more angry, aggressive, and violent as a result of being exposed to high levels of media violence. Are they more likely to slap a child or spouse when provoked? Are they more likely to drive aggressively, and display "road rage?" Are they more likely to assault co-workers? The answer is a clear yes.

Myth 3. Violent media, especially violent games, allow a person to get rid of violent tendencies in a nonharmful way. This myth has a long history and has at least two labels: the catharsis hypothesis, or venting. The basic idea is that various frustrations and stresses produce an accumulation of violent tendencies or motivations somewhere in the body, and that venting these aggressive inclinations either by observing violent media or by aggressive game playing will somehow lead to a healthy reduction in these pent-up violent tendencies. This idea is that it is not only incorrect, but in fact the opposite actually happens. We've know for over thirty years that behaving aggressively or watching someone else behavior aggressively in one context, including in "safe" games of one kind or another, increases subsequent aggression. It does not decrease it.

Myth 4. Laboratory studies of aggression do not measure "real" aggression, and are therefore irrelevant. This myth persists despite the successes of psychological laboratory research in a variety of domains. In the last few years, social psychologists from the University of Southern California and from Iowa State University have carefully examined this claim, using very different methodologies, and have clearly demonstrated it to be nothing more than a myth. Laboratory studies of aggression accurately and validly measure "real" aggression.

Myth 5. The magnitude of violent media effects on aggression and violence is trivially small. This myth is related to Myth 2, which claims that only a few people are influenced by media violence. In fact, as noted earlier the TV violence effect on aggression and violence is larger than many effects that are seen as huge by the medical profession and by society at large. Furthermore, preliminary evidence and well-developed theory suggests that the violent video game effects may be substantially larger.

For Good or Ill

I have focused my remarks on the negative consequences of exposing young people to violent video games, and on the reasons why violent video games are likely to prove more harmful even than violent TV or movies. Although this may be obvious to many, I should also like to note that many of the characteristics that make violent video games such a powerful source of increased aggression and violence in society also can be used to create video games that enhance learning of lessons that are quite valuable to society. This includes traditional academic lessons as well as less traditional but still valuable social lessons.

Caveats

Obviously, many factors contribute to any particular act of violence. There is usually some initial provocation, seen as unjust by one party or the other. This is followed by some sort of retaliatory response, which is in turn interpreted as an unjust provocation. This leads to an escalatory cycle that may end in physical harm to one or both parties. How people respond to initial provocations depends to a great extent on the social situation (most people are less likely to respond aggressively in church than they are in a bar), on their current frame of mind (those who have been thinking aggressive thoughts or who are feeling hostile are more likely to respond aggressively), and on the personality of the individual (habitually aggressive people are more likely to respond aggressively than habitually peaceful people). Short term exposure to media violence influences a person's frame of mind, and long term exposure creates people who are somewhat more aggressive habitually, but many factors contribute to current frame of mind and to habitual aggressiveness. However, even though one cannot reasonably claim that a

particular act of violence or that a lifetime of violence was caused exclusively by the perpetrator's exposure to violent entertainment media, one can reasonably claim that such exposure was a contributing causal factor. More importantly for this hearing, my research colleagues are correct in claiming that high exposure to media violence is a major contributing cause of the high rate of violence in modern U.S. society. Just as important, there are effective ways of reducing this particular contributing cause. Educating parents and society at large about the dangers of exposure to media violence could have an important impact.

Unknowns

The research literature on video games is sparse. There are numerous questions begging for an answer that is simply not yet available. Just to whet your appetite, here are a few questions I believe need to be addressed by new research.

1. Does explicitly gory violence desensitize video game players more so than less gory violence? If so, does this desensitization increase subsequent aggression? Does it decrease helping behavior?

2. What features increase the game player's identification with an aggressive character in video games?

3. What features, if any, could be added to violent video games to decrease the impact on subsequent aggression by the game player? For instance, does the addition of pain responses by the game victims make players less reluctant to reenact the aggression in later real-world situations, or do such pain responses in the game further desensitize the player to others' pain?

4. Can exciting video games be created that teach and reinforce nonviolent solutions to social conflicts?

Conclusion

Thank you for your interest in this issue. I'd be happy to address your questions at this time.

Click here for the written testimony given by Dr. David Walsh, President of the National Institue on Media and the Family.