

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION**

ENTERTAINMENT SOFTWARE)	
ASSOCIATION; VIDEO SOFTWARE)	
DEALERS ASSOCIATION; AND ILLINOIS)	
RETAIL MERCHANTS ASSOCIATION;)	No. 05 C 4265
)	
Plaintiffs,)	Judge Matthew Kennelly
)	
v.)	Magistrate Judge Denlow
)	
ROD BLAGOJEVICH, in his official capacity)	
as Governor of the State of Illinois; LISA)	
MADIGAN, in her official capacity as Attorney)	
General of the State of Illinois; and RICHARD)	
A. DEVINE, in his official capacity as State's)	
Attorney of Cook County,)	
)	
Defendants.)	

DECLARATION OF CRAIG A. ANDERSON, Ph.D.

I, CRAIG A. ANDERSON, declare the following to be true and correct under penalty of perjury:

Background

1. The following represents my expert opinion in this case, regarding the scientific research literature on the effects of exposing youth to media violence in general, with a special emphasis on violent video games. This report was requested by the Office of the Governor of Illinois. My expert opinion is based on generally accepted principles in the field of psychology and the pertinent scientific research literature.

2. I received my B.A. with a double major psychology and sociology from Butler University (Indianapolis) in 1976; my M.A. in psychology from Stanford University in 1978; and my Ph.D. in psychology from Stanford University in 1980. I have served on the faculties of Rice University in Houston as Assistant (1980-1985) and Associate (1985-1988) Professor; the Ohio State University in

Columbus as a Visiting Assistant Professor (1984-1985); the University of Missouri at Columbia as Associate (1988-1992) and Full (1992-1999) Professor; and Iowa State University as Professor and Chair of the Department of Psychology (1999-2005), and as Distinguished Professor in Liberal Arts and Sciences (2005).

3. I have over 100 professional publications in psychology, over 75 of which are in peer-reviewed journals. Most of the remaining publications are invited book chapters in various psychological handbooks, encyclopedia, and other edited volumes. I have published original empirical research on a wide range of topics, including motivation, emotion, depression, loneliness, shyness, social judgment, human inference, attitude and belief persistence and change, personality, and aggression. In this work I have successfully employed a wide range of research and statistical methods. I have been involved in the design, analysis, and interpretation of all three major types of studies—experimental, cross-section correlational, and longitudinal. I am familiar with and have used a wide array of statistical methods including: analysis of variance, regression, factor analysis, cluster analysis, latent variable modeling, and meta-analysis (among others).

4. My first article on aggression appeared in 1979. My work consistently appears in top psychology journals, such as *Journal of Personality and Social Psychology*, *Psychological Bulletin*, *Psychological Review*, *Personality and Social Psychology Bulletin*, *American Psychologist*, *Psychological Science*, and *Current Directions in Psychological Science*. I have also authored major summary and review pieces for other top psychological science outlets, such as *Annual Review of Psychology*, *Advances in Experimental Social Psychology*, and various handbooks and encyclopedias.

5. I have over 30 publications on media violence; over 20 are on video game violence. I have conducted over 100 original empirical studies, about half on human aggression, over a dozen on video games. My publications have included meta-analytic techniques over half a dozen times.

6. I have given expert testimony to the U.S. Senate (March 21, 2000), the St. Louis County

Commission (October 12, 2000), and in the form of a deposition for the Washington State case (Video Software Dealers Association, et al., v. Norm Maleng, et al., spring of 2004).

Effects of Media Violence: The Scientific Facts

7. The research literature on the effects of exposure to media violence is one of the largest, most diverse in methods, and most well understood (by true experts) in all of social and behavioral science. There have been numerous reviews by a variety of expert panels and commissions, all coming to the same conclusion that exposure to media violence is a risk factor for aggression and violence. Researchers using modern meta-analytic techniques to statistically combine the results of all relevant empirical studies also generally come to the same conclusion. The next sections summarize these effects.

General Statement on Media Violence

8. In July of 2000, representatives of six major professional health societies issued a "Joint Statement on the Impact of Entertainment Violence on Children" at a Congressional Public Health Summit. The groups included: American Academy of Pediatrics, American Academy of Child & Adolescent Psychiatry, American Psychological Association, American Medical Association, American Academy of Family Physicians, and the American Psychiatric Association.

9. The Statement notes (among other things) that, "Television, movies, music, and interactive games are powerful learning tools, and highly influential media." It lists four main types of effects of exposure to violent entertainment media:

- < Children who see a lot of violence are more likely to view violence as an effective way of settling conflicts. Children exposed to violence are more likely to assume that acts of violence are acceptable behavior.
- < Viewing violence can lead to emotional desensitization towards violence in real life. It can decrease the likelihood that one will take action on behalf of a victim when violence occurs.
- < Entertainment violence feeds a perception that the world is a violent and mean place. Viewing violence increases fear of becoming a victim of violence, with a resultant increase in self-protective behaviors and a mistrust of others.
- < Viewing violence may lead to real life violence. Children exposed to violent programming at

a young age have a higher tendency for violent and aggressive behavior later in life than children who are not so exposed.

Recent Statement on Video Game Violence

10. In August of 2005, the American Psychological Association (APA) passed a "Resolution on Violence in Video Games and Interactive Media." Among other things, the resolution notes that there is considerable evidence of harmful effects of exposure to violent video games, similar to harmful effects found previously in studies of television and film violence. The resolution also suggests that violent video games may be more conducive to learning harmful lessons than violent television, and calls for a reduction of all violence in video games and interactive media marketed to children and youth. A copy of the resolution is attached hereto as Exhibit A.

More Specific Effects of Media Violence

11. It is important to note the differences between short-term versus long-term effects. Short-term effects are those that occur almost immediately upon exposure. Some of them may last only a short time (minutes or hours), whereas others may persist for a considerably longer time. The short-term effects of most relevance to this case are:

- Observational learning of how to aggress.
- Increase in aggressive behavior.
- Increase in aggressive thinking.
- Increase in aggressive emotions.

12. It is generally believed by media violence researchers that the last three of these four short-term effects of exposure usually dissipate fairly quickly. However, once one learns how to commit a specific behavior by observing someone else doing it, that knowledge is unlikely to disappear. Whether it becomes a frequently used part of the observer's behavioral repertoire depends on several factors, including whether the observed behavior itself was rewarded in some way (for example, did the screen

character get what he/she wanted by his violent action), and, whether the observer is rewarded or punished when he/she uses a similar type of aggressive action.

13. Even those short-term effects that dissipate fairly quickly are important because they provide an additional basis for long-term effects. For example, highly stable attitudes towards violence, beliefs about the effectiveness of violent behavior and its appropriateness, attitudes towards particular groups of people (e.g., women, police, prostitutes, criminals, Muslims) are unlikely to emerge from one brief exposure to media violence that illustrates or supports those attitudes and beliefs, even though short term changes in such thinking does occur. But any factor that repeatedly induces a particular set of attitudes, beliefs, and other thought processes increases the likelihood that they will become internalized, or more permanent ways of viewing the world. In other words, it is useful to view each media violence exposure as a type of practice or learning opportunity.

14. Long-term effects are those that result from repeated exposure to media violence. The most relevant long-term effects of repeated exposure to violent media are:

- Increase in the likelihood of aggressive behavior, including violent behavior (various types of physical assault).
- Increase in positive attitudes, beliefs, and thought processes concerning aggression.
- Reduction of normal inhibitions against aggression.

15. The evidence concerning who is most vulnerable to media violence exposure is somewhat mixed. There is some evidence that initially aggressive individuals, younger children, or males might be more affected than relatively non-aggressive individuals, older children, or females. But these moderating effects are not consistent, and many studies find significant effects of media violence on non-aggressive individuals, older youths (including young adults), and females. In other words, no specific group has repeatedly demonstrated total immunity to aggression-related effects of exposure to media violence.

16. The research evidence on the overall effects of media violence is consistent across all three of the

major types of research designs: randomized experiments, cross-sectional correlational studies, and longitudinal studies.

17. Three additional points of relevance warrant consideration. First, human aggression, especially the most extremely violent forms of it, is influenced by many risk and resilience factors. A partial listing includes a history of antisocial or aggressive behavior, positive attitudes and beliefs about aggression, maladaptive parenting styles, weapon availability, low IQ, neighborhood crime, and antisocial peers. Second, extremely violent behaviors usually emerge only when several risk factors are in place. Media violence exposure is one such risk factor, perhaps the one that is easiest to modify. Third, the best understanding of violent video game effects arises from consideration of research and research-based theoretical models on all types of media violence (television, film, video games, etc.), as well as basic research and theory on human learning and developmental processes.

More Specific Effects of Exposure to Violent Video Games

18. The research literature on violent video games is necessarily smaller and more recent than the research on violent television and film. Nonetheless, recent meta-analytic reviews of the research give rise to the following conclusions. Exposure to violent video games:

- Increases aggressive behavior.
- Increases aggressive thinking.
- Increases aggressive emotions.
- Increases physiological arousal.
- Decreases prosocial (or helping) behavior.

19. Furthermore, high levels of exposure to violent video games have been linked to forms of physically violent behavior, as well as other less extreme types of aggression. These effects appear to be about the same size for males and females, younger versus older youths, and more versus less generally aggressive individuals. However, more research is needed before strong conclusions can be drawn about whether some groups might be more vulnerable than others.

Methods and Examples of Violent Video Game Research

20. Empirical research is most useful when it is designed to test theoretical models. This is true in all sciences. The vast majority of theoretical models in the social, behavioral, and medical sciences are causal models. That is, they are constructed to aid in understanding causal relationships among variables—in essence, what causes what. In the media violence domain, theoretical models of human aggression have been developed and modified to help understand the causal influence of exposure to media violence on a variety of psychological and behavioral processes. Because well-developed theoretical models are useful in suggesting effective interventions designed to promote desired societal outcomes, multiple tests of such models using multiple methodologies are essential. The three main types of methodologies used in original empirical studies are discussed below. In addition, a common statistical procedure used to summarize the results of original empirical studies is also discussed. All of these four methods are standard practice and widely accepted in the social, behavioral, and medical sciences. It is the total picture of combined studies that answers the question of a causal link.

Experimental Studies

21. One common type of study in violent media research is an experiment. Experiments allow researchers to manipulate one variable to see how it affects another. Experiments typically assign participants to be exposed to a pre-determined violent or nonviolent video game. After playing the assigned game, the participants then complete some measure of interest. Some of the common measures are aggressive behavior, aggressive thoughts, and aggressive feelings.

22. There are two primary components for a well-designed media violence experiment. The first is random assignment of participants to the different treatment conditions. This means that every participant should have the same chance to be assigned to play either a violent or nonviolent video game. The second is that the violent and nonviolent games should be made as equivalent as possible on *theoretically relevant* characteristics (e.g., difficulty, frustration). An acceptable alternative procedure is to measure

potential differences in these relevant characteristics and to statistically control (equate) for them in the main data analyses. Equating the comparison games in either of these two ways strengthens one's confidence that any observed differences on the aggression measures are the result of differences in the violent content. The main strength of experimental studies is that they allow stronger conclusions about whether the hypothesized causal variable (e.g., exposure to violent video games) actually caused changes in the measured outcome variable (e.g., aggressive behavior, thoughts, feelings).

23. Experiments by many different research teams have showed that violent video game exposure can increase aggressive behavior, increase aggressive thoughts, increase aggressive feelings, increase desensitization to violence, and decrease prosocial behavior. An example of an experimental study was one reported by Irwin and Gross (1995). In this study, children were randomly assigned to play either a nonviolent or violent video game. After playing a video game, children were allowed to engage in free play while they were observed for aggressive behavior (e.g., hitting, shoving, pinching, hair pulling, etc...). Results showed that participants who had just played a violent video game were more aggressive than those who played a nonviolent video game.

24. Overall, well-conducted experimental and correlational studies of video game violence exposure have typically shown a significant positive relationship with aggression in samples of children and adolescents (Anderson and Bushman, 2001; Anderson, 2003).

Cross-Section Correlational Studies

25. Another method to examine the impact of violent video games on aggression is by using correlational data. Correlational studies examine how strongly two variables are related without manipulating either variable. Cross-section correlational studies involve the collection of data at essentially one point in time. Such studies can provide information on variables that cannot be measured in a laboratory, such as more extreme forms of aggression. In a correlational study, participants typically complete survey materials that measure participants' past violent video game experience and other

variables of interest (e.g., aggressive behavior, delinquency, attitudes towards violence, attitudes towards authority). Sometimes measures are collected from other sources as well, such as parents, teachers, or medical records. Analyses are then conducted to see if violent video game experience is connected to any of the variables of interest.

26. A well-designed correlational study typically tries to account for other *theoretically plausible* variables that might affect the relationships between media exposure and aggression (e.g., sex, total amount of video game time, etc...). If a study finds that violent video game experience and aggression are linked, then that is evidence that violent video game experience plays a role in aggression.

27. Such studies are useful in the development and testing of theoretical models in at least two ways. First, they provide an opportunity for basic aspects of the model to be disconfirmed, the hallmark of any scientific theory. For example, it is possible to discover that amount of exposure to violent video games is not positively linked to aggressive behavior. Second, they provide an opportunity to test alternative explanations of the media violent/aggression link. For example, one can examine whether exposure to violent video games is positively associated with aggression even after statistically controlling for total amount of nonviolent video game exposure.

28. For example, a study conducted by Anderson and Dill demonstrated that violent video game exposure was positively related to the self-reported aggression on the National Youth Survey, an instrument developed by criminologists which includes items assessing behaviors that would be considered criminal if known to the police. This association remained significant even when time spent playing any type of video game was statistically controlled. There are a number of additional studies of this type linking violent video game exposure to aggression and violence.

29. While experimental studies of exposure to violent television and video games have shown both short-term increases in aggressive behavior in children, adolescents, and adults, correlational studies have demonstrated a longer-term association between media violence exposure and aggressive behavior in the

natural environment. (Anderson, Berkowitz, Donnerstein, Huesmann, Johnson, Linz, Malamuth, and Wartella, 2003; Anderson and Bushman, 2001, 2002; Anderson and Dill, 2000;

Longitudinal Studies

30. A longitudinal study is essentially a more complicated form of correlational study. In a longitudinal study, information is collected about participants over the course of time, at least two points in time. Longitudinal studies in the media violence domain typically run from several months to several years, some as long as several decades. Shorter periods of time (e.g., one month) are usually deemed inappropriate because theoretically that is not enough time for differences in exposure to have much (or any) impact on the types of outcome variables of interest.

31. With a longitudinal study, one can examine whether habitual media violence exposure at one point in time (e.g., beginning of a school year) is associated with aggression levels measured at a later point in time, while statistically controlling for aggression level at the earlier point in time. A well-designed longitudinal study also allows examination of various factors that could affect the relationships between media exposure and aggression.

32. Currently, there are no published longitudinal studies that examine the effects of violent video game exposure. However, there is one longitudinal study that examined the effects of time spent playing any type of video game (not just violent video games). That study (Ihori, Sakamoto, Kobayashi, & Kimura, 2003) found a small but significant link between video game play and later physical aggression among Japanese children. Theoretically, this effect should be very small because the study did not separate the effects of violent video game play from nonviolent video game play.

33. There are a number of well-conducted longitudinal studies of television/film violence effects. These studies generally show a significant association between habitual media violence exposure and later aggression and violence. Because the basic underlying psychological processes appear to be the

same in all forms of media violence, these longitudinal studies are relevant to understanding the effects of video game violence.

34. Additionally, another soon-to-be-published longitudinal study supports the causal connection between aggression and violent video games. In a study of 430 students ranging from 3rd to 5th graders, results show that students who played more violent video games early in the school year became more verbally aggressive, more physically aggressive, and less prosocial later in the school year, as rated by their peers and teachers. Students who played more violent video games began to see the world more in terms of aggression, which research has shown makes them more likely to react aggressively.

(summarized in Gentile, D.A., & Anderson, C.A. (in press). *Violent Video Games, Effects on Youth, and Public Policy Implications*. Chapter to appear in N. Dowd, D. G. Singer, & R. F. Wilson (Eds.), *Children, Culture, and Violence*. Thousand Oaks, CA: Sage.)

Meta-Analyses

35. When an empirical study is conducted, researchers essentially assess how large an effect one variable has on determining another variable. In violent video game research, an effect size displays how large of an impact violent video game exposure has on aggression-related variables. Of course, different studies rarely yield the exact same result, even if they are conducted in exactly the same way. This is because of differences between studies in such things as sample characteristics, sample size, measures of aggressive behavior, and characteristics of the games used in the studies, as well as normal random fluctuations inherent in any scientific investigation. Each study has its own unique set of strengths and weaknesses; there is no such thing as a "perfect" study, in any domain of science. After a number of studies of the same basic hypothesis have been conducted, it becomes desirable to attempt to summarize their results in an efficient, unbiased way. One good way of doing this is to calculate an average effect size for a research literature by conducting a meta-analysis. A meta-analysis involves calculating effect sizes for each relevant sample and finding an average effect size across numerous studies. This process

utilizes a larger sample size than any one study, thereby giving a more accurate estimate of the average effect size.

36. In 2001, Anderson and Bushman published the first comprehensive meta-analysis on violent video game research. Craig A Anderson & Brad J Bushman. (September 2001), Effects of Violent Video Games on Aggressive Behavior, Aggressive Cognition, Aggressive Affect, Physiological Arousal and Prosocial Behavior: A Meta-Analytic Review of the Scientific Literature, *Psych. Science*, Vol.12, No.5, pp. 353-359 This meta-analysis showed that violent video game exposure increases aggressive behavior, aggressive thoughts, aggressive feelings, and physiological arousal. In addition, the analysis also concluded that violent video game exposure decreases prosocial behavior.

37. One potential criticism of a meta-analysis is that it may include studies in the analysis that were methodologically flawed, thereby underestimating the true effect size. Anderson published an article in 2004 that tried to address this concern. Anderson, C.A. (2004). An update on the effects of violent video games. *Journal of Adolescence*, 27, 113-122. Anderson used a pre-selected set of methodological criteria to distinguish studies that utilize the best practices of empirical research from studies that did not use these practices. For example, some practices that detracted from being qualified as a "best practices" study were: games used in the "nonviolent game" condition that actually contained violence; using a measure of time spent on any type of video game instead of exposure to violent video games; or using a measure of aggressive personality in a short term experimental study that should have used a measure of aggression in the immediate situation. When studies were classified using the best practices criteria, the methodologically stronger studies yielded larger effect sizes than the methodological weaker studies. This finding demonstrated that the previous meta-analyses may have underestimated the true effect size of violent video game exposure on aggressive behavior.

How Large is the Media Violence Effect?

38. As mentioned earlier, the term effect size refers to how large an effect a variable has on

determining another variable. Previous meta-analyses that include all studies find the effect size of violent video game exposure on aggression-related variables to be around the .2 range. To put this in perspective, we can compare the effect size of violent video game exposure on aggression to other relationships that our society has deemed important. The effect of violent video game exposure on aggression is larger than the effect of being exposed to asbestos on contracting laryngeal cancer, consuming calcium on increased bone mass, or second hand tobacco smoke effects on lung cancer. It is smaller than the effect of smoking tobacco on lung cancer.

Violent Television and Movie Exposure Compared to Violent Video Game Exposure

39. It is interesting to note that whereas television viewing time by children and adolescents appears to not be changing much, time spent on video games has been increasing. Currently there is only one published study that directly tests whether violent video game exposure is more detrimental than violent movie or television exposure. In a correlational study Funk (2004) found that high exposure to violent video games was associated with lower levels of empathy and more positive attitudes towards violence. Television violence did not independently contribute to either empathy or attitudes towards violence. Movie violence was significantly associated only with attitudes towards violence. In addition to this one study, there is at least one unpublished study in progress showing similar results. Furthermore, there are strong theoretical reasons to believe that violent video game exposure could have a stronger impact on the player than violent television or movie exposure.

Higher Level of Involvement

40. Previous research has demonstrated that learning increases when people are more actively involved in the task. Playing a video game is a highly active activity that requires constant attention from the player, while watching television is a fairly passive activity. The continuation of the game depends on the player's alertness and responses, while a television show continues to be broadcast regardless of what the viewer is doing in the room. This difference between video games and television would suggest that

violent video game exposure may enhance learning aggressive behaviors, attitudes, and beliefs compared to an equivalent amount of exposure to violent television.

Identification with Violent Characters

41. Past research has shown that identifying oneself with a violent character can increase the effect of the media violence exposure. Television viewers might or might not identify with the violent characters in the program; however, this is not the case for violent video game players. Violent video game players are required to assume the identity of a violent character. In some games, commonly referred to as first person shooters, the players see the world from the violent character's visual perspective. In "third person" games, players can often select the gender, appearance, and abilities of the character who they control. Often, characters can be adjusted to create an electronic likeness of the player. In other games, players can download images (called "skins") into the game and overlay these images onto the character model in the game. These skins can be pictures of players themselves, thereby electronically embedding their visual likeness into the game. Once again, these differences between violent video games and violent television would suggest that violent video game exposure could have a larger impact on players compared to violent television exposure.

Reinforcement of Violent Actions

42. Some of the most cited research in psychology shows that behavior (including aggressive behavior) is increased when the behaviors are rewarded. In violent television programs and films, reward for violent actions is indirect. Viewers' "reward" for a violent character's action is seeing the result of that action (e.g., witnessing the character receive something he or she wants, the death of his or her enemy, etc...). However, in violent video games, rewards are much more direct. Players instantaneously receive numerous types of reward for their own actions in the game (e.g., points, access to new levels of the game, abilities to use new weapons, intriguing video and audio effects, verbal praise such as a voice saying "nice shot" or "you're unstoppable"). Because rewards in violent video games are more numerous

and more direct than in violent television or films, this suggest violent video game exposure may be more detrimental.

Higher Amounts of Violence Exposure

43. Research has demonstrated that the media violence effect is cumulative. That is, exposure to more media violence increases the effect. Violent television programs and movies do not display violent actions constantly. A large portion of time in movies and television programs are allotted to plot development, romantic storylines, and comedic relief. Many violent video games, however, almost continuously display violence. Often, the player is constantly searching for new enemies, engaging them in combat, and being rewarded for violent actions. Because of this difference, violent video game players are exposed to more scenes of violence compared to an equivalent amount of time with violent television or films.

How Do Violent Video Games Increase Aggression?

44. Short term effects, those that occur during and for at least a short time after playing a violent video game, are believed to be the result of increases in the accessibility of aggressive thought, aggressive affect, and/or physiological arousal. Playing a violent video game can increase any of these three types of variables, each of which has a long history in theoretical models of human aggression.

45. Long term effects of repeated exposure to media violence are believed to be the result of changes (learning) in a wide array of aggression-related variables, ranging from such obvious variables as simple knowledge about how to harm others to less obvious variables such as the chronic accessibility of aggressive thoughts and scripts. When a person plays a violent video game, several things are occurring. First, players are witnessing scenes of violence, which make aggressive thoughts more readily accessible in the player. Also, aggressive scripts for situations involving confrontation are being introduced and reinforced. Aggressive scripts are essentially abstract guidelines for how to behave in certain situations. When aggressive thoughts and scripts are more accessible in memory, they tend to lead people to interpret events that occur to them in a more hostile way, which in turn tends to increase the likelihood of an

aggressive behavior. The chronic accessibility of any type of thoughts and scripts is affected by how often those thoughts and scripts have been used in the past, by repetition. Other types of aggression-related variables believed to be involved in long term media violence effects include: aggressive beliefs and attitudes; aggression-biased perceptual schemas; and aggressive expectation schemas. Finally, it is believed that repeated media violence exposure can lead to decreases in normal aggression-inhibitions, such as desensitization of normal negative emotional reactions to violence.

Unwarranted Criticisms of Violent Media Research

46. The research on violent video games is not perfect by any means, but sometimes is unfairly criticized. For example, one criticism is that there are no studies linking video games to serious real life aggression. This is untrue, because a number of correlational studies have linked high exposure to violent video games with increased likelihood of seriously aggressive real life behaviors. It is true that there are no *experimental* studies of violent video game effects on serious real-life aggression. The reason for this is because it is not ethical to place experimental participants in situations where they can be severely harmed or can severely harm another individual. This is the same type of criticism that the tobacco industry sometimes leveled at medical research on the smoking/cancer issue; there were no true experimental studies in which children were randomly assigned to become smokers or nonsmokers for 40 years with lung cancer incidence as the outcome measure. In both cases (media violence, tobacco) researchers had to develop scientifically valid and ethically appropriate ways of testing the relevant scientific theoretical models, and both have done so.

47. Another criticism of the violent video game research is that it is other differing characteristics of violent and nonviolent games (e.g., frustration) that are responsible for causing increases in aggression, not violent content itself. It is true that a frustrating game can increase aggression in a player, but several studies have demonstrated that when frustration (or other characteristics) are controlled, violent video game exposure still increases aggression.

48. Another criticism is that methodologically "weaker" studies give an inflated view of the average effect size in meta-analyses, or that methodologically strong studies typically find no effect at all. In fact, weaker studies tend to yield smaller effect sizes. As mentioned earlier, when only the methodologically strong studies are included in a meta-analysis, the average violent video game effect sizes are larger than when all studies are included.

49. Another criticism has been is that when a participant plays a violent video game in an experimental study, that gameplay and exposure is different than regular exposure outside of the laboratory. This is an unusual criticism, because participants are still playing a violent video game as they would in their own home. The main differences most likely are that they do not play for as long as they would outside of the laboratory (in most studies participants only play from 10 to 20 minutes), they do not receive additional rewards and encouragement for violent game play by observers (e.g., friends), and because they are in a more public setting, they might be more restrained in their excitement or frustrations while playing. Regardless, these differences would once again mean that laboratory studies might well underestimate the effect of violent video game exposure in naturalistic settings. Furthermore, there have been no studies showing that gameplay in a home environment protects the player from the deleterious effects of exposure to violent video games.

50. An occasional criticism of human aggression research concerns the manner in which aggression is measured in a laboratory setting. Aggression is typically defined as a behavior intended to harm another individual who is motivated to avoid the harm. Within a laboratory, creating a situation like this is a complicated task, but one that is far from impossible. Several laboratory paradigms have been created over the past 50 years that satisfy the definition of aggression. The most common scenario is one in which the participant is induced to believe that he or she is issuing a noxious stimulus to another person (e.g., electric shock, loud noise blasts, unpalatable food). Studies have been conducted to determine the validity of these aggressive measures. These examinations have shown that these laboratory measures are valid and correlate with aggression that occurs outside the laboratory. They are commonly accepted by experts

in the relevant research community, as evidenced by the frequent publication of such studies in the top peer-reviewed journals.

Interventions

51. There has not been much research on interventions designed to address the media violence problem. Existing research suggests that several types may reduce the media violence effects on aggression. Counter-attitudinal interventions designed to change children's attitudes and beliefs concerning the accuracy, usefulness, and harm of television violence seem to reduce some of the media violence effects. When parents frequently watch television with their children and speak negatively about whatever violence occurs in the shows, there is apparently a reduction in the violent media effects. Finally, there is evidence that reducing the amount of violent media consumed has a beneficial effect.

Conclusions

52. The findings and opinions regarding effects of violent video games set forth in this report are, in my opinion, based on reasonable degree of psychological/scientific certainty. Furthermore, both of the Illinois General Assembly Legislative Findings, "that minors who play violent video games are more likely to: (1) Exhibit violent, asocial, or aggressive behavior. (2) Experience feelings of aggression." are well supported by existing theory and data.

Date: October 5, 2005



Craig A. Anderson, Ph.D.