

---

# Violent Video Games and the Supreme Court

---

## *Lessons for the Scientific Community in the Wake of Brown v. Entertainment Merchants Association*

---

Christopher J. Ferguson  
Texas A&M International University

*In June 2011 the U.S. Supreme Court ruled that video games enjoy full free speech protections and that the regulation of violent game sales to minors is unconstitutional. The Supreme Court also referred to psychological research on violent video games as “unpersuasive” and noted that such research contains many methodological flaws. Recent reviews in many scholarly journals have come to similar conclusions, although much debate continues. Given past statements by the American Psychological Association linking video game and media violence with aggression, the Supreme Court ruling, particularly its critique of the science, is likely to be shocking and disappointing to some psychologists. One possible outcome is that the psychological community may increase the conclusiveness of their statements linking violent games to harm as a form of defensive reaction. However, in this article the author argues that the psychological community would be better served by reflecting on this research and considering whether the scientific process failed by permitting and even encouraging statements about video game violence that exceeded the data or ignored conflicting data. Although it is likely that debates on this issue will continue, a move toward caution and conservatism as well as increased dialogue between scholars on opposing sides of this debate will be necessary to restore scientific credibility. The current article reviews the involvement of the psychological science community in the Brown v. Entertainment Merchants Association case and suggests that it might learn from some of the errors in this case for the future.*

**Keywords:** violent video games, aggression, violence, public policy, child development

**O**n June 27, 2011, the Supreme Court of the United States (SCOTUS) ruled in the case of *Brown v. Entertainment Merchants Association* (2011; or *Brown v. EMA*) that video games enjoy First Amendment protections and that minors’ use of games with violent content may not be regulated by the government. Further, the court concluded that the research used to support the regulation of violent video games was “unpersuasive” and would not pass strict scrutiny.<sup>1</sup> Advocates for the First Amendment have lauded the decision (e.g., Reporters Committee for Freedom of the Press, 2011; Thierer, 2011), whereas activist groups concerned about violent media effects on children expressed disappointment (e.g.,

Parents Television Council, 2011). Of greater concern here is the reaction of the psychological community. In this article I argue that the scientific community is best served by examining mistakes made during the decade prior to the SCOTUS decision and correcting these mistakes. Although cogent arguments can be made in support of the beliefs that violent games either do or do not increase aggression in youth, the scientific review process failed to prevent psychologists from making an increasing stream of statements that expressed high certitude, made spurious comparisons with medical research, ignored disconfirmatory evidence, and increasingly spoke beyond what the data could support. I offer some thoughts on what went wrong with the intent of showing how an understanding of the limitations of the scientific process in this case may inform the psychological community and lead it toward restoring credibility in the future.

### **A History of Events Leading to and Surrounding the Brown v. EMA Decision**

#### **Background**

Since their arrival on the public scene, video games have been a source of controversy. In 1983 C. Everett Koop, the U.S. Surgeon General, claimed that video games were a leading cause of family violence (Cooper & Mackie, 1986). One early (1976) game, *Death Race*, allowed players to run over “gremlins” with a car, racking up points with each kill. In 1982 a game called *Custer’s Revenge* was released by a niche adult-market video game company. The game involved a naked “Custer” with a visible erection avoiding arrows so that he could reach a Native American woman and have sex with her (some critics interpreted this as simulated rape). Despite generating considerable contro-

---

Correspondence concerning this article should be addressed to Christopher J. Ferguson, Department of Behavioral Sciences, Texas A&M International University, 5201 University Boulevard, Laredo, TX 78041. E-mail: cjferguson1111@aol.com

---

<sup>1</sup> Strict scrutiny is the highest level of judicial review by which the courts weigh evidence regarding compelling government interest against constitutional protections. Practically speaking, with regard to scientific evidence, strict scrutiny implies that cause and effect must have been conclusively demonstrated with relatively little disconfirmatory evidence.



**Christopher J. Ferguson**

versy, few copies of this game were sold.<sup>2</sup> Nonetheless, most contemporary studies of violent video games focused on far milder games such as *Missile Command* (in which players shot incoming missiles out of the sky), *Pac-Man* (involving a character who ate pellets for points and ran from ghosts; Cooper & Mackie, 1986), *Berzerk* (which involved a two-dimensional character who shot robots chasing him; Graybill, Strawniak, Hunter, & O'Leary, 1987), *Zaxxon* (a space/aerial combat game), and *Centipede* (in which the player defended a mushroom patch from invading insects and spiders; Anderson & Ford, 1986).

The 1990s brought increases in technology and violent games with person-on-person violence such as *Mortal Kombat* and *Street Fighter* (two graphic person-on-person fighting games) and *Doom* (a first-person-shooter zombie infestation game). By the early 1990s, youth violence was at one of the highest levels on record (Federal Interagency Forum on Child and Family Statistics, 2010), and the United States was shocked by a rash of school shootings. Many commentators expressed concern about a potential epidemic of youth "superpredators" (Muschert, 2007, 2008). Some advocates promoted the idea that video games were training children to become murderers (Grossman, 1996) and began using polemical language such as "murder simulators" or, in Germany, *killerspiele* (killer games). Senator Joseph Lieberman was quoted as referring to violent video games as "digital poison" (CNN, 1997). Yet during the 1980s and 1990s, research on video game violence remained inconclusive, despite the public outcry (e.g., Cooper & Mackie, 1986; Dominick, 1984; Gibb, Bailey, Lambirth, & Wilson, 1983; Scott, 1995; van Schie & Wiegman, 1997; Wiegman & van Schie, 1998).

In 1992–1993, hearings were led by Senators Joseph Lieberman and Herbert Kohl regarding violence in video

games. The video game industry was given a one-year timeframe to set up a voluntary rating system or face a government alternative. The result was the Entertainment Software Ratings Board (ESRB), a voluntary ratings system that provides age-related categories for games. The ESRB also provides content-based descriptors for violence, language, sex, and other potentially offensive content. The ESRB was set up by the video game industry and receives funding from major video game companies to maintain the rating system. Companies submit footage of the most graphic elements of their games, which are rated by several trained, independent raters. Penalties are in place for companies who attempt to skirt the ratings by not submitting objectionable content.

Arguably, the watershed moment for the violent video game debate was the Columbine High School massacre in 1999 in which two youths killed 12 students and a teacher before committing suicide. Soon after the shooting it was widely reported that the youths played the violent video game *Doom*, cementing in the public mind that school shootings and violent video games were invariably linked. The massacre may have, in part, provoked Senate Commerce Committee hearings on media violence in 2000. During these hearings, Senator Lieberman claimed that video games and other media had turned some children into killers, and Senator John McCain criticized the ESRB ratings as "nothing but a smoke screen to provide cover for immoral and unconscionable business practices" (ABC News, 2000, para. 5).

The language employed by scholars began to change as well during this period, and statements of greater certitude about the effects of video game violence became more normative. Some scholars began to claim that the effects found were similar in magnitude to those found for smoking and lung cancer or other important medical effects (Huesmann, 2007), that video game and other media violence could explain up to 30% of societal violence (Strasburger, 2007), that the effects of violent video games were comparable in magnitude to the effects of important criminological risk factors, and that inconsistencies in the research had virtually evaporated (Anderson, 2004). Although speaking about media violence generally, American Academy of Pediatrics (AAP) President David Cook (2000) claimed that of 3,500 studies of media violence undertaken, only 18 had not found effects, a statement that

---

<sup>2</sup> Some scholars (e.g., Olson, 2010) have noted that media outcries about objectionable games are often self-defeating, at least if the goal is to protect minors from exposure to them. For instance, much attention in the *Brown v. EMA* case focused on a highly violent and depraved game called *Postal* (and its sequel), which surveys of youth found that few to no children ever played (Ferguson et al., 2009; Kutner & Olson, 2008; Lenhart et al., 2008; Olson et al., 2007). The irony of such political and news media attention is that it may draw youths' attention to games they had no idea about, even as the stated objective is to reduce exposure.

has since proven to be inconsistent with the data (Freedman, 2002).<sup>3</sup>

During this time, claims of a link between video game violence and school shootings or youth violence began to be questioned. A 2001 report on youth violence relegated media violence to a minor role in such outcomes and noted inconsistencies in the literature (U.S. Department of Health and Human Services [DHHS], 2001). A planned chapter on media violence was ultimately not included in this report because of the minor role DHHS ultimately felt media violence played in youth violence. Similarly, a 2002 report on school shootings by the U.S. Secret Service and the U.S. Department of Education (Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002) found little evidence to suggest that school shooters consumed unusually high levels of violent video games or other media.

In 2005 the American Psychological Association (APA) released a resolution on video game violence linking violent video games with aggressive behavior, thoughts, affect, and decreased prosocial behavior. The resolution contained no equivocation and called for a reduction of violent content in such media. For instance, this resolution stated that “comprehensive analysis of violent interactive video game research suggests such exposure a.) increases aggressive behavior, b.) increases aggressive thoughts, c.) increases angry feelings, d.) decreases helpful behavior, and, e.) increases physiological arousal” (APA, 2005, para. 5) and that “studies further suggest that videogames influence the learning processes in many ways more than in passively observing TV” (APA, 2005, para. 8), despite the fact that this latter point had been contradicted by meta-analysis (Sherry, 2001). Despite this appeal to consensus by the APA, the scholarly community was, in fact, becoming increasingly divided. Although there are many scholars involved in both sides of this debate, several authors have been particularly prolific and worthy of note. Arguing for the existence of negative effects of violent video games, scholars such as Craig Anderson, Brad Bushman, and Doug Gentile (e.g., Anderson et al., 2010) have been particularly prolific, along with their colleagues and students. Scholars who are more skeptical of the effects of video game violence include Cheryl Olson, Lawrence Kutner, and John Colwell (e.g., Colwell & Kato, 2003; Kutner & Olson, 2008). The nature of the disagreements between these groups are discussed later in the article.

### **Enter *Brown v. EMA* (Previously *Schwarzenegger v. EMA*)**

California’s attempt to regulate the sale of video games to minors was not the first.<sup>4</sup> Other states (Georgia, Illinois, Louisiana, Maryland, Michigan, Minnesota, Oklahoma, and Washington) as well as municipalities in Indiana and Missouri passed various pieces of legislation restricting sales of violent games to minors. In each of these cases, the legislation was struck down on constitutional grounds, with the courts noting in several cases that the psychological research was unable to demonstrate a cause and effect relationship between video game violence and aggression in youth.<sup>5</sup> In one case (*Entertainment Software Associa-*

*tion, Video Software Dealers Association, and Illinois Retail Merchants Association* [ESA, VSDA, and IRMA] *v. Blagojevich, Madigan, and Devine*, 2005), the court expressed concern that scholars advocating the causal position considered only work that supported their views:

With regard to their conclusions, Dr. Goldstein and Dr. Williams noted that Dr. Anderson not only had failed to cite any peer-reviewed studies that had shown a definitive causal link between violent video game play and aggression, but had also ignored research that reached conflicting conclusions. Dr. Goldstein and Dr. Williams noted that several studies concluded that there was no relationship between these two variables. They also cited studies concluding that in certain instances, there was a *negative* relationship between violent video game play and aggressive thoughts and behavior (e.g., initial increases in aggression wore off if the individual was allowed to play violent video game for longer period). (pp. 14–15)

The court similarly criticized the legislature for citation bias in their review of the literature:

Finally, the Court is concerned that the legislative record does not indicate that the Illinois General Assembly considered any of the evidence that showed no relationship or a negative relationship between violent video game play and increases in aggressive thoughts and behavior. The legislative record included none of the articles cited by Dr. Goldstein or Dr. Williams. It included no data whatsoever that was critical of research finding a causal link between violent video game play and aggression. These omissions further undermine defendants’ claim that the legislature made “reasonable inferences” from the scientific literature based on “substantial evidence.” (*ESA, VSDA, and IRMA v. Blagojevich, Madigan, and Devine*, 2005, p. 16)

Thus the court raised the issue of scientific credibility, that not only the legislature but some scholars were selectively excluding research data that didn’t confirm their hypotheses.

California’s law seeking to restrict the sale of violent video games to minors was first proposed by Assemblyman (later State Senator) Leland Yee, a child psychologist. The law had the backing of the state psychological and pediatrics associations as well as of advocacy “watchdog” groups devoted to media concerns. It is important to note that arguments for the law implied not merely that violent video games might increase minor acts of aggression but that they would cause “harm” to minors, including violent behavior and neurological harm to the brain. The law was passed and signed by then-governor Arnold Schwarzenegger in 2005; it would have imposed a \$1,000 fine on retailers for selling

<sup>3</sup> Most scholars put the number for all studies of media violence in the range of several hundred, although debate continues regarding how consistent this pool of data is. Freedman (2002) found the data to be about equally divided between supportive studies, null studies, and those that were inconsistent. He claimed that many studies that purported to support causal beliefs were in fact either inconsistent or null.

<sup>4</sup> It is noted that this discussion focuses on U.S. cases. Regulation of violent video games is permitted in some other countries.

<sup>5</sup> There were also questions raised about whether the relatively minor aggressive acts studied in most video game violence studies demonstrated a compelling state interest as they typically did not involve serious acts of youth violence.

violent games to minors and would have required a clearly marked sticker for such games beyond the ESRB ratings for violent games. The Entertainment Software Association (ESA) and the Video Software Dealers Association (VSDA) quickly filed a lawsuit in district court to block implementation of the law. U.S. District Judge Ronald Whyte agreed to a preliminary injunction, once again questioning the research evidence and ultimately ruling for the ESA with a permanent injunction in 2007. The state of California appealed the decision to the 9th Circuit Court of Appeals, which once again ruled for the ESA in 2009 (*Video Software Dealers Association and Entertainment Software Association v. Schwarzenegger*, 2009). In reviewing the research evidence provided by the state, the 9th Circuit Court noted that approximately half of the evidence cited was from a single scholar and concluded,

In sum, the evidence presented by the State does not support the Legislature's purported interest in preventing psychological or neurological harm. Nearly all of the research is based on correlation, not evidence of causation, and most of the studies suffer from significant, admitted flaws in methodology as they relate to the State's claimed interest. None of the research establishes or suggests a causal link between minors playing violent video games and actual psychological or neurological harm, and inferences to that effect would not be reasonable. (*VSDA and ESA v. Schwarzenegger*, 2009, III, A, [13])

In 2009 then-governor Schwarzenegger appealed the case to SCOTUS, which agreed to hear the case in 2010. The SCOTUS decision to hear the case was surprising to some, given the unanimity of decisions among the lower courts as well as the decision not to carve out a new category of unprotected violent speech in the recent *United States v. Stevens* (2010) case pertaining to animal "crush" videos (these involved sexual fetish videos of women crushing small live animals to death under stiletto heels). Thus some speculated that SCOTUS may have been signaling a willingness to carve out violence, at least in video games, as a new category of unprotected speech (Denniston, 2010a).

### **Cracks in the Edifice**

Although the language of much of the scientific community as exemplified in the 2005 resolution statement of the APA remained one of absolute certitude during the early 2000s, in fact some studies continued to find that video game effects on aggression were minimal (e.g., Baldaro et al., 2004; Colwell & Kato, 2003; Durkin & Barber, 2002). These were arguably in the minority and generally ignored by both the news media and the scientific community (none were cited in APA's 2005 resolution). Despite claims from some scholars that violent media might explain as much as 30% of societal violence (Strasburger, 2007), some scholars began to note that the video game era saw approximately a two-thirds reduction in youth violence, not an increase, which appeared to conflict with some of the statements of harm (Olson, 2004), at least on the societal level.

In 2005 a combined experimental/prospective study of video game violence concluded that exposure to video game violence had no impact on relational aggression or normative beliefs in aggression (Williams & Skoric, 2005). Unlike previous disconfirmatory studies, this report received comparatively widespread news media attention. Advocates of the causal position soon excoriated the weaknesses of the study in harsh terms (e.g., Huesmann, 2007), although arguably the weaknesses of the Williams and Skoric (2005) study were shared among studies on both sides of the debate. For instance, Huesmann (2007) complained about the aggression measures used in the study, although these overlap considerably with measures in other video game studies that have not been so criticized (e.g., Möller & Krahe, 2009). Similarly, Huesmann claimed that the Williams and Skoric study had low power, although with a sample of 213, their study is in the high range of sample sizes for experimental studies. Huesmann also claimed that Williams and Skoric had an inadequate control group, although other scholars have pointed out this issue is endemic in the field (Adachi & Willoughby, 2011b). Thus I argue here that the Williams and Skoric paper was singled out for criticism not because it was uniquely flawed, but rather because of its results. Of course it is reasonable to note that some advocates of the causal position have come in for considerable criticism as well, although this criticism tends to focus less on single studies and more on general comments made by these scholars (see discussions by Ferguson, 2010; Grimes, Anderson, & Bergen, 2008; Kutner & Olson, 2008) in the context of the sociology of media violence research itself. However, the Williams and Skoric paper was arguably the tip of the iceberg for an increasing number of studies that have called into question the causal position on video games (e.g., Adachi & Willoughby, 2011a; Bösche, 2010; Bowen & Spaniol, 2010; Devilly, Callahan, & Armitage, 2012; Ferguson, 2011; Ferguson, San Miguel, & Hartley, 2009; Ivory & Kalyanaraman, 2007; Teng, Chong, Siew, & Skoric, 2011; Unsworth, Devilly, & Ward, 2007; von Salisch, Vogelgesang, Kristen, & Oppl, 2011). Scholarly reviews also began to question whether the causal position had been overstated (e.g., Adachi & Willoughby, 2011b; Barnett & Coulson, 2010; Ferguson, 2010; Grimes et al., 2008; Hall, Day, & Hall, 2011a; Mitrofan, Paul, & Spencer, 2009; Sherry, 2007), as did editorials in the *Lancet* ("Is Exposure to Media Violence," 2008) and *Nature* ("Editorial: A Calm View," 2003), the latter specifically calling on researchers to "tone down the crusading rhetoric until we know more" (p. 355). The reviews cited above generally concluded that claims of causal certainty or unequivocal findings in the literature greatly exceeded the available data, that methodological problems are common in the field, particularly pertaining to careful controls in experiments and poor aggression measures in all studies, and that ideological biases were damaging scientific credibility. Communications scholar John Sherry asked in 2007, "Further, why do some researchers continue to argue that video games are dangerous despite evidence to the contrary?" (Sherry, 2007, p. 244). The Australian government in September 2010 and the Swedish government in

December 2011 (Swedish Media Council, 2011) conducted reviews of the research and both concluded the research was inconclusive and weakened by numerous flaws. The Australian government specifically criticized comments such as those involving comparisons with medical effects, noting that “as the definitions and measurements and VVGs (violent video games) are contested, comparing VVG effects with correlations between two easily defined variables (i.e. “smoking” and “lung cancer”) is more likely to mislead readers than to inform them” (Australian Government, Attorney General’s Department, 2010, p. 32).

Three groups of scholars (Anderson, 2004; Anderson et al., 2010; Ferguson, 2007; Ferguson & Kilburn, 2009; Sherry, 2001, 2007) conducted meta-analyses on violent video game effects. Two of the three groups (Ferguson, 2007; Ferguson & Kilburn, 2009; Sherry, 2001, 2007) concluded that video game violence effects were minimal and may have been influenced by publication bias (Ferguson, 2007), although the third group concluded that video game effects are consistent and strong. Thus considerable disagreement remained within the scientific community regarding video game violence influences.

### **SCOTUS Decides**

The SCOTUS case attracted considerable attention, including numerous amicus briefs on both sides. In addition to supporting briefs from two activist groups, California was supported by 11 other states as well as by a brief authored by State Senator Yee and cosigned by the California chapter of the American Academy of Pediatrics, the California Psychological Association, and approximately 100 psychologists and medical scholars. The EMA was supported by approximately 27 separate briefs. Many of these were from media industries (ranging from movies to comic books), but they also included briefs from groups concerned with the First Amendment, from legal scholars, from the American Civil Liberties Union and the National Youth Rights Association, and from the Entertainment Consumers Association (representing video game consumers), the Chamber of Commerce of the United States, and the Cato Institute. Nine states and Puerto Rico sided against California in an amicus brief, as did a group of 82 social and medical scientists who felt that California had misrepresented the research in supporting the law. The APA did not file or sign an amicus brief; Steven Breckler of the APA Science Directorate was quoted as indicating the research was not conclusive enough to weigh in on the matter (see Azar, 2010).

Arguments were held on November 2, 2010, and although opinions appeared divided among the justices, the court appeared to question the notion that violent games “harmed” minors. They also expressed skepticism of the notion that games were different from other media and over whether the California law was properly worded, narrowly tailored, or least restrictive. Several of the justices did appear concerned about violence in video games, particularly Justices Roberts, Alito, and Breyer, which led some speculators to suggest that SCOTUS might strike down the

California law but leave an open door for a more narrowly tailored law (Denniston, 2010b).

The degree of tension within the scientific community over these issues attracted notice when two signers of State Senator Yee’s amicus brief supporting California joined with a lawyer to publish an essay in a law review critical of the other amicus brief (the Millett brief) of scholars (Pollard-Sacks, Bushman, & Anderson, 2011); the essay claimed that the scholars supporting California had published more research on the topic and thus were the true experts. However, this analysis did not deal with the substance of the two briefs. The Pollard-Sacks et al. (2011) essay amounted mainly to ad hominem attacks and appeals to authority, not to a comprehensive review of data. Furthermore, the Pollard-Sacks et al. paper was subsequently reviewed by scholars who were not involved in either amicus brief (Hall, Day, & Hall, 2011b). Hall et al. concluded that the methodology of Pollard-Sacks et al. underestimated the expertise of the scholars on the Millett brief and otherwise ran counter to proper scientific inquiry.<sup>6</sup>

SCOTUS announced their decision on *Brown v. EMA* on June 27, 2011. In a 7–2 decision (Justices Alito and Roberts concurring but appearing more open to a narrower law than the majority; Justices Breyer and Thomas dissenting), the majority opinion written by Justice Scalia stated that video games enjoyed full First Amendment protections, that youth enjoyed considerable First Amendment protections that could not be legislated away even where the state might document some interest, that the research on video game violence was “unpersuasive” and could not reach strict scrutiny, and that attempts to regulate violence would have to meet strict scrutiny. No door was left open for a narrower law.

Writing just before the decision in the *Mayo Clinic Proceedings* (and echoing the much earlier editorial in *Nature*, “Editorial: A Calm View,” 2003) Hall et al. (2011a) cautioned scholars that they were potentially exaggerating the effects of video game violence and that such exaggerations were likely to harm the credibility of the scientific community in the eyes of the public and the legal system. These warnings appear prescient, as the majority opinion specifically criticized the psychological science invoked, stating,

The State’s evidence is not compelling. California relies primarily on the research of Dr. Anderson and a few other research psychologists whose studies purport to show a connection between exposure to violent video games and harmful effects on children. These studies have been rejected by every court to consider them, and with good reason: They do not prove that violent video games *cause* minors to *act* aggressively (which would at least be a beginning). Instead, “[n]early all of the research is based on correlation, not evidence of causation, and most of the studies

---

<sup>6</sup> For instance, consider the case of Constance Steinkueller, who lists 49 peer-reviewed publications on her curriculum vitae, only 9 of which (less than 20%) would have been identified using the methodology of Pollard-Sacks et al. (2011). Steinkueller, despite being labeled a nonexpert by Pollard-Sacks et al., has since gone on to become one of the U.S. executive branch’s leading experts on video games and technology.

suffer from significant, admitted flaws in methodology.” *Video Software Dealers Assn.* 556 F. 3d, at 964. They show at best some correlation between exposure to violent entertainment and minuscule real-world effects, such as children’s feeling more aggressive or making louder noises in the few minutes after playing a violent game than after playing a nonviolent game.

Even taking for granted Dr. Anderson’s conclusions that violent video games produce some effect on children’s feelings of aggression, those effects are both small and indistinguishable from effects produced by other media. In his testimony in a similar lawsuit, Dr. Anderson admitted that the “effect sizes” of children’s exposure to violent video games are “about the same” as that produced by their exposure to violence on television. App. 1263. And he admits that the *same* effects have been found when children watch cartoons starring Bugs Bunny or the Road Runner, *id.*, at 1304, or when they play video games like Sonic the Hedgehog that are rated “E” (appropriate for all ages), *id.*, at 1270, or even when they “vie[w] a picture of a gun.” (*Brown v. EMA*, 2011, Opinion of the Court, pp. 12–13)

Echoing concerns among some researchers regarding the poor quality of aggression measures used in many studies (Ferguson, 2010; Ritter & Eslea, 2005; Savage, 2004, 2008; Tedeschi & Quigley, 1996), SCOTUS noted the disconnect between “aggression” as used in many of the studies and how it is perceived in the general public:<sup>7</sup>

One study, for example, found that children who had just finished playing violent video games were more likely to fill in the blank letter in “explo\_e” with a “d” (so that it reads “explode”) than with an “r” (“explore”). App. 496, 506 (internal quotation marks omitted). The prevention of this phenomenon, which might have been anticipated with common sense, is not a compelling state interest. (*Brown v. EMA*, 2011, Opinion of the Court, p. 13, footnote 7)

By contrast, Justices Alito and Roberts assented but did express concerns about violence in video games and were willing to consider less restrictive means to control such content. Justice Breyer also appeared convinced by causal arguments but expressed frustration regarding what to do with conflicting social science data. Justice Breyer appeared convinced by California’s argument that the interactivity of video games makes them different from other media, stating “the closer a child’s behavior comes, not to watching, but to *acting* out horrific violence, the greater the potential psychological harm” (*Brown v. EMA*, 2011, Breyer, J., dissenting, p. 14) despite the fact that there is no consensus view on this even among scholarly advocates of the causal position let alone dissenting scholarly opinions. Justice Breyer’s conclusion appears to have been based upon his efforts to assemble lists of supporting and non-supporting research studies. The majority opinion was dismissive of Justice Breyer’s efforts, stating “we do not see how it could lead to Justice Breyer’s conclusion, since he admits he cannot say whether the studies on his side are right or wrong” (*Brown v. EMA*, 2011, Opinion of the Court, p. 14, footnote 8).

Reactions to *Brown v. EMA* (2011) are naturally likely to run the gamut. I argue here, echoing the concerns of Hall et al. (2011a), that psychological science emerges from *Brown v. EMA* weaker in credibility than it was going in.

Although I suspect the SCOTUS justices would be the first to acknowledge their own limitations in judging the merits of psychological science, they do have the advantage both of objective distance from the research and lack of any stake in the research. Furthermore, the SCOTUS decision joins with similar comments from the lower courts, the Australian and Swedish governments, the U.S. DHHS, several highly ranked medical and scientific journals, and numerous independent scholars in warning that the scientific community may have gotten this issue wrong, at least in making what I will henceforth call “extreme statements” that exceeded the conclusions possible from the available data.

This is not to say that the decision by SCOTUS is beyond criticisms. Justices may not be in the best position to render judgment on science. For instance, justices may interpret the limitations sections of scientific articles as an acknowledgement by the authors that their own studies lack validity. By focusing too much on limitations sections, the court system may ironically propel scholars to make more unequivocal statements, as this may appear to be what the courts want. Furthermore, the court’s comment that results of some studies may have been “anticipated with common sense” reflects poor awareness that common sense is often a meager indicator of factuality and may be the result of hindsight bias (Chabris & Simons, 2010; Lilienfeld, Lynn, Ruscio, & Beyerstein, 2009; Watts, 2011). As such, the SCOTUS decision is worthy of critical examination. Nonetheless, I suspect it is tempting to believe that the fault lies with SCOTUS for its failure to understand “the science” or to believe that perhaps psychologists have simply failed to communicate “true” facts to the legal system and the public and that the only requirement is for psychologists to improve their communication (an argument that could potentially lead to more unequivocal and extreme statements rather than fewer). Here I express the concern that in doing so the scientific community would miss an opportunity to self-evaluate and (particularly in light of recent calls by Simmons, Nelson, & Simonsohn, 2011, and LeBel & Peters, 2011, regarding Type I error and methodological flexibility in psychology) increase both rigor and appropriate scientific skepticism and scrutiny. Concerns that the legal community may fail to understand causality in experimental research and discussions on how the scientific community might improve communication are eloquently

---

<sup>7</sup> The general public in hearing about “aggressive cognitions” arguably envisions individuals planning on harming one another, not these types of word tests. The question is whether cognitive word tests such as these are related to actual aggressive behavior in real life, and the answer appears to be no (Ferguson, 2007). To illustrate the weakness of such measures we might imagine that if we showed research participants a film involving homosexual romantic themes (e.g., *Brokeback Mountain*) we might reasonably find that immediately following viewing of the film homosexually themed words would be more easily accessible to those participants than to a control group who had not viewed the film. However, to assert that individuals watching such a film would be more inclined to actual homosexual behavior immediately after as a consequence of seeing the film would likely get little purchase in psychological science.

expressed elsewhere (Gentile, Saleem, & Anderson, 2007). However, it is just as important to understand that it is the structural and theoretical elements of the science itself that may have promoted rigid and ideological beliefs that also damaged scientific credibility.

## The Science of Video Game Violence

Very often, reviews of video game violence focus on arguments in which the authors attempt to make the case for why links between video game violence and aggression are *absolutely true* or *absolutely false* (e.g., Anderson et al., 2010; Ferguson, 2010; Huesmann, 2010; Kutner & Olson, 2008). I wish to take a different approach and consider where points of agreement and disagreement exist within the field. Although it is probably difficult to claim universal agreement on any point (humans being human), there are probably several issues upon which relatively wide agreement exists, and these points may set a foundation upon which future coordination and cooperation in the field between scholars may rest.

### Areas of Agreement

**Video game violence is an important issue to study.** There is little disagreement, at least among social scientists, that video game violence effects are a worthwhile topic. The hypothesis that video game violence may increase aggression, whether that hypothesis proves to be true or not, is a perfectly valid hypothesis to consider scientifically. Although some individuals in the general public or among politicians and some media scholars may fret about the disconnect between psychological studies and the cultural context of media violence (e.g., Jenkins, 2006), I am not aware of any scholars who argue that this issue should be left entirely unconsidered.

**Violence is multidetermined.** Violent behavior is widely understood as a complex developmental process that occurs through the interaction of biological and environmental influences (Beaver, Barnes, May, & Schwartz, 2011). No scholar on either side of the debate is arguing that video games are the *only* source of youth violence or aggression or should be judged according to that standard.

**Results differ when aggression and violence are considered as outcomes.** Most scholars recognize that outcomes differ when serious violent acts and milder aggressive acts (such as in laboratory studies) are considered. Generally speaking, the effects of video game violence on violent criminal acts appear to be minimal (Ferguson & Kilburn, 2009; see also Doug Gentile's comments in Bavelier et al., 2011), whereas stronger effects are seen for milder measures of aggression, particularly those used in the lab. This distinction is sometimes lost on the general public (although also by some scholars; see Strasburger, 2007) and may sometimes be neglected when discussions begin to focus on public health as in the *Brown v. EMA* (2011) case.

**It is important to consider evidence from multiple sources.** There are three general sets of studies in the video game violence literature—correlational,

longitudinal/prospective, and experimental studies. Although scholars differ with regard to whether these three forms of studies produce consistent results, most scholars acknowledge that it is important to consider all forms of evidence, as the strengths of one form of evidence may offset the weaknesses of another approach.

### Areas of Disagreement

**Research results consistently document links with aggression.** Scholars advocating the causal position have generally argued that all three areas of research (correlational, longitudinal/prospective, and experimental) produce overwhelmingly consistent results (e.g., Anderson et al., 2010). Other scholars argue that this is not so and that, in fact, none of these three areas return consistent results (e.g., Ferguson, 2010; Kutner & Olson, 2008). Scholars also disagree about whether the data of some individual studies support, are neutral with regard to, or refute causal hypotheses.

**The validity of aggression measures.** Perhaps one of the most vociferous and ongoing debates concerns the validity of aggression measures themselves, particularly those used in laboratory experimental studies. Recently it has been shown that many of these measures are unstandardized and that authors, sometimes even the same author, measure aggression differently with the same instruments across studies (Kutner & Olson, 2008). Most notably, the revised Taylor Competitive Reaction Time test (TCRTT, or the noise blast test) used in laboratory experiments has been criticized for its highly unstandardized use (Ferguson, 2010; Kutner & Olson, 2008). Briefly, in the TCRTT the participants believe they are playing a reaction time game against another person. When they lose, they are blasted with a burst of white noise that they believe their opponent set for them. When they win, they can blast their opponent with similar white noise. In reality there is no opponent, and wins and losses by the participants are set in advance by the computer. The TCRTT has both noise duration and intensity measures, but even these two have 25 trials each which can be selected from or recombined into multiple potential indices. Some studies have taken summed or averaged separate scores for win trials and lose trials (i.e., trials occurring after the participant had won or lost a reaction time game) for both intensity and duration separately (Anderson & Dill, 2000), with disagreement subsequently seen between those results. Others have summed all intensity measures only, combining all win or lose trials (Anderson & Murphy, 2003); have separated the 25 trials into summed blocks of approximately equal thirds (Anderson et al., 2004); have taken the square root of the duration score and multiplied it by the intensity score (Carnagey & Anderson, 2005); or have summed the number of "high intensity" trials (trials in which the participant selected an intensity between 8 and 10 on a 1–10 scale; Anderson & Carnagey, 2009). This is not a minor issue of slight procedural differences, as research suggests that these different potential outcomes don't produce similar results (Anderson & Dill, 2000; Elson, 2011; Ferguson & Rueda, 2009), and there is a potential that the differing

indices could show that violent games increase, decrease, or have no effect on player aggression for the same sample of participants. Such measures have been documented to result in increased effect sizes relative to carefully standardized and validated aggression measures (Ferguson & Kilburn, 2009), a finding that is well in line with Simmons et al.'s (2011) recent revelations about "methodological flexibility" in psychology. However, advocates of the causal position (e.g., Anderson et al., 2010) argue that general agreement among these measures with theory suggests that, whatever their weaknesses, these measures are working as they should.

**Does publication bias matter?** Publication bias is a common and well-documented phenomenon in the psychological and other sciences. However, scholars have differed over whether it has been an issue for video game research. Ferguson and Kilburn (2009) in a meta-analytic study discovered significant evidence of publication bias. However, Anderson et al. (2010) concluded that publication bias was minimal. These disagreements hinge upon differences in opinion regarding how best to analyze and correct for publication bias. For instance, Anderson et al. (2010) suggested that noninclusion of unpublished studies in previous meta-analyses was a potentially biasing and incorrect procedure. However, Ferguson and Kilburn (2010) noted that the Anderson et al. (2010) analysis itself included unpublished studies by the authors themselves and their close colleagues but never solicited or included unpublished studies from authors who had found opposing results, thus substantiating concerns about selection bias in the inclusion of unpublished studies. The courts had previously expressed similar concerns regarding scholars ignoring research that contradicted their personal views (*ESA, VSDA, and IRMA v. Blagojevich, Madigan, and Devine*, 2005). As such, the concerns expressed by Ferguson and Kilburn (2010) are consistent with those of the judiciary.

**Do small effects matter?** If one takes the research at face value, virtually all meta-analyses agree that the basic effect size for violent video games and aggression is approximately  $r = .15$  (Anderson et al., 2010; Ferguson & Kilburn, 2009; Sherry, 2001). This represents a bivariate correlation, and Ferguson and Kilburn (2009) and Sherry (2001) both argued that this figure may represent an inflated figure because of the issues mentioned above as well as because of the lack of control for other variables (particularly in correlational and longitudinal/prospective) studies. By contrast, Anderson et al. (2010) argued that this figure may in fact be *too low* because of other methodological issues such as ceiling effects. Even if one takes this figure at face value, scholars disagree as to whether it is large enough to constitute evidence for the kind of societal intervention proposed by *Brown v. EMA* (2011). Some scholars (e.g., Huesmann, 2007) defend these effect sizes by comparing them to medical effects, whereas other scholars have countered that such comparisons are based on miscalculated statistics (e.g., Block & Crain, 2007).

## How Did Disagreement Occur?

At present we thus have two groups of scholars, approximately equal in number, who disagree vehemently about the data on video game violence effects. Differences between the two camps are complex but focus on both practical matters such as how to interpret small effect sizes, the validity of aggression measures, and the proper ways of controlling for third variables in analyses as well as theoretical issues involving the use of terms such as *aggression* and *violence* and whether social cognitive theories are adequate at explaining aggression. Given broader issues in the field regarding methodological flexibility (Simmons et al., 2011) and the politically charged nature of this field, it is perhaps unsurprising that the two groups of scholars might look at the same data and, in all sincerity, see two very different things within. When data are unclear and guidelines for making sense of such data are absent, disagreements are both expected and potentially quite healthy so long as they are allowed to progress naturally.

## The Scientific Community's Involvement in the Video Game Violence Debate

As is often the case with societally pressing issues (or at least issues that appear to be so at first glance), the scientific community became involved in the discussion of video game violence debates in an attempt to set an agenda for the public discussion. These involvements went beyond debates between scholars to blanket statements by professional organizations attempting to set forth an "official" scientific position in these debates. In this section, I discuss the errors in these policy statements and how they came to exist in such a state without accurately describing the state of the science.

It would probably be difficult to overestimate the influence of professional organization resolutions and position statements on the legislative process. Granted, hyperbole from legislators and politicians, such as the various statements by Senator Lieberman or Surgeon General C. Everett Koop or others, predated much of the furor within the scientific community itself (an important point I'll return to later). Yet the conclusiveness of the policy statements by the APA and the AAP provided a convenient talking point for politicians, advocacy groups, and individual scholars, State Senator Yee being no exception.

However, the policy statements were often incorrect even on basic details, and for areas in which there was scholarly controversy (such as the smoking and lung cancer analogy), these controversies were not reported. Furthermore, disconfirmatory evidence was not reported or cited, studies finding inconclusive results were reported as if their results were conclusive, and difficulties adequately measuring aggression went unmentioned. The erroneous statement by the AAP suggesting that 3,500 studies of media violence existed (AAP, 2001; Cook, 2000) is perhaps symptomatic of the larger structural failures in peer review of these resolutions and policy statements. As noted, Freedman (2002) challenged this figure soon after the statement

was issued, and meta-analyses of media violence studies could typically find no more than 300 or so such studies, including unpublished studies. Thus the AAP overstated the number of studies by tenfold during testimony to Congress. In a follow-up resolution (AAP, 2009), the estimated number of studies was quietly lowered to 2,000, an apparent net loss of 1,500 studies over the previous decade. However, the figure of 2,000 studies also is questionable, appearing to be based on the personal database of a single scholar. A search of that database reveals that, although there may be 2,000 articles within, the majority do not pertain to media violence per se and many (perhaps most) are not empirical studies.

The 2009 AAP statement also repeated the smoking/lung cancer analogy without noting that it had become controversial (Block & Crain, 2007; Ferguson, 2009). The AAP (2009) stated that “playing violent video games has been found to account for a 13% to 22% increase in adolescents’ *violent behavior* [emphasis added]; by comparison, smoking tobacco accounts for 14% of the increase in lung cancer” (p. 1223). Claims about smoking and lung cancer are based on a miscalculation (Block & Crain, 2007; Ferguson, 2009) that has been continually repeated despite having been detected. The National Cancer Institute (2011) estimates that 90% of lung cancer deaths and virtually all of the rise in such deaths are due to smoking, not 14% as suggested by the AAP.

By avoiding such statistics and talk of violent behavior, the 2005 APA resolution is certainly better. However, like the AAP statement, the APA resolution (APA, 2005) nonetheless presents the research on video games as more conclusive than it is and simply fails to cite any research that would raise doubts.

### **Putting Theory Before Data**

Scientific theories are used to organize existing data and guide future research. Although theory in science is of critical importance, it is understood that theories can at times obstruct scientific progress (Greenwald, 2012; Greenwald, Pratkanis, Leippe, & Baumgardner, 1986). This obstruction occurs when scholars become emotionally invested in a theoretical perspective. Inconclusive data may be interpreted as supportive of the theory, and nonsupportive data may be ignored, criticized, or suppressed. This proposition may seem controversial on the surface, although I propose that it is merely evidence of human nature and that, as scientists, we too often forget the limitations of our own human nature.

Much in the discussions on media violence rests upon social cognitive theories of aggression. Put quickly here, such theories, including the general aggression model (GAM; Anderson et al., 2010), posit that aggression is learned by the activation and repetition of cognitive scripts coupled with the desensitization of emotional responses due to repeated exposure. Although such theories do not rule out biological or personological inputs, neither are they explicitly detailed, and most of the models are focused on learning-based inputs. Such views generally do not make a clear distinction between violence occurring in real

life and that occurring on screen, or between levels of graphicness, an issue noted in *Brown v. EMA* (2011). These views came under close scrutiny during the *Brown v. EMA* case and ultimately were one issue that undermined the position of the state of California.

Social cognitive models such as the GAM are themselves based on social learning, and I express the concern that psychological discussions too quickly move from discussing social learning as something humans *can* do to something they *must* do. Or, to put it more colloquially, if the only tool you have is a hammer, everything begins to look like a nail. Arguably some of this problem may come from the veneration of experimental methods in which the distinction between what *can* occur in the lab and what actually *does* occur in the natural environment is often lost (McCall, 1977). The concern is that proponents of social cognitive theories ultimately and inadvertently create a closed system in which disconfirmation becomes unlikely. Although such circumstances are inadvertent, adherents to a particular theoretical model may, though acting in good faith, favor work that supports their personal views over disconfirmatory evidence (Greenwald et al., 1986; Grimes et al., 2008). Proponents of a theoretical model, by serving as reviewers, in essence become the “gatekeepers” of that model, making falsification of that model unlikely or impossible. Theory defensiveness beckons a situation in which a “reverse burden of proof” is created, from which disconfirmatory evidence may be subjected to much higher scrutiny than confirmatory evidence, which is the opposite of the falsification ideal in science. Thus the social cognitive theories of aggression such as the GAM may have become self-promoting, rather than carefully and objectively analyzed for the purpose of possible falsification. My intent is not to single out the adherents of this particular theoretical position but rather to argue that “theory defensiveness” is an issue that operates broadly across many areas of our field and may be a factor in the current debate as well.

### **Nonindependence of Professional Society Resolutions**

Resolution statements are often presented to the general public in such a way as to imply that the professional organization conducted an independent and objective review of the research. However, in the case of the APA (2005) resolution, the initial Committee on Violence in Video Games and Interactive Media consisted mainly of scholars who were heavily invested in promoting the causal hypothesis of video game violence. No scholars whose work had questioned such beliefs (e.g., Colwell & Kato, 2003; Durkin & Barber, 2002; Olson, 2004; Sherry, 2001) were included on the committee (see APA, Public Affairs Office, 2005, for a list of committee members).

Resolution statements such as the 2005 APA statement typically go through higher levels of peer review, but this may promulgate a “wag the dog” effect in which the conclusions of the committee are difficult to challenge at higher levels. This is particularly true where the ideological and political structures of the larger organization may pro-

mote disincentives to challenging the conclusions of the committee. Put simply, the APA, itself an advocacy as well as scientific organization, benefits from identifying a problem for which psychologists are part of the solution. Given that a group such as the APA might reasonably be expected to be homogeneous with well-set ideological and political agendas (Redding, 2001), as would any human enterprise, the failure to include an independent or pluralistic committee from the outset made a particular conclusion inevitable before any data were actually examined. Well-known processes of groupthink thus explain the APA (2005) resolution. The resolution failed to consider disconfirmatory evidence, presented the research as more consistent than it actually was, and speculated that interactive media may be more harmful than television (something that was never documented even in the research taken at face value). Furthermore, the resolution took an advocacy tone in calling for the dissemination of controversial conclusions without carefully noting the controversy and in implicitly repudiating the ESRB rating system without evidence that it was ineffective<sup>8</sup> and calling for the development of a new system.

Nor are the APA (2005) and AAP (2009) statements independent of each other, with at least one researcher (Dr. Anderson) either sitting on or advising both committees. This situation creates a curious tautology in which some scholars produce a body of research, then sit on a professional committee that declares their own body of research beyond further debate, and then in future research refer back to those professional organization resolutions as if these statements provide independent verification of their ideas (e.g., Anderson et al., 2010). This phenomenon is referred to as “echo attribution” (Rosen & Davison, 2001) and involves scholars referring to journal or professional organization statements that they themselves authored as if they offered independent verification of their ideas. Naturally, there is no reason to suspect that critics of the causal perspective would be any different in this regard. Relying solely on scholars from either “side” of such debates makes one prone to producing statements that are biased in one direction or another.

One difficulty with resolution statements, at least in this area, is that they tend to present nuanced research as far more conclusive and applicable to the real world than it may actually be. The AAP (2009) statement certainly goes further than the APA (2005) statement in repeating claims about smoking and lung cancer, inflating the actual number of studies, and overgeneralizing aggression research to violence, although the difference is a matter of degree. Once professional groups have made extreme statements of this sort, they have placed their own scientific credibility and political capital on the line (Hall et al., 2011a). This may make it difficult for them to adapt to new research or scholarship that points out difficulties with the existing research base without losing face. In other words, the greater the degree of extremeness in the statements made by and endorsed by the scientific community, the more invested in such statements the scientific community may

become, and the greater the difficulty of self-correcting at a later date should these views become untenable.

Greater caution in the development, construction, and release of such resolution statements on the part of professional organizations is warranted. I would argue that constructing committees that consist of scholars who are heavily invested in a research field only increases the likelihood of a result that follows along ideological lines rather than objective ones (Grimes et al., 2008). Even where individuals are experts in their fields, it is human nature that scientists on either side of a debate, being human, would be unable to objectively evaluate their own work (or work with which they disagree on theoretical grounds). Thus, starting with committees of psychologists who are not invested in a research field may produce more objective results (indeed one can envision a jury-like *voir dire* process to root out preconceived notions as much as possible). However, it may be difficult to truly remove systemic ideological biases within the field on any controversial topic (Redding, 2001), which helps explain why resolutions have tended to be error prone despite multiple levels of internal review. Thus policy statements and resolutions should err on the side of caution and conservatism in the future.

### **Close Connections Between Science and Advocacy**

Although scientific data should be evaluated on their merits, rather than on their source, it is probably not controversial to suggest that any research on aggression produced by the video game industry would be considered highly suspect. To my knowledge, no such research exists. However, there are other financial stakeholders in the video game debate, namely, advocacy groups who promote views of video game violence that clearly link such games to socially relevant violence (e.g., the National Institute on Media and the Family, Common Sense Media, the Parents Television Council, and the Center for Successful Parenting). For instance, the last group, despite its broad innocuous name, appears to be entirely dedicated to the issue of video game violence. The organization’s home page (<http://www.sosparents.org>) is dedicated to the issue of video game violence, declaring “The results of the fMRI brain scan studies measuring the *damage to the brains* [emphasis added] of teenagers is shocking” (Center for Successful Parenting, 2009, para. 4). Such groups have expended considerable prestige on the notion that video games are harmful to youth. These groups depend upon fear messages in order to secure donations from frightened parents and concerned citizens and may sometimes sell speaking engagements or books.

The question becomes one of how appropriate it is for scientists to associate with advocacy groups who have a

---

<sup>8</sup> In fact the Federal Trade Commission (2009) has found the ESRB system to be highly effective, and an independent, blinded scholarly review of the ratings found them to be valid, at least as an indicator of violence (Ferguson, 2011).

clear political vested interest in a particular side of an ongoing debate. If we agree that receiving funding from the video game industry represents a conflict of interest, this would appear to be a sword that cuts both ways, with funding by advocacy/lobbying groups also representing a conflict of interest. During the *Brown v. EMA* (2011) case it emerged that many of the studies cited by the state of California and in supporting briefs had been funded by groups such as the Center for Successful Parenting (which funded the majority of fMRI studies purporting to show evidence of brain damage as a result of playing violent games) and the National Institute on Media and the Family. To be clear, not all studies were so funded, nor should it be concluded that the majority of studies advocating the causal position are funded by advocacy groups. Yet this intrusion of advocacy, particularly in studies cited in the California case, is an issue of concern. This is generally a tricky issue for science to grapple with. Data should be considered for their merits, not their source, yet the issue of conflict of interest as a potential threat to the integrity of science has also been identified as a serious issue such that many journals now require authors to state any financial ties to stakeholders. Although most discussion of this issue in the medical community focuses on the pharmaceutical industry (Institute of Medicine, 2009), it is reasonable to conclude that similar biasing issues may arise from collaboration with other stakeholders with an ideological and/or financial investment in a particular outcome.

This, of course, may not be immediately apparent to the scholars themselves, for whom such partnerships may seem a “meeting of the minds” in which the motives to protect children are ostensibly the uniting force. Yet the urge to intermingle science with advocacy can be detrimental to the scientific process, reducing objectivity and impartiality. As Grisso and Steinberg (2005, p. 619) noted, “Scientific credibility demands impartiality, whereas advocacy is never impartial.” As these authors also noted, “When developmental scientists choose what they will study about children and their welfare, they are often motivated by personal beliefs and values about the importance of child protection” (p. 620), indicating that the personal beliefs of scientists may already shape the scientific endeavor. Close associations with advocacy groups, particularly via research funding, may further reinforce ideological values and remove the scholars further from objective science. By its very nature, advocacy may push scientists to make the very extreme statements that I have cautioned against. As Brigham, Gustashaw, and Brigham (2004) noted, “Advocacy, however, requires conviction. Advocates ‘sell’ their positions so that they might convince others of a specific solution to a problem. Uncertainty is unhelpful to the advocate as well as to the salesperson” (p. 201).

## Science as a (Flawed) Human Endeavor: Moral Panic Theory

The notion that human societies may construct panics over certain phenomena and exaggerate their impact as a way of

expressing moral outrage toward certain “folk devils” is a well-understood and well-researched phenomenon (Cohen, 1972; Ferguson, 2010; Gauntlett, 1995). Moral panics are commonly understood as the manufacture of exaggerated fears toward a “folk devil” against which there is moral repugnance (Ben-Yehuda, 2009). Although the phenomenon has received little attention in psychology, it is well accepted within criminology given that crime (including youth violence) is often at the root of such panics. Examples within recent years include panics over juvenile superpredators (Muschert, 2007), the supposed rise of violent juvenile females (Office of Justice Programs, 2008), reverse-recorded satanic lyrics in music and satanic ritual abuse (Bottoms & Davis, 1997), and so forth. Cyclical patterns of moral panic following the advent of new media—from waltzes to dime novels, to movies, to jazz and rock and roll, to comic books, to television, to *Dungeons and Dragons*, to Harry Potter—have been well discussed (Ferguson, 2010; Gauntlett, 1995; Kutner & Olson, 2008).

It is important to be aware of moral panic theory and the role of science in such panics if we are to understand how the scientific community unwittingly became involved in promoting unreasonable fear of violent video games, speaking beyond the available data, and allowing the promulgation of extreme claims without the usual scientific caution and skepticism. Being human, scientists are not immune to the affect heuristics in which judgments may be driven by emotional responses rather than objectivity (Slovic, Finucane, Peters, & MacGregor, 2002). In essence, scientists who are exposed to the violent imagery of some games and are subsequently offended may interpret ambiguous data in light of their emotional responses to offensive material.

In most such cases it is society itself that “spins” the moral panic wheel, with preexisting moral beliefs setting the stage for the rest of the process. This may take the form of expressed disgust, offense, or devaluation (“Why would anyone want to play that?”). There may be times in which science, or perhaps an individual scientific study, is the spark for a moral panic (perhaps such as in the case of vaccines and autism). However, in most cases the societal concerns tend to predate the science, or at least a move toward increased extremism in science. This can be observed in the statements of politicians such as Surgeon General C. Everett Koop and Senator Lieberman. Initially Dr. Koop had to acknowledge that his claims about video games and family violence were not based on actual data, but two decades later some scholars and professional organizations were making claims of similar magnitude (e.g., AAP, 2009; Huesmann, 2007; Strasburger, 2007). These concerns quickly spread to sensationalist news reporting (e.g., news organizations “warning” parents about offensive-looking games that children actually have little access to; see Footnote 1) and also calls for research to support the burgeoning panic. Research suggesting there is not much to worry about is ignored.

It is this point on research that is most important for our discussion. According to moral panic theory, society begins to essentially select research that fits with the pre-

existing beliefs. Science is made to act as a rationale for translating moral repugnance to moral regulation (Critcher, 2009). Essentially we might think of the opinions of scientists on an issue such as video game violence as occupying a kind of bell curve. Of course we might understand that scientists who have preexisting concerns about an issue such as video game violence may already self-select into the field (Grisso & Steinberg, 2005), creating an unintended bias within the scientific community where the scientists in a field don't necessarily represent a plurality of opinions (Redding, 2001). Yet society itself may amplify this process through media outlets choosing to publicize only research that promotes the panic (Thompson, 2008) and government and advocacy granting agencies choosing to select which research to fund. I submit that it is much more difficult to secure grant funding by arguing that something *isn't* a pressing social concern.

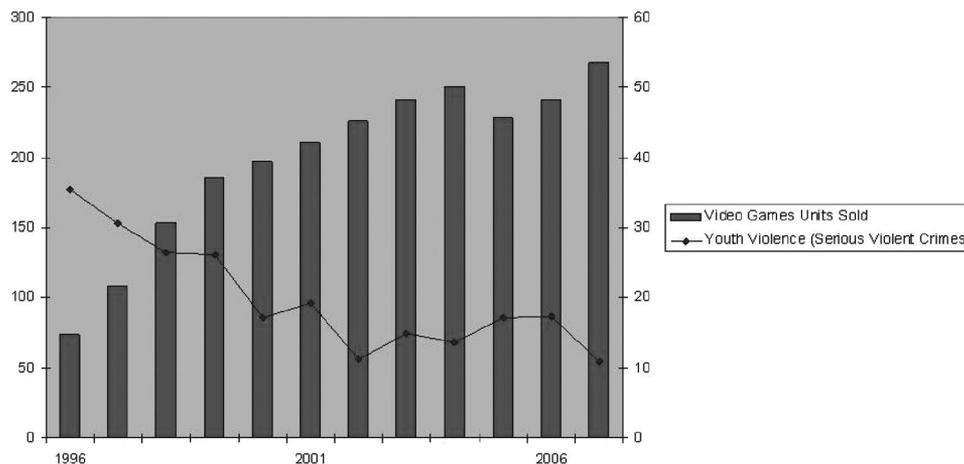
Natural incentives within the scientific community may also push the selectiveness of the science. First, as noted, the APA is an advocacy as well as scientific organization, as well it should be. Of course, the two roles may sometimes become entangled. Identifying a pressing social problem and offering psychology as a potential solution to it is ostensibly in the interest of the profession. Where news media are selective about sensationalist claims, this may incentivize professional groups to make (or at least permit) such claims in order to garner publicity (both the APA and the Association for Psychological Science websites regularly highlight psychological science that makes it into news reports). This process may also promote *citation bias* wherein scholars themselves simply ignore, by failing to cite, any data that conflict with their views, thereby reinforcing the false belief in scientific consistency. This has

already been documented as a problem in this field (Ferguson, 2010; Freedman, 2002).

Individuals involved in a moral panic certainly would scoff at such an idea because naturally they are not aware that they have participated in such a panic. Indeed, we may expect many individuals who have invested in such beliefs to essentially double down on their claims (similar to an extinction burst, in which behavior intensifies immediately after removal of reinforcement rather than decreases, as one might instinctively expect) as their claims come under increasing question.

Typically, media-based moral panics die down once society begins to understand that the prognostications of societal harm have not come true. Perhaps one important element in the case of violent video games is the societal data on youth violence, which has been documented to have shown a precipitous decline to 40-year lows during the video game era, not a rise (see Figure 1). Figure 1 summarizes data on video game sales and youth violence, broken down by year. Although societal data are only one source of data, and we must be wary of ecological fallacies given claims by both professional groups and individual scholars that media violence is responsible for up to 30% of societal violence (e.g., AAP, 2009; Huesmann, 2007; Strasburger, 2007) or is comparable in magnitude to the effects of smoking on lung cancer or other important medical findings (Gentile et al., 2007; Huesmann, 2007), consideration of the societal data on youth violence is certainly warranted. It is important to note that the data in Figure 1 are for all video games sales, not violent games specifically, as sales statistics are not broken down by violent content. However, scholars have argued that violent content is nearly ubiquitous in video games, including the

**Figure 1**  
Youth Violence and Video Game Sales Data



Note. Video game sales data source: The NPD Group, Inc./Retail Tracking Service. Youth violence data source: <http://www.childstats.gov>. Reprinted from "Blazing Angels or Resident Evil? Can Violent Video Games Be a Force for Good?" by C. J. Ferguson, 2010, *Review of General Psychology*, 14, p. 75. Copyright 2010 by the American Psychological Association.

mildest category of E-rated (for everyone) games (Thompson & Haninger, 2001). Scholars concerned about video game violence have recently argued that this trend has at least held steady and possibly increased (Strasburger, Jordan, & Donnerstein, 2010). As such, looking at general video game consumption is a reasonable track for violent game consumption, with the caveat noted above. From these data we can see that claims of impending harm to youth have not materialized in visible societal problems. Nor to my knowledge is there any evidence to document claims made by the state of California and supporting amicus briefs of rising brain damage rates in youth video gamers. Thus, echoing the concerns of Hall et al. (2011a), psychological science appears to be caught on the edge of a declining moral panic and risks further credibility by doubling down on rigid orthodoxy. Fortunately, science is self-correcting, and one might reasonably argue that self-correction has already begun. However, it remains worth considering how science can become involved with moral panics as well as the means by which science can be used to help resolve them.

## Where Do We Go From Here?

In this article I have argued that the process by which the APA and other professional organizations became involved in the video game debate and ensuing attempts at legislation was often fraught and commingled with ideology, politics, and advocacy rather than the maintenance of a purely objective scientific stance. The result was the promulgation of numerous false statements regarding the consistency, quality, and strength of the research on video games, statements that have run the risk of reducing the credibility of psychological science (Hall et al., 2011a). That groups such as the APA often commingle advocacy with science, often to the detriment of the latter, has been previously discussed. O'Donohue and Dyslin (1996) argued that APA resolution statements, including a previous one on television violence, often reflect political rather than scientific agendas (see subsequent discussion by Fox & Prilleltensky, 1996; Jones, 1996; Kendler, 1996; and Smith, 1996). Coupled with the affect heuristic (in which individuals use their emotional reactions to make judgments about the nature of a thing) and the failure to solicit a wide range of scholarly opinions, the APA (2005) resolution on video games appears to be of the same mien.

These conclusions are certain to be controversial within the field. However, if errors were made, they were good faith errors of human nature. Although it is important to correct these errors, it is hoped that this correction can be accomplished in an atmosphere of collegial and open discussion between different groups involved in this debate. Indeed, it is easy to imagine that if the tables were turned, critics of media effects theory might be equally prone to wall themselves off theoretically. This would constitute a tragic outcome and a distinct failure to learn from the past. Thus I suggest the following structural and procedural changes to increase the rigor of the science in this field.

## Listening to the Critics

It may be tempting for psychologists to believe that judges, the general public, and some scholars *simply don't understand* claims of harmful effects of video game violence. Some advocates of media effects theory have gone so far as to construct theoretical rationales for why many people are dismissive of their theories, such as the third-person effect (e.g., Gentile et al., 2007). However, just as fears of video games seem to lessen once people actually observe the games (Ivory & Kalyanaraman, 2009), outside observers may become less impressed with the research once they actually see it. This seems to have been the case with SCOTUS, who were unimpressed with the aggression measures used in the psychological studies. Instead of merely dismissing the concerns from so many sources, it may be time for psychologists to consider these concerns and begin a process of self-correction.

## The Use of Independent Reviews

As noted, the APA's 2005 resolution is of little value, given that it consisted of scholars reviewing their own work. Whatever the field of study, this method of creating resolutions is almost guaranteed to introduce bias. Individual scholars naturally value their own work over that of opposing scholars. Again, this is simple human nature and need not imply any wrongdoing on the part of the committee members, who assuredly acted in good faith. Nonetheless, professional organizations may find better results by constructing committees of individuals with a full range of divergent views on an issue as well as several uninvested generalists who may not be heavily involved in the field in question. However, professional organizations should still remain alert to the fact that some biases reflect self-selection into the field, and field wide ideological leanings (Redding, 2001). Thus, independent reviews from within the scientific community may have an overall tendency to remain slanted compared with reviews from outside.

## Maintaining a Separation Between Science and Advocacy

Maintaining a separation between science and advocacy may remain a difficult goal considering the dual mission of the APA as well as the natural tendency of scientists both to become involved in a field due to their desire to be involved in advocating for their beliefs and then to naturally congregate with advocacy groups who may share similar concerns. However, as discussed in this article, advocacy and science do not share the same goals, and scientists may wish to reconsider their ties to advocacy groups, particularly regarding controversial issues.

## Improving Peer Review

That peer review is both an essential part of science and, at times, notably flawed is well understood. Particularly in a field in which a small homogeneous group of scholars are particularly prominent, peer review may unwittingly act as a kind of defense of old views, even as they become

outdated (Grimes et al., 2008). Again, this need not imply intent on the part of editors or reviewers, only that ideological biases and other biases can, at times, infuse the peer review process (Schwartz & Zamboanga, 2009; Suls & Martin, 2009). With this in mind, however, editors may wish to consider taking greater care to solicit neutral reviewers in order to ensure a more impartial peer-review process.

### **Dialoging Across Debates**

One unfortunate outcome of the debates on video game violence is the increased polarization among researchers in this field (as witnessed by the infighting among the scholarly amicus briefs for and against the California law). Scholars love to debate, and debate in the sciences can be healthy and productive. However, when politics and advocacy become involved, it is easy for such debates to become personal and ad hominem. Although this review has focused on extreme statements by advocates of the antigame position, it is important to note that extreme rhetoric also comes from their critics. For instance, many criticisms of antigame scholarship invoke blanket condemnations of the field (e.g., Ferguson, 2010; Gauntlett, 1995; Kutner & Olson, 2008) and accusations of bias. In retrospect, such efforts will only harden ideology on both sides and foster a “digging in” effect that will not promote objectivity on either side of the debate. Tempting (and good theater) though it may be for both sides of this debate to “play gotcha” in order to “win” the debate, I suggest that such activity will not serve science in the long run. Although there certainly are some scholars who occupy a fragile middle ground in these debates (Giumetti & Markey, 2007; Markey & Markey, 2010; Przybylski, Rigby, & Ryan, 2010), the risk remains that video game researchers may split permanently into arguing camps. Although it is time to dismantle the more extreme views and statements, causal advocates and skeptics may be surprised to find some common ground (e.g., media literacy, parental involvement) upon which to form more positive working relationships. Therefore I advocate for scholars on both sides of this debate to create opportunities to reach out to their colleagues and dialogue cordially where possible. Informal gatherings at major conferences may provide one such opportunity.

By dialoguing across the debate it may be possible for scholars to begin to formulate understanding on how areas of disagreement might be reconciled. Beginning with an understanding of where agreement does and does not exist may set a platform for a more constructive discussion. So too, scholars reaching across debates may be able to agree on methodologies and procedures for resolving some aspects of the debate. The joint communiqué of Hyman and Honorton (1986), which communicated both areas of agreement regarding their debate on psi (involving telepathy or extrasensory perception) and recommendations for future research that might help to resolve that debate, potentially set a model for how this field might progress. Similarly, researchers on video game effects may search for opportunities to work together, starting with areas of

broad agreement and setting forth a model for how research might progress constructively. It would seem that the first step would be to find ways to reestablish trust and collegiality between opposing sides. Doing so would return this field to something more constructive than its present state.

### **Improving Communication With the General Public and the Courts**

Undoubtedly, *Brown v. EMA* (2011) reflects a failure of the scientific community to adequately and carefully communicate research results to the general public. It would, however, be unfortunate if the lesson learned were that psychologists should express *less* rather than *more* equivocation in discussing research results. Part of the failure of communication lay in the promulgation of extreme claims that exceeded the available data. These claims may have had short-term value in raising awareness to issues but in the long term may have served to damage the credibility of the science. I suggest that scientists may wish to consider a two-pronged approach to conversing with the public. On the one hand, there is great value in educating the public regarding the differences between common misconceptions and high-quality scientific data (Lilienfeld et al., 2009). For instance, scientists may wish to take greater care to elucidate how causal inferences are drawn from experiments. However, equivocation is likely the lot of the psychological scientist given how often beliefs in psychological science themselves change over time with new data. This is entirely scientifically appropriate, but it does argue for scholars to avoid strongly unequivocal statements that may, in essence, leave them in an ideological lurch should the data begin to change.

One issue of frustration for scientists is in regards to how courts “should” use scientific information. However, this is fundamentally for the courts to decide using standards such as the Daubert and Frye standards (Faust, 2012). Further, to the extent that scholarly opinions within a field differ and science tends to change and self-correct over time, it may be best for scientific evidence to be considered by uninvolved third parties, given the potential for science to otherwise be put to ideological purposes (Grimes et al., 2008). Put simply, it may be best for scientists to remain committed to the production of objective information. Deciding how such information “should” be used arguably strays into advocacy and becomes problematic.

### **Concluding Remarks**

One only need look through the history of psychology to see that psychological science can sometimes get things wrong. I reiterate that this does not mean that an argument could not potentially be made for or against a relationship between media violence and mild aggression. Rather, I argue that arguments made to date by many scholars and by the APA itself were extreme insofar as they spoke beyond the data. This occurred when such statements implied generalizations to socially relevant outcomes such as violence or even brain damage (or failed to correct misrepresentations of their research, such as in the Yee brief, which was signed by over 100 scholars at least implying their endorse-

ment of the Yee brief's claims) and made haughty claims that the magnitude of the effects were similar to those of smoking/lung cancer, important criminological risk factors, or even global warming or evolution (vs. creationism; see Sinclair, 2011).

The psychological community now has an opportunity to learn from the mistakes made and to begin the process of scientific self-correction. Not to do so will do increasing harm to the credibility of psychological science. This is an issue in which much emotion was invested. I believe firmly that emotion can now only do greater harm, and I hope that the psychological community will be able to come together dispassionately to consider how to learn from *Brown v. EMA* (2011) and to increase the rigor of our discipline, particularly in the face of controversial and political topics. I sincerely hope that this essay may be one small part of that process.

## REFERENCES

- ABC News. (2000, September 13). *Senate holds hearing on violence in media*. Retrieved July 1, 2011, from <http://abcnews.go.com/Politics/story?id=122924&page=1>
- Adachi, P. J. C., & Willoughby, T. (2011a). The effect of video game competition and violence on aggressive behavior: Which characteristic has the greatest influence? *Psychology of Violence, 1*(4), 259–274. doi:10.1037/a0024908
- Adachi, P. J. C., & Willoughby, T. (2011b). The effect of violent video games on aggression: Is it more than just the violence? *Aggression and Violent Behavior, 16*, 55–62. doi:10.1016/j.avb.2010.12.002
- American Academy of Pediatrics. (2001). Media violence. *Pediatrics, 108*(5), 1222–1226. doi:10.1542/peds108.5.1222
- American Academy of Pediatrics. (2009). Media violence policy statement. *Pediatrics, 124*(5), 1495–1503. doi:10.1542/peds.2009-2146
- American Psychological Association. (2005). *Resolution on violence in video games and interactive media*. Retrieved July 3, 2011, from <http://www.apa.org/about/policy/interactive-media.pdf>
- American Psychological Association, Public Affairs Office. (2005, August 17). *APA calls for reduction of violence in interactive media used by children and adolescents* [Press release]. Retrieved July 6, 2011, from <http://www.psychology.iastate.edu/faculty/caa/abstracts./2005-2009/05APA.pdf>
- Anderson, C. A. (2004). An update on the effects of playing violent video games. *Journal of Adolescence, 27*, 113–122. doi:10.1016/j.adolescence.2003.10.009
- Anderson, C. A., & Carnagey, N. L. (2009). Causal effects of violent sports video games on aggression: Is it competitiveness or violent content? *Journal of Experimental Social Psychology, 45*, 731–739. doi:10.1016/j.jesp.2009.04.019
- Anderson, C. A., Carnagey, N. L., Flanagan, M., Benjamin, A. J., Eubanks, J., & Valentine, J. C. (2004). Violent video games: Specific effects of violent content on aggressive thoughts and behavior. *Advances in Experimental Social Psychology, 36*, 199–249. doi:10.1016/S0065-2601(04)36004-1
- Anderson, C. A., & Dill, K. (2000). Video games and aggressive thoughts, feelings and behavior in the laboratory and in life. *Journal of Personality and Social Psychology, 78*, 772–790. doi:10.1037/0022-3514.78.4.772
- Anderson, C. A., & Ford, C. M. (1986). Affect of the game player: Short-term effects of highly and mildly aggressive video games. *Personality and Social Psychology Bulletin, 12*, 390–402. doi:10.1177/0146167286124002
- Anderson, C. A., & Murphy, C. R. (2003). Violent video games and aggressive behavior in young women. *Aggressive Behavior, 29*, 423–429. doi:10.1002/ab.10042
- 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: A meta-analytic review. *Psychological Bulletin, 136*, 151–173. doi:10.1037/a0018251
- Australian Government, Attorney-General's Department. (2010). *Literature review on the impact of playing violent video games on aggression*. Barton, Australian Capital Territory, Australia: Commonwealth of Australia. Retrieved from <http://www.apa.org/divisions/div46/articles.html>
- Azar, B. (2010). Virtual violence: Researchers disagree about whether violent video games increase aggression. *Monitor on Psychology, 41*(11), p. 38.
- Baldaro, B., Tuozi, G., Codispoti, M., Montebanocci, O., Barbagli, F., Trombini, E., & Rossi, N. (2004). Aggressive and non-violent videogames: Short-term psychological and cardiovascular effects on habitual players. *Stress and Health: Journal of the International Society for the Investigation of Stress, 20*, 203–208. doi:10.1002/smi.1015
- Barnett, J., & Coulson, M. (2010). Virtually real: A psychological perspective on massively multiplayer online games. *Review of General Psychology, 14*(2), 167–179. doi:10.1037/a0019442
- Bavelier, D., Green, S., Han, D., Renshaw, P., Mezernich, M., & Gentile, D. (2011). Brains on video games. *Nature Reviews Neuroscience, 12*, 763–768.
- Beaver, K. M., Barnes, J. C., May, J. S., & Schwartz, J. A. (2011). Psychopathic personality traits, genetic risk, and gene-environment correlations. *Criminal Justice and Behavior, 38*(9), 896–912. doi:10.1177/0093854811411153
- Ben-Yehuda, N. (2009). Moral panics – 36 years on. *British Journal of Criminology, 49*, 1–3. doi:10.1093/bjc/azn076
- Block, J., & Crain, B. (2007). Omissions and errors in “Media Violence and the American Public.” *American Psychologist, 62*, 252–253. doi:10.1037/0003-066X.62.3.252
- Bösche, W. (2010). Violent video games prime both aggressive and positive cognitions. *Journal of Media Psychology: Theories, Methods, and Applications, 22*(4), 139–146. doi:10.1027/1864-1105/a000019
- Bottoms, B., & Davis, S. (1997). The creation of satanic ritual abuse. *Journal of Social and Clinical Psychology, 16*, 112–132. doi:10.1521/jscp.1997.16.2.112
- Bowen, H. J., & Spaniol, J. (2010). Chronic exposure to violent video games is not associated with alterations of emotional memory. *Applied Cognitive Psychology, 25*, 906–916. doi:10.1002/acp.1767
- Brigham, F. J., Gustashaw, W., & Brigham, M. (2004). Scientific practice and the tradition of advocacy in special education. *Journal of Learning Disabilities, 37*, 200–206. doi:10.1177/00222194040370030301
- Brown v. Entertainment Merchants Association, *131 S. Ct. 2729* (2011). Retrieved from <http://www.supremecourt.gov/opinions/10pdf/08-1448.pdf>
- Carnagey, N. L., & Anderson, C. A. (2005). The effects of reward and punishment in violent video games on aggressive affect, cognition, and behavior. *Psychological Science, 16*, 882–889. doi:10.1111/j.1467-9280.2005.01632.x
- Center for Successful Parenting. (2009). *The Center for Successful Parenting: Video research center*. Retrieved from <http://www.sosparents.org/>
- Chabris, C., & Simons, D. (2010). *The invisible gorilla: And other ways our intuitions deceive us*. New York, NY: Crown/Random House.
- CNN. (1997, November 25). *Senator decries violent video games*. CNN. Retrieved from <http://edition.cnn.com/ALLPOLITICS/1997/11/25/email/videos/>
- Cohen, S. (1972). *Folk devils and moral panics*. London, England: MacGibbon and Kee.
- Colwell, J., & Kato, M. (2003). Investigation of the relationship between social isolation, self-esteem, aggression and computer game play in Japanese adolescents. *Asian Journal of Social Psychology, 6*, 149–158. doi:10.1111/1467-839X.t01-1-00017
- Cook, D. (2000, September 13). *Testimony of the American Academy of Pediatrics on media violence before the U.S. Senate Commerce Committee*. Elk Grove Village, IL: American Academy of Pediatrics. Retrieved from <http://www.aap.org/advocacy/releases/mediaviolencetestimony.pdf>
- Cooper, J., & Mackie, D. (1986). Video games and aggression in children. *Journal of Applied Social Psychology, 16*, 726–744. doi:10.1111/j.1559-1816.1986.tb01755.x

- Critcher, R. (2009). Widening the focus: Moral panics as moral regulation. *British Journal of Criminology*, *49*, 17–34. doi:10.1093/bjcz/azn040
- Denniston, L. (2010a, October 26). *Argument preview: Kids and video games* [Blog post]. Retrieved from <http://www.scotusblog.com/2010/10/argument-preview-kids-and-video-games/http://www.scotusblog.com/?p=107224>
- Denniston, L. (2010b, November 2). *Argument recap: "Common sense" and violence* [Blog post]. Retrieved from <http://www.scotusblog.com/2010/11/argument-recap-common-sense-and-violence/>
- Deville, G., Callahan, P., & Armitage, G. (2012). The effect of violent videogame playtime on anger. *Australian Psychologist*, *47*, 98–107. doi:10.1111/j.1742-9544.2010.00008.x
- Dominick, J. (1984). Videogames, television violence and aggression in teenagers. *Journal of Communication*, *34*(2), 136–147. doi:10.1111/j.1460-2466.1984.tb02165.x
- Durkin, K., & Barber, B. (2002). Not so doomed: Computer game play and positive adolescent development. *Journal of Applied Developmental Psychology*, *23*, 373–392. doi:10.1016/S0193-3973(02)00124-7
- Editorial: A calm view of video violence. *Nature*, *424*, 355. doi:10.1038/424355a
- Elson, M. (2011, July). *Seek and ye shall find: The unstandardized use of the CRTT to measure aggressive behavior*. Paper presented at the 1st multi-player International Conference on the Social Aspects of Digital Gaming, University of Hohenheim, Stuttgart, Germany.
- Entertainment Software Association, Video Software Dealers Association, and Illinois Retail Merchants Association v. Blagojevich, Madigan, and Devine, 404 F.Supp.2d 1051 (N.D. Ill. 2005). Case No. 05 C 4265. Retrieved from [http://scholar.google.com/scholar\\_case?case=1215058598091026533&q=404+F.Supp.2d+1051&hl=en&as\\_sdt=2002](http://scholar.google.com/scholar_case?case=1215058598091026533&q=404+F.Supp.2d+1051&hl=en&as_sdt=2002)
- Faust, D. (2012). Criteria for appraising scientific status I: Daubert factors. In D. Faust (Ed.), *Coping with psychiatric and psychological testimony: Based on the original work by Jay Ziskin* (6th ed., pp. 42–87). New York, NY: Oxford University Press.
- Federal Interagency Forum on Child and Family Statistics. (2010). *America's children in brief: Key national indicators of well-being, 2010*. Washington, DC: U. S. Government Printing Office. Retrieved from [http://www.childstats.gov/pdf/ac2010/ac\\_10.pdf](http://www.childstats.gov/pdf/ac2010/ac_10.pdf)
- Federal Trade Commission. (2009). *Marketing violent entertainment to children*. Retrieved from <http://www.ftc.gov/os/2009/12/P994511violententertainment.pdf>
- Ferguson, C. J. (2007). Evidence for publication bias in video game violence effects literature: A meta-analytic review. *Aggression and Violent Behavior*, *12*, 470–482. doi:10.1016/j.avb.2007.01.001
- Ferguson, C. J. (Ed.). (2009). *Violent crime: Clinical and social implications*. Thousand Oaks, CA: Sage.
- Ferguson, C. J. (2010). Blazing angels or resident evil? Can violent video games be a force for good? *Review of General Psychology*, *14*(2), 68–81. doi:10.1037/a0018941
- Ferguson, C. J. (2011). Video games and youth violence: A prospective analysis in adolescents. *Journal of Youth and Adolescence*, *40*(4), 377–391. doi:10.1007/s10964-010-9610-x
- Ferguson, C. J., & Kilburn, J. (2009). The public health risks of media violence: A meta-analytic review. *Journal of Pediatrics*, *154*(5), 759–763. doi:10.1016/j.jpeds.2008.11.033
- Ferguson, C. J., & Kilburn, J. (2010). *Much ado about nothing: The misestimation and overinterpretation of violent video game effects in Eastern and Western nations: Comment on Anderson et al. (2010)*. *Psychological Bulletin*, *136*(2), 174–178. doi:10.1037/a0018566
- Ferguson, C. J., & Rueda, S. M. (2009). Examining the validity of the modified Taylor competitive reaction time test of aggression. *Journal of Experimental Criminology*, *5*(2), 121–137. doi:10.1007/s11292-009-9069-5
- Ferguson, C. J., San Miguel, C., & Hartley, R. D. (2009). A multivariate analysis of youth violence and aggression: The influence of family, peers, depression and media violence. *The Journal of Pediatrics*, *155*(6), 904–908.e3. doi:10.1016/j.jpeds.2009.06.021
- Fox, D. R., & Prilleltensky, I. (1996). The inescapable nature of politics in psychology: A response to O'Donohue and Dyslin: Comment. *New Ideas in Psychology*, *14*(1), 21–26. doi:10.1016/0732-118X(95)00028-F
- Freedman, J. (2002). *Media violence and its effect on aggression: Assessing the scientific evidence*. Toronto, Ontario, Canada: University of Toronto Press.
- Gauntlett, D. (1995). *Moving experiences: Understanding television's influences and effects*. Herts, England: John Libbey Media.
- Gentile, D. A., Saleem, M., & Anderson, C. A. (2007). Public policy and the effects of media violence on children. *Social Issues and Policy Review*, *1*(1), 15–61. doi:10.1111/j.1751-2409.2007.00003.x
- Gibb, G., Bailey, J., Lambirth, T., & Wilson, W. (1983). Personality differences between high and low electronic video game users. *Journal of Psychology: Interdisciplinary and Applied*, *114*(2), 159–165. doi:10.1080/00223980.1983.9915409
- Giumetti, G. W., & Markey, P. M. (2007). Violent video games and anger as predictors of aggression. *Journal of Research in Personality*, *41*, 1234–1243. doi:10.1016/j.jrp.2007.02.005
- Graybill, D., Strawniak, M., Hunter, T., & O'Leary, M. (1987). Effects of playing versus observing violent versus nonviolent video games on children's aggression. *Psychology: A Quarterly Journal of Human Behavior*, *24*, 1–8.
- Greenwald, A. G. (2012). There is nothing so theoretical as a good method. *Perspectives on Psychological Science*, *7*(2), 99–108. doi:10.1177/1745691611434210
- Greenwald, A. G., Pratkanis, A. R., Leippe, M. R., & Baumgardner, M. H. (1986). Under what conditions does theory obstruct research progress? *Psychological Review*, *93*(2), 216–229. doi:10.1037/0033-295X.93.2.216
- Grimes, T., Anderson, J., & Bergen, L. (2008). *Media violence and aggression: Science and ideology*. Thousand Oaks, CA: Sage.
- Grisso, T., & Steinberg, L. (2005). Between a rock and a soft place: Developmental research and the child advocacy process. *Journal of Clinical Child and Adolescent Psychology*, *34*(4), 619–627.
- Grossman, D. (1996). *On killing: The psychological cost of learning to kill in war and society*. Boston, MA: Back Bay Books.
- Hall, R. C. W., Day, T., & Hall, R. C. W. (2011a). A plea for caution: Violent video games, the Supreme Court, and the role of science. *Mayo Clinic Proceedings*, *86*(4), 315–321. doi:10.4065/mcp.2010.0762
- Hall, R. C. W., Day, T., & Hall, R. C. W. (2011b). A further plea for caution against medical professionals overstating video game violence effects—In reply—I. (2011). *Mayo Clinic Proceedings*, *86*(8), 821–823. doi:10.4065/mcp.2011.0357
- Huesmann, L. R. (2007). The impact of electronic media violence: Scientific theory and research. *Journal of Adolescent Health*, *41*, S6–S13. doi:10.1016/j.jadohealth.2007.09.005
- Huesmann, L. R. (2010). Nailing the coffin shut on doubts that violent video games stimulate aggression: Comment on Anderson et al. (2010). *Psychological Bulletin*, *136*(2), 179–181. doi:10.1037/a0018567
- Hyman, R., & Honorton, C. (1986). A joint communiqué: The psi ganzfeld controversy. *Journal of Parapsychology*, *50*(4), 351–364.
- Institute of Medicine. (2009). *Conflict of interest in medical research, education and practice*. Retrieved from <http://www.iom.edu/Reports/2009/Conflict-of-Interest-in-Medical-Research-Education-and-Practice.aspx>
- Is exposure to media violence a public health risk? (2008). *The Lancet*, *371*, 1137. doi:10.1016/S0140-6736(08)60495-X
- Ivory, J. D., & Kalyanaraman, S. (2007). The effects of technological advancement and violent content in video games on players' feelings of presence, involvement, physiological arousal, and aggression. *Journal of Communication*, *57*(3), 532–555. doi:10.1111/j.1460-2466.2007.00356.x
- Ivory, J., & Kalyanaraman, S. (2009). Video games make people violent—well, maybe not that game: Effects of content and person abstraction on perceptions of violent video games' effects and support of censorship. *Communication Reports*, *22*(1), 1–12. doi:10.1080/08934210902798536
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York, NY: New York University Press.
- Jones, S. L. (1996). Political resolutions, metaphysics, science and the APA: A response to O'Donohue and Dyslin. *New Ideas in Psychology*, *14*(1), 11–16. doi:10.1016/0732-118X(95)00029-G
- Kendler, H. H. (1996). The politics of the APA—Self-inflicted wounds: A response to O'Donohue and Dyslin. *New Ideas in Psychology*, *14*(1), 27–29. doi:10.1016/0732-118X(95)00026-D

- Kutner, L., & Olson, C. (2008). *Grand theft childhood: The surprising truth about violent video games and what parents can do*. New York, NY: Simon & Schuster.
- LeBel, E. P., & Peters, K. R. (2011). Fearing the future of empirical psychology: Bem's (2011) evidence of psi as a case study of deficiencies in modal research practice. *Review of General Psychology, 15*(4), 371–379. doi:10.1037/a0025172
- Lenhart, A., Kahne, J., Middaugh, E., MacGill, A., Evans, C., & Mitak, J. (2008). *Teens, video games and civics: Teens gaming experiences are diverse and include significant social interaction and civic engagement*. Retrieved from [http://www.pewinternet.org/PPF/r/263/report\\_display.asp](http://www.pewinternet.org/PPF/r/263/report_display.asp)
- Lilienfeld, S., Lynn, S., Ruscio, J., & Beyerstein, B. (2009). *Mythbusting in introductory psychology courses: The whys and the hows*. In S. A. Meyers & J. R. Stowell (Eds.), *Essays from e-xcellence in teaching* (Vol. 9, pp. 55–61). Retrieved from the society for the Teaching of Psychology website: <http://teachpsych.org/ebooks/eit2009/index.php>
- Markey, P. M., & Markey, C. N. (2010). Vulnerability to violent video games: A review and integration of personality research. *Review of General Psychology, 14*(2), 82–91. doi:10.1037/a0019000
- McCall, R. B. (1977). Challenges to a science of developmental psychology. *Child Development, 48*(2), 333–344. doi:10.2307/1128626
- Mitrofan, O., Paul, M., & Spencer, N. (2009). Is aggression in children with behavioural and emotional difficulties associated with television viewing and video game playing? A systematic review. *Child: Care, Health and Development, 35*(1), 5–15. doi:10.1111/j.1365-2214.2008.00912.x
- Möller, I., & Krahe, B. (2009). Exposure to violent video games and aggression in German adolescents: A longitudinal analysis. *Aggressive Behavior, 35*, 75–89. doi:10.1002/ab.20290
- Muschert, G. (2007). The Columbine victims and the myth of the juvenile superpredator. *Youth Violence and Juvenile Justice, 5*(4), 351–366. doi:10.1177/1541204006296173
- Muschert, G. W. (2008). Research in school shootings. *Social and Personality Psychology Compass, 2*(3), 60–80.
- National Cancer Institute. (2011). *Smoking*. Retrieved from the National Cancer Institute website: <http://www.cancer.gov/cancertopics/tobacco/smoking>
- O'Donohue, W., & Dyslin, C. (1996). Abortion, boxing and Zionism: Politics and the APA. *New Ideas in Psychology, 14*(1), 1–10. doi:10.1016/0732-118X(95)00025-C
- Office of Justice Programs. (2008). *Violence by teenage girls: Trends and contexts*. Washington, DC: U. S. Department of Justice.
- Olson, C. K. (2004). Media violence research and youth violence data: Why do they conflict? *Academic Psychiatry, 28*, 144–150. doi:10.1176/appi.ap.28.2.144
- Olson, C. K. (2010). Children's motivations for video game play in the context of normal development. *Review of General Psychology, 14*(2), 180–187. doi:10.1037/a0018984
- Olson, C. K., Kutner, L., Warner, D., Almerigi, J., Baer, L., Nicholi, A., & Beresin, E. (2007). Factors correlated with violent video game use by adolescent boys and girls. *Journal of Adolescent Health, 41*, 77–83. doi:10.1016/j.jadohealth.2007.01.001
- Parents Television Council. (2011). *PTC denounces Supreme Court ruling on CA video game law*. Retrieved from <https://www.parentstv.org/PTC/news/release/2011/0627a.asp>
- Pollard-Sacks, D., Bushman, B. J., & Anderson, C. A. (2011). Do violent video games harm children? Comparing the scientific amicus curiae "experts" in *Brown v. Entertainment Merchants Association*. *Northwestern University Law Review: Colloquy, 106*, 1–12.
- Przybylski, A. K., Rigby, C. S., & Ryan, R. M. (2010). A motivational model of video game engagement. *Review of General Psychology, 14*(2), 154–166. doi:10.1037/a0019440
- Redding, R. E. (2001). Sociopolitical diversity in psychology: The case for pluralism. *American Psychologist, 56*, 205–215. doi:10.1037/0003-066X.56.3.205
- Reporters Committee for Freedom of the Press. (2011). *Reporters Committee lauds U.S. Supreme Court ruling on violent video games*. Retrieved from <http://www.rcfp.org/newsitems/index.php?i=11942>
- Ritter, D., & Eslea, M. (2005). Hot sauce, toy guns, and graffiti: A critical account of current laboratory aggression paradigms. *Aggressive Behavior, 31*, 407–419. doi:10.1002/ab.20066
- Rosen, G. M., & Davison, G. C. (2001). "Echo attributions" and other risks when publishing on novel therapies without peer review. *Journal of Clinical Psychology, 57*(10), 1245–1250. doi:10.1002/jclp.1092
- Savage, J. (2004). Does viewing violent media really cause criminal violence? A methodological review. *Aggression and Violent Behavior, 10*, 99–128. doi:10.1016/j.avb.2003.10.001
- Savage, J. (2008). The role of exposure to media violence in the etiology of violent behavior: A criminologist weighs in. *American Behavioral Scientist, 51*, 1123–1136. doi:10.1177/0002764207312016
- Schwartz, S., & Zamboanga, B. (2009). The peer-review and editorial system: Ways to fix something that might be broken. *Perspectives on Psychological Science, 4*(1), 54–61. doi:10.1111/j.1745-6924.2009.01106.x
- Scott, D. (1995). The effect of video games on feelings of aggression. *Journal of Psychology: Interdisciplinary and Applied, 129*(2), 121–132. doi:10.1080/00223980.1995.9914952
- Sherry, J. (2001). The effects of violent video games on aggression: A meta-analysis. *Human Communication Research, 27*, 409–431.
- Sherry, J. (2007). Violent video games and aggression: Why can't we find links? In R. Preiss, B. Gayle, N. Burrell, M. Allen, & J. Bryant (Eds.), *Mass media effects research: Advances through meta-analysis* (pp. 211–248). Mahwah, NJ: Erlbaum.
- Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science, 22*(11), 1359–1366. doi:10.1177/0956797611417632
- Sinclair, B. (2011). *Games' day in court: Science, violence and the law*. Retrieved from <http://www.gamespot.com/features/6314963/games-day-in-court-science-violence-and-the-law/>
- Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2002). Rational actors or rational fools: Implications of the affect heuristic for behavioral economics. *Journal of Socio-Economics, 31*(4), 329–342. doi:10.1016/S1053-5357(02)00174-9
- Smith, M. B. (1996). Comment on O'Donohue and Dyslin. *New Ideas in Psychology, 14*(1), 17–19. doi:10.1016/0732-118X(95)00027-E
- Strasburger, V. C. (2007). Go ahead punk, make my day: It's time for pediatricians to take action against media violence. *Pediatrics, 119*, e1398–e1399. doi:10.1542/peds.2007-0083
- Strasburger, V. C., Jordan, A. B., & Donnerstein, E. (2010). Health effects of media on children and adolescents. *Pediatrics, 125*(4), 756–767. doi:10.1542/peds.2009-2563
- Suls, J., & Martin, R. (2009). The air we breathe: A critical look at practices and alternatives in the peer review process. *Perspectives on Psychological Science, 4*, 40–50. doi:10.1111/j.1745-6924.2009.01105.x
- Swedish Media Council. (2011). *Väldsamma datorspel och aggression – en översikt av forskningen 2000–2011* [Violent computer games and aggression – an overview of the research 2000–2011]. Retrieved from <http://www.statensmedierad.se/Publikationer/Produkter/Valdsamma-datorspel-och-aggression/>
- Tedeschi, J., & Quigley, B. (1996). Limitations of laboratory paradigms for studying aggression. *Aggression & Violent Behavior, 2*, 163–177. doi:10.1016/1359-1789(95)00014-3
- Teng, S. K. Z., Chong, G. Y. M., Siew, A. S. C., & Skoric, M. M. (2011). Grand Theft Auto IV comes to Singapore: Effects of repeated exposure to violent video games on aggression. *Cyberpsychology, Behavior, and Social Networking, 14*(10), 597–602. doi:10.1089/cyber.2010.0115
- Thierer, A. (2011). *A response to Leland Yee & James Stayer on what motivated video game decision*. Retrieved from the Technology Liberation Front website: <http://techliberation.com/2011/06/28/a-response-to-leland-yee-james-stayer-on-what-motivated-video-game-decision/>
- Thompson, K. (2008). The classic moral panic: Mods and rockers. In R. Heiner (Ed.), *Deviance across cultures* (pp. 60–68). New York, NY: Oxford University Press.
- Thompson, K. M., & Haninger, K. (2001). Violence in E-rated video games. *JAMA: Journal of the American Medical Association, 286*(5), 591–598. doi:10.1001/jama.286.5.591
- United States v. Stevens, 130 S. Ct. 1577 (2010). Retrieved from <http://www.supremecourt.gov/opinions/09pdf/08-769.pdf>
- Unsworth, G., Devilly, G., & Ward, T. (2007). The effect of playing violent videogames on adolescents: Should parents be quaking in their

- boots? *Psychology, Crime & Law*, 13, 383–394. doi:10.1080/10683160601060655
- U.S. Department of Health and Human Services. (2001). *Youth violence: A report of the Surgeon General*. Retrieved from <http://www.surgeon-general.gov/library/youthviolence/report.html>
- van Schie, E., & Wiegman, O. (1997). Children and videogames: Leisure activities, aggression, social integration, and school performance. *Journal of Applied Social Psychology*, 27(13), 1175–1194. doi:10.1111/j.1559-1816.1997.tb01800.x
- Video Software Dealers Association and Entertainment Software Association v. Schwarzenegger*, 556 F.3d 950 (9th Cir. 2009). Retrieved from <http://www.ca9.uscourts.gov/datastore/opinions/2009/02/20/0716620.pdf>
- von Salisch, M., Vogelgesang, J., Kristen, A., & Oppl, C. (2011). Preference for violent electronic games and aggressive behavior among children: The beginning of the downward spiral? *Media Psychology*, 14(3), 233–258. doi:10.1080/15213269.2011.596468
- Vossekuil, B., Fein, R., Reddy, M., Borum, R., & Modzeleski, W. (2002). *The final report and findings of the Safe School Initiative: Implications for the prevention of school attacks in the United States*. Washington, DC: U. S. Department of Education and U. S. Secret Service. Retrieved from [http://www.secretservice.gov/ntac/ssi\\_final\\_report.pdf](http://www.secretservice.gov/ntac/ssi_final_report.pdf)
- Watts, D. J. (2011). *Everything is obvious, once you know the answer: How common sense fails us*. New York, NY: Crown Business/Random House.
- Wiegman, O., & van Schie, E. (1998). Video game playing and its relations with aggressive and prosocial behaviour. *British Journal of Social Psychology*, 37(3), 367–378.
- Williams, D., & Skoric, M. (2005). Internet fantasy violence: A test of aggression in an online game. *Communication Monographs*, 72, 217–233.