

## A Plea for Caution: Violent Video Games, the Supreme Court, and the Role of Science

RYAN C. W. HALL, MD; TERRI DAY, JD, LL.M., MSSA; AND RICHARD C. W. HALL, MD

**On November 2, 2010, the US Supreme Court heard arguments in the case of *Schwarzenegger v Entertainment Merchants Association*, with a ruling expected in 2011. This case addressed whether states have the right to restrict freedom of speech by limiting the sale of violent video games to minors. To date, 8 states have tried to pass legislation to this effect, with all attempts being found unconstitutional by lower courts. In large part, the Supreme Court's decision will be determined by its review and interpretation of the medical and social science literature addressing the effects of violent video games on children. Those on both sides of the violent video game debate claim that the scientific literature supports their opinions. Some involved in the debate have proclaimed that the debate is scientifically settled and that only people holding personal interests and biases oppose these "established truths." We review the historical similarities found in the 1950s comic book debate and studies identified from a PubMed search of the term *violent video games* showing both the harmful and beneficial effects of these video games. We define factors that physicians need to consider when reading and stating opinions about this literature. Opinions from past court rulings are discussed to provide insight into how judges may approach the application of these social science studies to the current legal issue. Although on the surface the case of *Schwarzenegger v Entertainment Merchants Association* pertains only to the restriction of violent video games, it may establish principles about how medical and public health testimony can affect fundamental constitutional rights and how much and on what basis the courts will defer to legislators' reliance on unsettled science.**

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On November 2, 2010, the US Supreme Court heard oral arguments for *Schwarzenegger v Entertainment Merchants Association*<sup>1</sup> (oral arguments available at <http://www.oyez.org>), a case involving whether states can place statutory restrictions and labeling requirements on the sale or rental of "violent video games" to minors without violating constitutional principles of free speech guaranteed by the First and Fourteenth Amendments.<sup>1,2</sup> Laws that restrict minors' access to sexual materials otherwise legal for adults (the "sliding scale" notion of restriction on free speech, with more restrictions for minors but fewer for adults) are constitutional because such material is deemed a less valued or protected form of speech. Proponents of violent video game restrictions argue that the sliding scale standard applied to minors' access to sexual materials should apply to violent video games as well. However, "violent material" has always been seen as protected speech because of its potential political and societal impact (eg, photos and combat footage from the Vietnam War that changed public perception of the war).<sup>3</sup> One of the crucial questions the Supreme Court justices will address in *Schwarzenegger v Entertainment Merchants As-*

*sociation* is whether violent speech can be restricted under certain circumstances and, if so, whether a causal link is needed between the violent media and harm to satisfy First Amendment principles.<sup>3</sup> This determination will require the justices to focus on whether the evidence available in the scientific literature is sufficient to support such a link.

Scientifically, 2 competing social theories have been formulated about the potential effects of video game violence. The first is that video games increase violence because they teach players how to be violent and reinforce violent tendencies. The second theory is that video games have a neutral or possibly beneficial effect because they provide a socially acceptable, physically nondestructive outlet for the release of aggression and thereby promote better mental health.

Legally, the ruling in *Schwarzenegger v Entertainment Merchants Association* may have implications for how scientific evidence is viewed and weighed by the Court, especially when it comes to the question of restricting constitutional rights. For example, what deference should a court give legislative findings or what level of persuasion or proof would be required before scientific evidence is seen as conclusive enough to limit constitutionally protected liberties? Is it sufficient for such evidence to be clear and convincing or does a higher standard apply, such as beyond a reasonable doubt, for courts to determine that a government restriction on First Amendment protected speech satisfies strict scrutiny analysis (the standard of review applied to government restrictions on protected speech)? Past cases such as *Daubert*, *Joiner*, and *Kumho Tire* primarily focused on how to keep junk science out of the court room and who is qualified to provide an expert opinion.<sup>4-6</sup> *Daubert* provided judges with principles to guide them in performing a "gatekeeping function," including the following: (1) Can or has the theory or technique in question been tested? (2) Has it been subjected to peer review and publication? (3) Is there a known or potential error rate? (4) Is there a maintenance of standards regarding its operation? and (5) Has it gained widespread acceptance within a rel-

From the Department of Medical Education, University of Central Florida College of Medicine, Orlando, and Department of Psychiatry, University of South Florida, Tampa (R.C.W.H., R.C.W.H.); and Dwayne O. Andreas School of Law, Barry University, Orlando, FL (R.C.W.H., T.D.).

Individual reprints of this article are not available. Address correspondence to Ryan C. W. Hall, MD, 2500 W Lake Mary Blvd, Ste 219, Lake Mary, FL 32746 (Dr.rcwhall@att.net).

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TABLE 1. **Common Arguments Made About Comic Books in the 1950s and Violent Video Games**


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Children <b>learn to be violent</b> from reading comic books or playing violent video games
Children have <b>increased aggression</b> from exposure to comic books or violent video games
Comic books and violent video games <b>lead to actual aggressive behavior</b>
Comic books and violent video games have a pernicious <b>negative effect on society</b>
The negative effect of comic books and violent video games reaches the level of a <b>public health concern</b>
To <b>protect society and children</b> , minors must be denied access to the material
The scientific literature concerning long-term negative effects of comic books and violent video games has been <b>conclusively determined</b>
Anyone who does not acknowledge the scientifically proven harm of comic books and violent video games does so out of a <b>personal bias and/or financial concerns</b>

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evant scientific community?<sup>4</sup> The *Daubert* trilogy, as the 3 previous cases are known, was never intended to instruct legislators about how to determine which side of a scientific debate should be endorsed to justify First Amendment restrictions. In turn, the *Daubert* trilogy does not provide guidance to judges in determining how much deference to give legislative findings grounded on unsettled science. The *Schwarzenegger* decision may allow the Court to elucidate principles guiding judges on how much deference to give to scientific evidence and theories, especially when a conflict exists in the scientific community.

This article will review the 1950s comic book debate to highlight common elements in debates pertaining to media, children, and harm; the current state of the conflicted scientific literature concerning video game violence and the potential bias in that literature; and the opinions thus far of lower courts on the debate.

### THE 1950s COMIC BOOK DEBATE

The comic book debate of the 1950s is eerily similar to the current debate about the effects of video games on children. In 1954, the US Senate Subcommittee on Juvenile Delinquency held hearings on the effects of comic books on America's youth.<sup>3,7,8</sup> The primary focus of the Senate hearings was "crime and horror" comic books, some of which graphically showed horrific images such as dismembered bodies. Concerns were voiced that these comics would lead to a decline in public morals, an increase in violence and aggression, an increase in general lawlessness, and societal disrespect and deterioration.<sup>8</sup> Medical and social science experts became involved in the debate, writing articles such as "The Problem of the Comic Books" and "The Psychopathology of Comic Books," which were published in reputable journals.<sup>9,10</sup> A

leading proponent to limit, if not ban, the sale of "horror and crime comics," as he defined them, was Dr Fredric Wertham, a forensic psychiatrist.<sup>7</sup> Many of the concerns that dominate the current video game debate were also expressed by Dr Wertham in his testimony to the Senate subcommittee (Table 1 summarizes these similarities):

I would like to point out to you one other crime comic book which we have found to be particularly injurious to the ethical development of children and those are the Superman comic books. They arose in children's fantasies of sadistic joy in seeing other people punished over and over again, while you yourself remain immune. We have called it the "Superman complex." In these comic books, the crime is always real and Superman's triumph over [evil] is unreal. Moreover, these books like any other, teach complete contempt of the police...I may say here on this subject *there is practically no controversy*...as long as the crime comic books industry exists in its present form, *there are no secure homes*...crime comic books, as I define them, are the overwhelming majority of all comic books... There is an endless stream of brutality...I can only say that, in my opinion, *this is a public-health problem*...I think it ought to be possible to keep the children under 15 from seeing them displayed to them and preventing these being sold directly to children...The children don't say that this does them any harm, and that is an interesting thing because it has been so misrepresented by the comic book industry and their spokesmen in all the *biased opinions* that they peddle and that they hand out to unsuspecting newspaper editors (Italics added by author for emphasis).<sup>8</sup>

In large part because of these hearings, the comic book industry voluntarily adopted the Comics Code Authority standards.<sup>3,7</sup> Considering that Dr Wertham's testimony in Canada led to a ban on the import and sale of certain comic book titles, this seemed to be a reasonable step for the American comic book industry to take.<sup>8</sup>

The concern about comic books persists to this day, as evidenced by mental health "authorities" focusing on the negative male stereotype that boys learn from comic book characters. However, the "destructive" comic books of the 1950s are currently being lauded for the positive societal values they taught. Sharon Lamb, PhD, was quoted in a 2010 press release as saying: "[The comic book heroes of the past did fight criminals], but [they] were heroes boys could look up to and learn from because, outside of their costumes, they were real people with real problems and many vulnerabilities."<sup>11</sup>

Sixty years in the future, will social scientists be espousing the positive benefits of today's video games as they currently are doing with yesterday's comic books?

### REVIEW OF THE LITERATURE ON VIOLENT VIDEO GAMES

As already noted, the scientific community remains divided on the effect of violent video games on youth. Some in-

investigators argue that the effect is negative, whereas others see a neutral to a beneficial effect. A review of the literature supporting each theory follows, as well as a specific case in point of such conflicting opinions. A critical stance toward current findings is advised given that the science on this issue remains unsettled.

### **THEORY 1: VIOLENT VIDEO GAMES HAVE A NEGATIVE EFFECT ON YOUTH**

Articles reviewing the effects of video game content on general populations have found links between playing violent video games and changes in behavior, self-concept, and/or thought process. Barlett and Rodeheffer<sup>12</sup> found that persons who played realistic violent games for 45 minutes had a greater increase in arousal and aggressive feelings than persons who played unrealistic violent video games or nonviolent video games for the same period.

A study by Bushman and Anderson<sup>13</sup> (frequently quoted experts in the current debate) tried to address whether playing violent video games would lead to changes in behavior. In their study, participants played either a violent or nonviolent video game and were then exposed to a staged confrontation. Bushman and Anderson found many variations between the groups. First, the players of violent video games were less likely to help those involved in the staged confrontation than the players of the nonviolent games (21% vs 25%). Second, players of the violent video game rated the fight as less serious (mean score, 5.91 vs 6.44 on a scale of 1-10, with 1 being the least serious and 10 being the most serious). Third, players of violent video games took longer to help if they did help (73.3 seconds vs 16.2 seconds). Fourth, players of the violent video game were less likely to “hear” the confrontation taking place (94% vs 99%).<sup>13</sup> Bushman and Anderson thought that this study demonstrated a definable change in behavior that was specifically related to playing violent video games.

In a different experiment by Bushman and Anderson,<sup>13</sup> a similar definable behavioral change was found after viewing violent movies. Those who had just seen a violent movie took 26% longer to offer assistance to a person with an injury (a person on crutches) than did people who were about to see the violent movie or were about to see or had just seen a nonviolent movie (6.89 seconds vs 5.46 seconds).<sup>13</sup> Findings that exposure to violent media may negatively affect health (eg, increased risk of substance use, sexual activity, obesity, or poor body image) and behavior have also been reported for other media, such as television and music.<sup>14-17</sup> The American Academy of Pediatrics started issuing official policy statements as early as 2001 that violent media (eg, television, movies, music, and video games) “represent a significant risk to the health of children and adolescents.”<sup>15,16</sup> This raises the question

of whether the reported change in behavior is specific to any particular form of media or is caused by the violent content itself, regardless of the way it is experienced. Unfortunately, it is sometimes difficult to directly compare the varying studies to determine which media, if any, have the most profound effect on behavior because different measures and study designs are used. Even when comparing the 2 studies done by Bushman and Anderson, the methods vary; one measured the time helping an injured person, whereas the second measured the time to help a person after a physical altercation, a situation in which rendering assistance may have exposed the study participant to more risk. Although both studies reported measured time to a response after exposure to violent media, the risks are not comparable.

Many published studies suggest that certain populations are more at risk and/or are more likely to play violent video games than others.<sup>3</sup> Studies suggest that at-risk individuals are usually male, have preexisting personality disorders or traits (eg, conduct disorder), have preexisting mental health conditions (eg, attention deficit disorder), have had difficult or traumatic upbringings, and are insecure (with poor self-esteem).<sup>18,19</sup> A review of the literature by Frölich et al<sup>19</sup> showed that children with attention deficit disorder were at a higher risk of showing “addictive” behavior to violent video games and that violent video games “might be a significant risk variable for aggressive behavior” in persons who already have aggressive personality traits.

Many studies have found a correlation or association between the amount of time a game is played and subsequent changes in behavior.<sup>3</sup> A study by Hastings et al,<sup>20</sup> which relied on parents’ self-report of their children’s video game-playing behaviors, suggested that spending a large amount of time playing violent video games was correlated with troublesome behavior and poor academic achievement. The same study also indicated that children who played more educational games had more positive outcomes.

Although not as frequently studied, the effects of playing positive “prosocial” video games have been examined.<sup>21-23</sup> In a study by Greitemeyer and Osswald,<sup>21</sup> players of a prosocial video game were more likely to help after a mishap, more willing to assist in further experiments, and more likely to intervene in a harassment situation, the opposite of what was found in the Bushman and Anderson study of violent video game players.<sup>13</sup> Their findings supported the notion that video games affect individuals, as would be hypothesized from “general learning theories.”<sup>22</sup> Specifically, a person’s behavior is reinforced and/or encouraged by either prosocial or violent tactics that were rewarded by advancing in or winning the game.

## **THEORY 2: VIOLENT VIDEO GAMES HAVE A MINIMAL, UNDETERMINED, OR BENEFICIAL EFFECT ON YOUTH**

Although many articles have suggested a connection between violent video games and aggression, several have found no such relationship.<sup>24</sup> In 2007, a meta-analysis by Ferguson<sup>25</sup> found that, once “publication bias” was corrected, no significant correlation existed between violent video games and aggressive behavior. A study from Iran by Allahverdipour et al<sup>26</sup> found that “nongamers” and “excessive gamers” both had lower self-reported mental health wellness scores than “low to moderate gamers.” This finding suggests that excessive playing may be detrimental, but that there is some protective or, at least, nondeleterious effect to playing in moderation.<sup>26</sup> This finding is in line with social theory, which suggests that video games, like sports, may provide an outlet for individuals to work through aggression and, therefore, have better mental functioning and overall lower levels of aggression. Other studies have pointed to the positive attributes of violent video game playing, such as improved visual-spatial coordination, increased peripheral attention, and increased reactive decision-making capabilities.<sup>25</sup>

In a study by Ferguson et al<sup>27</sup> examining the multivariate risk factors for youth violence, the most salient positive predictors of youth violence were delinquent peer influences, antisocial personality traits, depression, and parents or guardians who use psychological abuse in intimate relationships. The factors that were not found to be predictive of youth violence included neighborhood quality, parental use of domestic violence in intimate relationships, and exposure to violent television or video games.

In a study that may be directly applicable to the question before the Supreme Court in the *Schwarzenegger* case, Regenbogen et al<sup>28</sup> used functional magnetic resonance imaging (fMRI) studies of the brain to determine whether there was a change in brain imaging that suggested a loss of distinction between virtual and actual violence in players of violent video games compared with controls. What they found is that “the ability to differentiate automatically between real and virtual violence has not been diminished by a long-term history of violent video game play, nor have gamers’ neural responses to real violence, in particular, been subject to desensitization processes.” This would indicate that, at least on a population basis, video games do not cause people to lose their grip on what is real vs what is fantasy.

A review of the literature published in 2009 by Mitrofan et al,<sup>29</sup> which tried to assess the association between watching violent television and playing violent video games and the emergence of behavioral problems in children with emotional difficulties, found the literature to be confused and contradictory. The overall conclusion of the authors was that the literature consisted of “insufficient, contradictory and methodologically flawed evidence on the associa-

tion between television viewing and video game playing and aggression in children and young people with behavioral and emotional difficulties.” The authors warned that better studies were needed before any true evidence-based public health policy could be formulated.

## **A CASE IN POINT: THE CONFLICTING RESPONSE TO THE META-ANALYSIS BY C. A. ANDERSON**

The reactions to a meta-analysis performed by C.A. Anderson et al<sup>30</sup> illustrate the 2 sides of the debate. The first was written by Huesmann,<sup>31</sup> who has authored more than 30 articles about violence and aggression. The second is a commentary written by Ferguson and Kilburn,<sup>32</sup> who together have published more than 40 articles on the subject of violence.

Huesmann,<sup>31</sup> in his commentary “[n]ailing the coffin shut on doubts that violent video games stimulate aggression,” wrote:

Observational learning theory has evolved into social-cognitive information processing models that explain that what a child observes in any venue has both short-term and long-term influences on the child’s behaviors and cognitions. C. A. Anderson et al.’s (2010) extensive meta-analysis of the effects of violent video games confirms what these theories predict and what prior research about other violent mass media has found [an association]....Contrary to some critics’ assertions, the meta-analysis of C. A. Anderson et al. is methodologically sound and comprehensive. Yet the results of meta-analyses are unlikely to change the critics’ views or the public’s perception that the issue is undecided because some studies have yielded null effects, because many people are concerned that the implications of the research threaten freedom of expression, and because many people have their identities or self-interests closely tied to violent video games.

Dr Huesmann’s commentary is strikingly similar in tone to the testimony provided by Dr Wertham regarding comic books in the 1950s.

In their commentary casting doubt on the link between the viewing of violent video games and aggression, Ferguson and Kilburn<sup>32</sup> wrote:

The issue of violent video game influences on youth violence and aggression remains intensely debated in the scholarly literature and among the general public. Several recent meta-analyses, examining outcome measures most closely related to serious aggressive acts, found little evidence for a relationship between violent video games and aggression or violence. In a new meta-analysis, C. A. Anderson et al. (2010) questioned these findings. However, their analysis has several methodological issues...includ[ing] many studies that do not relate well to serious aggression, an apparently biased sample of unpublished studies, and a “best practices” analysis that appears unreliable and does not consider the impact of unstandardized aggression measures on the inflation of effect size estimates.

### THE NEED FOR CRITICAL REVIEW OF THE LITERATURE

Many questions are raised by the split nature of the scientific literature regarding violence and video games. Do these articles represent “good science”? Are the results applicable to the real world? Were the results influenced by intentional (eg, researchers’ personal beliefs) or unintentional (eg, sampling errors) bias?<sup>29,32-34</sup> In an attempt to answer these questions, we searched the PubMed database in 2010 using the search term *violent video game* with no limit on time frame, identifying 92 relevant publications. The findings of the identified articles are depicted in Table 2. After reviewing the available publications in this one database, we realized that physicians should be mindful of several very important concerns when reading this or similar literature defining the risk of violence.

The study of the long-term effects of video games is “new,” and the conflicting findings have not yet been fully vetted.<sup>35</sup> Home video game consoles did not become common household items until the late 1970s and early 1980s and did not develop enough processing power to render realistic depictions of violence until the late 1990s.<sup>3</sup> Video games of the type being targeted by legislation did not enter the market in large numbers until after industry rating labels went into effect in 1994.<sup>3</sup>

It should be remembered that a correlation does not prove a causation.<sup>33</sup> For example, in the past, a correlation was reported between coffee consumption and lung and pancreatic cancer. However, is the real culprit the coffee the person is drinking or the proverbial cigarette he or she smokes with the coffee?<sup>33,36</sup> Do children with less parental involvement and supervision play more violent video games? If that is the case, then is the correlation with violence due not to the games per se but rather to a lack of parental supervision and interaction? The game time played would be then an accurate marker but not the real causative variable. If parents are asked to complete a survey about their children, are they likely or able to identify their own failings as parents?

One must also determine if a finding in the literature is “clinically” or practically relevant.<sup>37,38</sup> For example, many studies indicate that self-reported levels of aggression increase while playing video games.<sup>33,38</sup> Do these findings then translate into these players becoming more aggressive later or being more likely to engage in real violence?<sup>33,37,38</sup> The simple conclusion is that they probably do become more aggressive later, and, as previously mentioned, some academic studies support this hypothesis. However, studies also indicate that people who engage in or watch sports such as football, hockey, or martial arts (eg, judo) also show increased aggression while playing in or watching the event.<sup>39-44</sup> Are they at the same risk of future violence as the people who play video games? If multiple routine daily activities, such as watching or playing sports, driving

TABLE 2. Findings of 92 Articles Addressing Violent Video Games<sup>a,b</sup>

Finding	No. of articles
Provided data supporting some association between video games and behavior	37
Involved video games but did not directly assess only violent video games (looked at other factors as well, such as television viewing)	36
Reviewed past studies on violent video games	13
Opinion article making recommendations to clinicians or parents	10
Reviewed the physiological effects caused by playing video games, such as heart rate changes or changes on functional imaging studies	7
Showed effects for specific populations, such as those with preexisting personality trait disturbance and mental illnesses	7
Showed potential positive and negative effects from video games	4
Found no evidence for a relationship between video game viewing and behavior	1

<sup>a</sup> Articles were identified by searching PubMed in 2010 for the search term *violent video game* without limiting date parameters.

<sup>b</sup> Some articles fell into multiple categories and were counted more than once.

a car, watching TV, reading a comic book, or playing video games, increase aggression and alter behavior, is the effect so common that it loses its significance as a specific public health concern?<sup>38,45</sup>

When assessing the validity of data, we should remember that data are often processed by people with “theories” about how the mind learns and works.<sup>46</sup> Often, these theories change over time and drift in and out of academic, social, and political favor, as did the theory of the *schizophrenogenic mother*. At one time, the schizophrenogenic mother was a well-accepted theory to explain how environmental stressors, namely maternal interactions with children, could cause the child to become schizophrenic.<sup>47</sup> However, with a better understanding of central neurochemistry and the development of effective medications and new research techniques (eg, functional positron emission tomography, magnetic resonance imaging, and genetic studies), the schizophrenogenic mother is no longer seen as the prime cause of schizophrenia. If the Court had ruled on the validity of the scientific evidence defining the cause of schizophrenia in the 1950s (ie, the schizophrenogenic mother) compared with the information available in 2010 (ie, genetics), such a ruling today would be seen as “good law” based on unfounded, premature, or bad science.

### HOW THE COURTS HAVE REACTED

Previous court cases addressing states’ attempts to restrict access to video games are summarized in Table 3. The

TABLE 3. Synopsis of Previous Court Cases Regarding the Sale, Rental, or Distribution of Violent Video Games to Minors

Court of Appeals cases	
<i>Software Dealers Association v Scharzenegger</i> , 556 F3d 950 (9th Cir 2009)	Restrictions on the sale and rental of video games violate the First Amendment and the “variable obscenity” standard applicable to minors is not applicable. This case led to <i>Scharzenegger v Entertainment Merchants Association</i> , 130 SCt 2398 (2010)
<i>Interactive Digital Software Association v St Louis County</i> , 329 F3d 954 (8th Cir 2003)	The county ordinance making it unlawful for any person to knowingly sell, rent, or make available violent video games to minors without a parent or guardian’s consent violates the First Amendment
<i>American Amusement Machine Association v Kendrick</i> , 224 F3d 572 (7th Cir 2001)	Legislation restricting access to violent video games is unconstitutional
<i>Video Software Dealers Association v Webster</i> , 968 F2d 684 (8th Cir 1992)	Imposing a penalty on those who sell or rent violent video games to minors is unconstitutional
Federal District Court cases	
<i>Entertainment Merchant Association v Henry</i> , No. CIV-060675-C, 2007 WL 2743097 (WD Okla Sept 17, 2007)	Provision of criminal statute imposing penalties to anyone who knowingly sells, rents, furnishes, distributes, or disseminates material harmful to minors, including material depicting inappropriate violence, is unconstitutional
<i>Entertainment Software Association v Foti</i> , 451 F Supp 2d 823 (MD La 2006)	Statute criminalizing the distribution of video or computer games “appealing to minors’ morbid interest in violence” violates the First Amendment
<i>Entertainment Software Association v Hatch</i> , 443 F Supp 2d 1065 (D Minn 2006)	Imposing fines on minors who buy or rent violent video games and requiring merchants to post signs warning of such penalties violate the First Amendment
<i>Entertainment Software Association v Granholm</i> , 426 F Supp 2d 646 (ED Mich 2006)	Invalidated state statute criminalizing “knowingly disseminating to a minor an ultra-violent explicit video game that is harmful to minors”
<i>Entertainment Software Association v Blagojevich</i> , 404 F Supp 2d 1051 (ND Ill 2005)	The state did not meet its burden to show that such restriction is necessary to satisfy the government’s interest in preventing violent and aggressive behavior in minors
<i>Video Software Dealers Association v Maleng</i> , 325 F Supp 2d 1180 (WD Wash 2004)	The relationship between the violence in video games and antisocial behavior in minors is not sufficiently substantial to support restrictions on violent video games

federal district court case of *Entertainment Software Association v Rod Blagojevich* is particularly instructive to the issues before the Supreme Court because of its analysis of the scientific literature regarding violent video games.<sup>48</sup> The court in that case found that the conclusions of the scientific proponents testifying in favor of limiting video games were overstated:

Dr. Anderson [PhD] testified that “it seems clear that exposure to violent video games increases aggressive behavior, aggressive thinking, physiological arousal, aggressive feelings, and is also associated with a decrease in prosocial behavior.”...The research underlying Dr. Anderson’s testimony, however, does not support such a stark and sweeping conclusion...[Defense experts] 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...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)...Dr. Anderson also has not provided evidence to show that the purported relationship between violent video game exposure and aggressive thoughts or behavior is any greater than with other types of media violence...or other factors that contribute to ag-

gression, such as poverty. In fact, several of the studies he uses to support his conclusions examine media violence generally and do not disaggregate the effect of video game violence or compare the effects of video game violence to these or other forms of media violence.<sup>48</sup>

### IMPLICATIONS FOR PHYSICIANS

The current debate about whether violence is caused by video games will not be the last time that groups of social scientists on both sides will feel compelled to weigh in with “hard data and opinions” to advance their political or social agenda. As scientists, if we remember our history, we will be less likely to put forth theories, such as the Superman complex and the schizophrenogenic mother, as uncontested facts. It is hard to prove a direct causal relationship between violence and media to the average judge and/or juror considering the fact that millions if not billions of people have watched violence on television and in movies, listened to rap music, and played violent video games and have not engaged in violent acts.

Physicians only need to look at the current video game debate to understand how “scientific literature” may be applied, appropriately or inappropriately, to influence social policy. Misuse can have a profound effect on how medicine

and physicians are viewed by the public and the courts. The *Schwarzenegger* decision may further change the standard by which medical testimony is accepted by the Court, as did the *Daubert* trilogy. To date, the lower courts have taken a very strict view in determining that science needs to show *definitive* causation. If the Supreme Court agrees with the lower courts, the future implications of its decision may be difficult to predict. It could result in a judicial free-for-all, leaving it up to each judge to make up his or her own mind about whether an issue has been conclusively decided scientifically. Alternatively, it could result in such strict guidelines on when scientific information can be used to justify a statutory restriction on constitutional rights that it severely limits scientific usefulness. It is important that we, as physicians, accurately report our scientific literature, its implications, and limitations; otherwise, we will see our testimony discounted, as was the testimony of Dr Anderson, by the US District Court for the Northern District of Illinois.<sup>48</sup>

#### REFERENCES

1. *Arnold Schwarzenegger, Governor of California, et al, v Entertainment Merchants Association, et al*, No. 08-1448. 130 SCt 2398 (2010).
2. US Supreme Court Media. *Schwarzenegger v Entertainment Merchants Association*. Oyez Web site. [http://www.oyez.org/cases/2010-2019/2010/2010\\_08\\_1448](http://www.oyez.org/cases/2010-2019/2010/2010_08_1448). Accessed February 16, 2011.
3. Day T, Hall R. Déjà vu: from comic books to video games: legislative reliance on "soft science" to protect against uncertain societal harm linked to violence v. the First Amendment *Oregon Law Rev*. 2010;89(2):415-504.
4. *Daubert v Merrell Dow Pharm, Inc*, 509 US 579, 589-98 (1993).
5. *General Electric Co v Joiner*, 522 US 136 (1997).
6. *Kumho Tire Co v Carmichael*, 526 US 137 (1999).
7. Menand L. *The Horror: Congress Investigates the Comics* [book review]. *New Yorker Magazine*. March 31, 2008. [http://www.newyorker.com/arts/critics/books/2008/03/31/080331crbo\\_books\\_menand](http://www.newyorker.com/arts/critics/books/2008/03/31/080331crbo_books_menand). Accessed February 16, 2011.
8. TheComicBooks.com. United States Senate Subcommittee on juvenile delinquency testimony of Dr. Frederic Wertham, April 21, 1954. <http://www.thecomicrobooks.com/1954senatetranscripts.html>. Accessed February 16, 2011.
9. The problem of the comic books. *Am J Psychiatry*. 1956;112(10):854.
10. Wertham F, Legman G. The psychopathology of comic books. *Am J Psychother*. 1948;2(3):472-490.
11. American Psychological Association. Today's superheroes send wrong image to boys, say researchers: 'macho' masculine stereotype not healthy for relationships. Published August 15, 2010. <http://www.apa.org/news/press/releases/2010/08/macho-stereotype-unhealthy.aspx>. Accessed February 16, 2011.
12. Barlett CP, Rodeheffer C. Effects of realism on extended violent and nonviolent video game play on aggressive thoughts, feelings, and physiological arousal. *Aggress Behav*. 2009;35(3):213-224.
13. Bushman BJ, Anderson CA. Comfortably numb: desensitizing effects of violent media on helping others. *Psychol Sci*. 2009;20(2):273-277.
14. Council on Communications and Media. From the American Academy of Pediatrics: Policy statement—impact of music, music lyrics, and music videos on children and youth. *Pediatrics*. 2009;124(5):1488-1494.
15. Council on Communications and Media. From the American Academy of Pediatrics: policy statement—media violence. *Pediatrics*. 2009;124(5):1495-1503.
16. Committee on Public Education. American Academy of Pediatrics: media violence. *Pediatrics*. 2001;108(5):1222-1226.
17. Committee on Public Education. American Academy of Pediatrics: Children, adolescents, and television. *Pediatrics*. 2001;107(2):423-426.
18. Tisseron S. Videogames risks: diagnosis and management. *Arch Pediatr*. 2009;16(1):73-76.
19. Frölich J, Lehmkuhl G, Döpfner M. Computer games in childhood and adolescence: relations to addictive behavior, ADHD, and aggression. *Z Kinder Jugendpsychiatr Psychother*. 2009;37(5):393-402.
20. Hastings EC, Karas TL, Winsler A, et al. Young children's video/computer game use: relations with school performance and behavior. *Issues Ment Health Nurs*. 2009;30(10):638-649.
21. Greitemeyer T, Osswald S. Effects of prosocial video games on prosocial behavior. *J Pers Soc Psychol*. 2010;98(2):211-221.
22. Gentile DA, Anderson CA, Yukawa S, et al. The effects of prosocial video games on prosocial behaviors: international evidence from correlational, longitudinal, and experimental studies. *Pers Soc Psychol Bull*. 2009;35(6):752-763.
23. Greitemeyer T, Osswald S, Brauer M. Playing prosocial video games increases empathy and decreases schadenfreude. *Emotion*. 2010;10(6):796-802.
24. Ferguson CJ, Kilburn J. The public health risks of media violence: a meta-analytic review. *J Pediatr*. 2009;154(5):759-763.
25. Ferguson CJ. The good, the bad and the ugly: a meta-analytic review of positive and negative effects of violent video games. *Psychiatr Q*. 2007;78(4):309-316.
26. Allahverdiipour H, Bazargan M, Farhadinasab A, et al. Correlates of video games playing among adolescents in an Islamic country. *BMC Public Health*. 2010;10:286.
27. Ferguson CJ, San Miguel C, Hartley RD. A multivariate analysis of youth violence and aggression: the influence of family, peers, depression, and media violence. *J Pediatr*. 2009;155(6):904-908.
28. Regenbogen C, Herrmann M, Fehr T. The neural processing of voluntary completed, real and virtual violent and nonviolent computer game scenarios displaying predefined actions in gamers and nongamers. *Soc Neurosci*. 2010;5(2):221-240.
29. Mitrofan O, Paul M, Spencer N. Is aggression in children with behavioral and emotional difficulties associated with television viewing and video game playing? A systematic review. *Child Care Health Dev*. 2009;35(1):5-15.
30. Anderson CA, Shibuya A, Ihori N, et al. Violent video game effects on aggression, empathy, and prosocial behavior in eastern and western countries: a meta-analytic review. *Psychol Bull*. 2010;136(2):151-173.
31. Huesmann LR. Nailing the coffin shut on doubts that violent video games stimulate aggression: comment on Anderson et al. (2010). *Psychol Bull*. 2010;136(2):179-181.
32. Ferguson CJ, Kilburn J. Much ado about nothing: the misestimation and overinterpretation of violent video game effects in eastern and western nations: comment on Anderson et al. (2010). *Psychol Bull*. 2010;136:174-178.
33. Browne KD, Hamilton-Giachritsis C. The influence of violent media on children and adolescents: a public-health approach. *Lancet*. 2005;365(9460):702-710.
34. Anderson CA. An update on the effects of playing violent video games. *J Adolesc*. 2004;27(1):113-122.
35. Villani VS, Olson CK, Jellinek MS. Media literacy for clinicians and parents. *Child Adolesc Psychiatr Clin N Am*. 2005;14(3):523-553.
36. Tang N, Wu Y, Ma J, et al. Coffee consumption and risk of lung cancer: a meta-analysis. *Lung Cancer*. 2010;67(1):17-22.
37. Funk JB. Children's exposure to violent video games and desensitization to violence. *Child Adolesc Psychiatr Clin N Am*. 2005;14(3):387-404.
38. Olson CK. Media violence research and youth violence data: why do they conflict? *Acad Psychiatry*. 2004;28(2):144-150.
39. Warden KB, Grasso SC, Luyben PD. Comparisons of rates and forms of aggression among members of men's and women's collegiate recreational flag football teams. *J Prev Interv Community*. 2009;37(3):209-215.
40. Thomas S, Reeves C, Smith A. English soccer teams' aggressive behavior when playing away from home. *Percept Mot Skills*. 2006;102(2):317-320.
41. Moore SC, Shepherd JP, Eden S, et al. The effect of rugby match outcome on spectator aggression and intention to drink alcohol. *Crim Behav Ment Health*. 2007;17(2):118-127.
42. Reynes E, Lorant J. Effect of traditional judo training on aggressiveness among young boys. *Percept Mot Skills*. 2002;94(1):21-25.
43. Begg DJ, Langley JD, Moffitt T, et al. Sport and delinquency: an examination of the deterrence hypothesis in a longitudinal study. *Br J Sports Med*. 1996;30(4):335-341.
44. Frank MG, Gilovich T. The dark side of self- and social perception: black uniforms and aggression in professional sports. *J Pers Soc Psychol*. 1988;54(1):74-85.
45. Deffenbacher JL, Richards TL, Filetti LB, et al. Angry drivers: a test of state-trait theory. *Violence Vict*. 2005;20(4):455-469.
46. Huesmann LR. The impact of electronic media violence: scientific theory and research. *J Adolesc Health*. 2007;41(6)(suppl 1):S6-S13.
47. Nuffield EJ. The schizogenic mother. *Med J Aust*. 1954;2(8):283-286.
48. *Entertainment Software Ass'n v Blagojevich*, 404 F Supp 2d 1051 (ND Ill 2005).