

Constitutional *Kombat*: Psychological Evidence Used to Restrict Video-game Violence

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Abstract

Violent video games have triggered substantial controversy due to highly publicized incidents of youth violence that have been allegedly inspired by the content of such games. Several jurisdictions have passed legislation penalizing the distribution of violent video games to minors and used psychological research to support the justification for such laws. However, courts have consistently found this research to be unpersuasive and have struck down restrictive video-game legislation on First-Amendment, Freedom-of-Speech grounds. This article explores our Constitutional right to free speech, along with its underlying psychological assumptions. It reviews the reasons that courts have found current research on the effects of violent video games to be unconvincing as evidence in a legal context, and presents a number of methodological recommendations that would make the research on this topic more probative in future cases.

Keywords: video games, violence, youth, restrictions, law, research evidence, expert testimony.

Introduction

On June 25, 2003, amid the Great Smokey Mountains, two teenagers armed with rifles opened fire on unsuspecting motorists. Stepbrothers William and Joshua Buckner, ages 16 and 14 respectively, killed one man and seriously injured one woman while allegedly mimicking the popular video game *Grand Theft Auto III* (Yi, 2003). In reaction to similarly brutal crimes perpetrated by users of violent video games, lawmakers and concerned citizens have proposed legislation that penalizes and often criminally sanctions retailers who allow minors access to such games. As of this writing, nine jurisdictions have attempted to pass restrictive video-game legislation, but so far court challenges based on the freedom-of-speech principle in the First Amendment of the

United States Constitution have consistently resulted in these laws being declared unconstitutional.

Typically, parties seeking to overcome First-Amendment protections in such court cases have presented psychological evidence to bolster the assertion that exposure to violent video games causes psychological harm to minors (e.g., Entertainment Software Association [ESA] v. *Blagojevich*, 2005, p. 1060). However, while some researchers have found a link between playing violent games and increased aggression (Anderson & Dill, 2000; Anderson & Ford, 1986; Ballard & Wiest, 1995; Carnagey & Anderson, 2005; Irwin & Gross, 1995; Kirsh, 1998; Silvern & Williamson, 1987), others have not (Cooper & Mackie, 1986; Funk, Buchman, Jenks, & Bechtoldt, 2003; Funk et al, 2002; Graybill, Kirsch, & Esselman, 1985; Graybill, Strawniak, Hunter, & O'Leary, 1987; Scott, 1995; Winkel, Novak, & Hopson, 1987). As a result of these inconsistencies and other issues that make the research unpersuasive, so far courts have been unwilling to uphold laws restricting the distribution of violent video games (*American Amusement Machine Association [AAMA] v. Kendrick*, 2001; *Entertainment Merchants Association [EMA] v. Henry*, 2007; *ESA v. Blagojevich*, 2005; *ESA v. Foti*, 2006; *ESA v. Granholm*, 2006; *ESA v. Hatch*, 2006; *Interactive Digital Software Association [IDSA] v. St. Louis County*, 2003; *Video Software Dealers Association [VSDA] v. Maleng*, 2004; *VSDA v. Schwarzenegger*, 2007). For example, when overturning the Safe Games Illinois Act, United States District Court Judge Matthew Kennelly declared that the state had "come nowhere near" proving that the law passed First-Amendment constitutional scrutiny using social science evidence (*ESA v. Blagojevich*, 2005, p. 1073). The Supreme Court of the United States has yet to weigh in on this issue.

Although courts have established a clear precedent for overturning restrictive video-game legislation on constitutional grounds, proponents of these laws seem to be relying on the hope that eventually the available psychological evidence on the harmful effects of violent games will become persuasive. The purpose of this article is to: (1) review how courts have responded to restrictive video-game legislation in light of the existing body of research on video-game violence, (2) analyze why that existing research has lacked persuasiveness, and (3) propose changes to the research methodology used in this area so that it can provide courts with more probative evidence in the future.

Background

Public Controversy

Video games have been a popular pastime of both adults and children for decades. The industry generates over \$13 billion annually in the United States (NPD Group, 2007). Further, as technology has increased, so too has the realism of video-game violence. Because graphically violent video games tend to generate profit, video-game producers appear to compete to see who can release the most dynamic and explicit game of the era.

The video-game industry has made efforts to limit children's access to inappropriately violent games. One such effort was the creation of the Entertainment Software Ratings

Board (ESRB). The ESRB is an independent organization that reviews and rates video games for all major gaming platforms, so that buyers, especially parents, can make more informed purchasing decisions. Despite such efforts by the industry, blame is often quickly placed on violent video games when children who commit brutal acts have been exposed to them.

For instance, armed with a semiautomatic pistol on December 1, 1997, Michael Carneal, age 14, killed three and wounded five at Heath High School in Paducah, Kentucky. Since Carneal was purportedly an avid consumer of violent entertainment, lawsuits were filed against various companies, such as Sony Computer Entertainment, by parents of victims who believed the industry was responsible for the incident (Kelly, 1999). Perhaps the most memorable incident of youth violence in recent history is the massacre at Columbine High School. On April 20, 1999, Eric Harris and Dylan Klebold systematically hunted down classmates and teachers within Columbine's walls. The boys killed 13 people before turning their guns on themselves. Lawsuits were swiftly filed against several video-game makers and distributors after it was alleged that Harris and Klebold were frequent players of games such as *Mortal Kombat*, *Doom*, and *Red-neck Rampage* (Abbott, 2002). Also infamous were the Washington D.C. Beltway killings in September and October of 2002, when ten people were shot and killed by a pair of snipers over a period of three weeks. The teenage sniper, Lee Boyd Malvo, was alleged to have been brainwashed into committing the killings by 42-year-old accomplice, John Allen Muhammad. Reports indicated that Muhammad inundated the youth with military-themed violent video games, such as *Ghost Recon* (Siegel, 2003).

The *Grand Theft Auto* series of games is commonly implicated after incidents of youth violence. There is the incident summarized at the beginning of this article and a number of others. For example, in November of 2002, 16-year-old Dustin Lynch beat and stabbed 17-year-old JoLynn Mishne to death. Mishne's father publicly blamed *Grand Theft Auto III* for his daughter's death (Meyer, 2003). In January of 2003 in Oakland, California, Demarcus Ralls and five accomplices embarked on a ten-week killing spree, leaving five dead. Ralls was also charged with two attempted murders and 18 robberies. The gang told police they were imitating scenes from *Grand Theft Auto III* (Zamora, 2006). Also alleged to be mimicking the game, 18-year-old Devin Moore fatally shot three police officers with one of their own weapons after being arrested for possession of a stolen vehicle on June 7, 2003 (Bradley, 2005).

Various hypotheses have been proposed to explain how violent video games may at times be responsible for youth violence. One notable theory is that violent entertainment in general, and violent video games in particular, train individuals to kill. Dave Grossman, psychologist for the U.S. Army, alleges that today's video games are literally teaching children to kill in the same way that the military uses behavior-modification techniques to train its soldiers, (Grossman, 1996). Military training programs use human targets, train soldiers to react quickly, and give immediate rewards for rapid shooting in order to desensitize them to killing. Grossman argues that video games have similar effects on children.

Not everyone agrees with Grossman's theory (e.g., Jones, 2002). Some believe that Grossman fails to recognize that effectively conditioning someone for any behavior requires a highly controlled environment. Video games hardly provide a controlled and structured scenario in which to teach someone to kill. Most video-game players are either in their bedrooms at home or in a public arcade surrounded by other people, whereas military training occurs in a rigid, authoritarian setting. Further, while cooperative military trainees are fully aware that they are being taught to kill for their country, video-game users are merely playing a game that they know to be simulated.

Legal Controversy

The freedom-of-expression clause of the First Amendment provides that "Congress shall make no law . . . abridging the freedom of speech" (U.S. Const., 1787). Although generally this grants individuals the right to express their thoughts and opinions without governmental interference, the right to freedom of speech is not absolute. For example, obscenity, child pornography, incitement of immediate commission of a crime, and fighting words are types of speech deemed generally unprotected by the First Amendment. These exceptions were created on the basis of the Supreme Court's holding that such speech is harmful and goes against the inherent purpose behind the drafting of the First Amendment (Massey, 2005). The content of violent video games has not been found to fall automatically into any of these established categories of exceptions, however. As such, the restrictions that have been attempted to be placed on video games have been subjected to a difficult three-pronged strict-scrutiny test by the courts, under which the government bears the burden of proving that (1) it has a "compelling state interest" to justify such restrictions, that (2) the regulation "actually serves that interest and is necessary to do so," and that (3) the regulation "is narrowly tailored and a material advancement of that interest" (*ESA v. Foti*, 2006, p. 831).

Those who question why exceptions to the protections of the First Amendment must meet such a high standard need to understand the strong philosophical ideals that are embodied in the right to free speech. Underlying each of these ideals are a number of psychological assumptions. For example, one assumption is that the First Amendment fosters a free marketplace of ideas where differing thoughts and opinions can clash, analogous to the concept in economics where superior goods prevail over inferior goods in the open market (*Abrams v. United States*, 1919; Massey, 2005; Mill, 1947; Milton, 2006; Saunders, 2003). The marketplace is therefore the forum in which ideas are expressed and examined to determine whether they represent the truth or whether those ideas should be rejected as falsehoods. Of course, this notion presumes that truth is discoverable and objective, rather than created and subjective. The marketplace theory also assumes that human beings are rational and eventually are able to recognize truth when they are presented with it. Therefore, so the theory goes, no harm can come from allowing false ideas into the marketplace, because ultimately the truth will be chosen.

Another assumption offered in support of the First Amendment is that freedom of speech is the means by which democracy functions (Meiklejohn, 1948). The idea is that

during elections it is important for voters to engage in open discussions about political candidates, and after elections citizens need be free to voice their opinions on the government's public policies, so that the needs and desires of the people are reflected (Massey, 2005). The underlying reason that democracy itself is valued is based on the assumption that the people's power to make decisions is superior to that same power resting in the government (Schauer, 1985). Furthermore, it is assumed that, if public officials realize that their actions are going to be scrutinized and perhaps publicized, they will be more likely to act in a reasonable and consistent way (Blasi, 1977).

Another theory behind the First Amendment is that it serves to encourage an attitude of open-mindedness toward speech that some might find to be offensive or unpleasant, but that, within some limits, tolerance must be encouraged for a society to be free (Bollinger, 1986). Free speech is also believed to promote individual thought and independent judgment, which in turn promote autonomy and self-fulfillment (Greenawalt, 1989; Saunders, 2003; Schauer, 1985). In contrast to other cultures where social dependence and collectivist values are encouraged and practiced, ours is one in which it is assumed that individual expression is required for the pursuit of happiness.

Exceptions When It Comes to Children

Lawmakers who pass legislation restricting the sale of violent video games to minors often argue that our justifications for valuing free speech so much do not apply to children. That is, children seldom contribute significantly to the marketplace of ideas, do not vote or effectively participate in our democratic process, are still engaged in the process of learning appropriate behaviors under the control of their guardians, and have less need for freedom of speech in the context of autonomy and self-fulfillment (Saunders, 2003). In addition, lawmakers point to other instances in which our laws have limited minors' constitutional rights in order to protect them.

Indeed, although the Constitution itself does not mention age, it is clear that it has been construed to give different rights to adults than to minors. For example, whereas adults are free to make decisions to refuse necessary medical care based on religious reasons, immature minors are not able to do the same and neither are their parents. "The right to practice religion freely does not include liberty to expose the . . . child to . . . ill health or death" (*Prince v. Massachusetts*, 1944, p. 166). Similarly, a child does not have a right to be exposed to obscenity (Massey, 2005).

Some argue that shielding children from violent media may be seen as having the effect of *granting* minors more rights when compared to those of adults. The underlying legal and philosophical rationale is that children possess "rights in trust" (Feinberg, 1980) or "developmental rights" (Eekelaar, 1986). In other words, children have certain privileges granted to them that are held in trust for the adults into whom they eventually develop. Among these rights is the right to reach their individual potentials as adults, without being seriously disadvantaged as children. From a psychological perspective, it is presumed that children have a lesser sense of morality and ability to reason morally when compared to adults, and therefore need protection from immoral ideas until they

are old enough to identify and evaluate them more competently (Moshman, 1989). Another psychological argument made for the limitation of minors' rights to freedom of speech is the assumption that they are more susceptible to undue influence than adults (Moshman, 1989).

Court Challenges to Restrictive Video-game Legislation

As of the writing of this article, nine attempts at restrictive video-game legislation have been passed and ultimately defeated by the video-game industry. Most of the laws at issue applied to game retailers who sold, rented, or otherwise made available violent video games to minors (*AAMA v. Kendrick*, 2001; *EMA v. Henry*, 2007; *ESA v. Blagojevich*, 2005; *ESA v. Foti*, 2006; *ESA v. Granholm*, 2006; *ESA v. Hatch*, 2006; *VSDA v. Maleng*, 2004; *VSDA v. Schwarzenegger*, 2007); one ordinance targeted the minors who purchased the games instead (*IDSA v. St. Louis County*, 2003). Violators of the statutes were subject to civil and criminal penalties, such as fines and incarceration.

A common first attack launched by the counties, cities, and states restricting violent video games has been to reason that violent video games constitute obscenity and are therefore unprotected by the First Amendment. However, because the obscenity exception has been ruled to apply only to sexually explicit material, this argument has been unsuccessful (*AAMA v. Kendrick*, 2001; *ESA v. Blagojevich*, 2005; *IDSA v. St. Louis County*, 2003; *VSDA v. Maleng*, 2004). Courts have also thwarted other attempts to force violent video games into exceptional categories by unequivocally holding that video games are fully protected speech entitled to a strict-scrutiny analysis (*ESA v. Foti*, 2006). A strict-scrutiny analysis first requires that any regulation which restricts the First Amendment be based on a "compelling interest." Jurisdictions passing restrictive video-game legislation have tried to meet this test by arguing that their compelling interest has been to protect the physical and psychological well-being of minors from the harm that violent video games cause. Courts have consistently accepted the protection of minors as a compelling interest, so meeting this element of strict scrutiny has not been an issue.

Under strict scrutiny, however, it is also necessary to prove with substantial evidence that the problem of youth violence will actually be reduced by these laws. More specifically, courts have asserted that empirical evidence must be presented to support the claim that playing violent video games causes harmful psychological effects on minors (e.g., *AAMA v. Kendrick*, 2001; *EMA v. Henry*, 2007; *ESA v. Hatch*, 2006; *IDSA v. St. Louis County*, 2003). This part of the strict-scrutiny test has been very problematic for proponents of restrictive video-game legislation.

Typically, the social-science evidence presented in these cases has been intended to show that exposure to violent video games increases an individual's aggressive behavior. For example, experimental studies have compared the reactions of two groups of volunteers: one that played a violent video game for a short period of time versus another that played a non-violent video game. Then, the researchers observed the participants' behavior to measure which participants exhibited more aggression of some

type. Similarly, other studies have measured the statistical correlations between exposure to violent video games in the past and individuals' history of aggression. So far, the courts have found such research to be insufficiently persuasive:

AAMA v. Kendrick

The first-of-its-kind ordinance targeted coin-operated video-game arcade operators in Indianapolis (Indianapolis, Ind., 2000), but never went into effect as a result of swift challenges by the video-game industry on the grounds that it violated the First Amendment (*AAMA v. Kendrick*, 2001). The city of Indianapolis supported its case with social-science evidence that purported to demonstrate a causal relationship between playing violent games and aggression. Specifically, the city presented an article discussing two psychological studies conducted by Dr. Craig Anderson, an often-cited researcher in this area and professor at the Iowa State University. The first study examined exposure to violent games and aggressive behavior among college students. After collecting self-report data on the students' histories of violent video-game play and commission of aggressive acts, researchers found a positive correlation between exposure to violent video games and aggression (Anderson & Dill, 2000). The second study included participants who believed they were competing against another participant, playing either a violent video game or a non-violent video game. The winning participants were then asked to administer a "noise blast" to their losing opponent. Researchers concluded that violent video games increased aggressive behavior since students who were asked to play the violent game gave their opponent a longer noise blast than non-violent game players; however, the difference in duration of noise blasts between the two experimental conditions was only milliseconds (Anderson & Dill, 2000).

The court did not find these studies persuasive. First, the video games played by participants in the studies were dissimilar to those targeted by the Indianapolis ordinance. Furthermore, the studies were unable to prove that violent video games had ever resulted in any actual violent acts in the community.

The idea that a child's interest in such fantasy mayhem is 'morbid' – that any kid who enjoys playing 'The House of the Dead' or 'Ultimate Mortal Kombat 3' should be dragged off to a psychiatrist – gains no support from anything that has been cited to [the court] in defense of the ordinance (*AAMA v. Kendrick*, 2001, p. 579).

IDSA v. St. Louis County

Another ordinance passed in St. Louis County, Missouri, (St. Louis County Ordinance No. 20,193, 2000) was promptly challenged on constitutional grounds (Jones, 2003). The case was ultimately decided by the United States Court of Appeals for the Eighth Circuit in June of 2003, which ordered a permanent injunction barring enforcement of the law (*IDSA v. St. Louis County*, 2003). To bolster its case, the county presented another study by Dr. Craig Anderson to demonstrate that playing violent games leads to immediate aggressive behavior and aggressive thoughts (Anderson & Bushman, 2001). The court did not find this study persuasive, stating that "this vague generality falls far

short of a showing that video games are psychologically deleterious.” The court also rejected several other “ambiguous, inconclusive, or irrelevant studies” presented, which were conducted with adult participants instead of minors.

VSDA v. Maleng

Legislation in the state of Washington (H.B. 1009, 2003) was also successfully challenged on First-Amendment grounds before a United States District Court in July of 2004 (*VSDA v. Maleng*, 2004). Among other things, the state had to demonstrate that the physical or psychological welfare of minors was threatened by the violent video games targeted by the legislation. Washington’s legislature determined that “there has been an increase in studies showing a correlation between exposure to violent video and computer games and various forms of hostile and antisocial behavior.” The court evaluated the basis for that determination in order to “ensure that the legislature’s judgments [were] based on reasonable inferences drawn from substantial evidence” (*VSDA v. Maleng*, 2004, p. 1187).

The state presented reports from experts and psychological studies that tended to suggest a causal relationship between exposure to violent games and aggression. The video-game industry presented its own expert, report, and several studies that suggested no causal link between violent games and aggressive behavior. In the end, the court held that while short-term effects on aggression could be reasonably inferred from the state’s evidence and that long-term exposure might be one risk factor leading to aggressive behavior, the current body of research on the topic was unpersuasive. The court found no evidence that exposure to violent video games might result in real violence; most studies presented by the state did not assess actual aggressive behavior, but instead “behaviors that serve as proxies for actual aggression.” The court did state that it “hopes that more research is done to determine the long-term effects of playing violent video games on children and adolescents” (*VSDA v. Maleng*, 2004, p. 1188).

ESA v. Blagojevich

In July of 2005, the State of Illinois passed the Violent Video Games Law (VVGL). Again, the video-game industry successfully challenged it on constitutional grounds in a United States District Court in December of 2005 (*ESA v. Blagojevich*, 2005). The state of Illinois presented, among other evidence, 17 scholarly articles and several live witnesses suggesting a connection between violent media and aggressive behavior. Dr. Craig Anderson, an author of 14 of the articles, testified about his “general aggression model” and how a person’s experiences can trigger aggressive thoughts and behaviors.

In addition to the studies discussed in earlier cases, Dr. Anderson testified to several other experiments he had conducted, which suggested that playing violent video games increases aggression; all three studies used college students as participants. In one study, students who had played a violent game were more likely to form aggressive words in a word-completion task (Anderson et al., 2004). In two studies, participants who had played violent video games gave louder noise blasts when given the opportu-

nity to do so after winning their games (Anderson et al., 2004). As the court noted, however, violent game players administered average noise blasts that were “less than one point higher than the average noise blast of non-violent video game players” (*ESA v. Blagojevich*, 2005, p. 1061).

Dr. Anderson also testified about three meta-analyses he conducted. In each, Dr. Anderson purported to find a link between violent video-game exposure and aggression (Anderson, 2003; Anderson, 2004; Anderson & Bushman, 2001; Anderson et al., 2003). He further testified that there had been only one reliable longitudinal study on this subject, in which elementary school students were asked about their exposure to violent video games during a six-month period. The participants’ responses were compared to reports from parents and teachers that estimated the children’s aggressive behavior during that same period. Students with more violent video-game exposure showed an increased likelihood of being involved in an aggressive physical altercation by the end of the six months. The study controlled for students who were involved in fights prior to the study’s beginning (Gentile & Anderson, 2006). The court commented that:

The total increase in aggressive behavior between the beginning and end of the study, however, was not very large; there was a high (0.4 to 0.5) correlation between aggression at the beginning and end of the study; and at most, only four percent of the increase in aggression was associated with exposure to video-game violence (*ESA v. Blagojevich*, 2005, p. 1061).

The video-game industry’s experts were Drs. Jeffrey Goldstein and Dmitri Williams. They conceded that there is a positive statistical correlation between exposure to violent games and aggression, but questioned the validity of Dr. Anderson’s measures of aggression and proof of a true causal link. In addition, they presented contradictory research that suggested no causal link or that aggression decreased if a participant played video games for longer periods of time. The court found Drs. Goldstein and Williams more persuasive, noting that research had not shown a definitive causal link between playing violent video games and aggression, further stating that “researchers in this field have not eliminated the most obvious alternative explanation: aggressive individuals may themselves be attracted to violent video games” (*ESA v. Blagojevich*, 2005, p. 1063).

ESA v. Granholm

Michigan’s law restricting violent video games (Mich. P. A. 108, 2005) was challenged by the industry as well before a United States District Court in March of 2006 (*ESA v. Granholm*, 2006). One of the problems that the court found with the law was that it did not seem to be based on “substantial evidence.” The state of Michigan used the same research conducted by Dr. Anderson, as did the state of Illinois. Michigan also asserted that the American Medical Association, the American Pediatric Association, and the American Psychological Association were in support of the conclusion that exposure to violent games led to detrimental effects on minors. However, the court dismissed these stances as political postures since they did not appear to be based on any scientific

research. Therefore, “based on the research presented by the defendants, it cannot be said that the legislature enacted the law using ‘reasonable inferences’ from scientific literature based on ‘substantial evidence’” (*ESA v. Granholm*, 2006, p. 654).

ESA v. Hatch

A statute in Minnesota uniquely targeted minors who played violent games, rather than the retailers who sell them (Minn. Stat. § 325I.06, 2006). The Act stated that “a person under the age of 17 may not knowingly rent or purchase [a video game rated AO or M by the ESRB];” the Act also required that purveyors of violent games post a sign notifying customers of this law. The video-game industry challenged this law and the case was heard before a United States District Court in July of 2006 (*ESA v. Hatch*, 2006). The state relied primarily on a meta-analysis conducted by Dr. Craig Anderson, which had also been presented in Illinois (Anderson, 2004). Results of this meta-analysis showed that violent-video-game exposure is correlated with aggression in children and adolescents. However, the court found this study “completely insufficient to demonstrate an empirical, causal link between video games and violence in minors” (*ESA v. Hatch*, 2006, p. 1069). The court also pointed to the lack of longitudinal research as another weakness in the data.

ESA v. Foti

Louisiana passed a statute restricting the sale, rental, or lease of video games that “appeal to the minor’s morbid interest in violence” (La. Act 441, 2006), but it was overturned on appeal by a United States District Court in August of 2006 (*ESA v. Foti*, 2006). The state presented social-science research suggesting a relationship between violent video games and aggressive behavior. The court noted that most of the evidence had been used in previous cases where regulations were ultimately overturned, and agreed that the evidence used in support of the law had been “sparse and could hardly be called in any sense reliable” (*ESA v. Foti*, 2006, p. 832). The state also presented an article suggesting that exposing adolescents to violent media might result in more conflictual social relationships, but conceding that more research was needed for a definitive conclusion (Brady & Matthews, 2006). Other articles presented focused on other forms of media violence and not video games. The court did not find any of this evidence persuasive: “It is unlikely that the State will be able to establish that any video games are directed toward inciting imminent lawless action or that they are likely to cause such action” (*ESA v. Foti*, 2006, pp. 832-833).

VSDA v. Schwarzenegger

The state of California passed restrictive video-game legislation in 2005 (A.B. 1179, 2005), but it was overturned by a United States District Court in 2007 (*VSDA v. Schwarzenegger*, 2007). The state presented, among other evidence, several articles by Dr. Anderson to support its case. However, noting that the courts in prior cases found Dr. Anderson’s studies unpersuasive, this court was not persuaded either. The court disparaged the research presented because it did not demonstrate a sufficient

casual relationship between playing violent games and harmful psychological effects. This was because there was “no showing that violent video games as defined in the Act, in the absence of other violent media, cause injury to children,” and because the state was unable to present evidence that video games are somehow more harmful than other forms of media just because they are interactive.

EMA v. Henry

In 2007, a United States District Court (*EMA v. Henry*, 2007) granted the video-game industry’s petition for a permanent injunction of a statute in Oklahoma that criminalized the distribution of violent material of “any description, exhibition, presentation or representation” that is “harmful to minors” (Okla. Stat. tit. 21, § 1040.75(3)(b), 2006). The court noted that “the First Amendment does not allow prohibitions to speech on the basis of “common sense” and that the evidence the state presented was not persuasive enough to support the conclusion that violent games cause psychological harm to minors (*EMA v. Henry*, 2007, p. 16).

Other Violent Video-game Research

It is clear from our case-law summary above, that the studies used as a basis for restrictive video-game legislation thus far have been found by the courts to be unconvincing. However, the studies that have been presented in court are only a sample of what has been published on the effects of violent video games. Thus, we reviewed these other studies as well, in order to determine if any empirical data exist that the courts might find to be more probative. Our literature search revealed five types of articles: narrative literature reviews, meta-analyses, experimental research, correlational research, and longitudinal research. Rather than review these studies individually, a general overview will suffice for our purposes.

Our first impression from this review is that the research results on the effects of violent video games have been inconsistent and equivocal. Some studies suggest that violent game-play increases aggression (e.g., Ballard & Wiest, 1995; Carnagey and Anderson, 2005; Dill and Dill, 1998; Dominick, 1984; Fling et al., 1992; Funk et al., 2004; Gentile, Lynch, Linder, & Walsh, 2004; Iori, Kobayashi, & Kimura, 2003; Irwin & Gross, 1995; Kestenbaum & Weinstein, 1985; Kirsh, 1998; Krahe & Moller, 2004; Lin & Lepper, 1987; Schutte, Malouff, Post-Gorden, & Rodasta, 1988; Silvern & Williamson, 1987; Slater, Henry, Swaim, & Anderson, 2003), while other studies propose that it does not (Cooper & Mackie, 1986; Funk et al., 2002, 2003; Graybill et al., 1985; Graybill et al., 1987; Scott, 1995; Van Schie & Wiegman, 1997; Williams & Skoric, 2005; Winkel et al., 1987).

Our second conclusion is that none of these studies meets the minimal research criteria that the courts have established as necessary to be probative in a legal context. None of these studies answers the questions of legal relevance that the courts have articulated. For example, there has been no research to address the question of whether violent video games are more harmful than other forms of violent media. In addition, no

research has been done on whether violent video games cause long-term or short-term effects.

There are several external validity problems shared by many of these studies as well. For example, many studies used college-aged participants, whereas the most relevant age group is minors, since that is the age group targeted by restrictive video-game legislation. It is also questionable whether college students participating for class credit serve as an appropriate sample of heavy video-game players, since they represent a more academically oriented population. Also, the games used in the studies were often not representative of the games involved in high-profile youth violence incidents. This is because most of the studies use older, less technologically advanced games. Another problem is that game-play within experiments tend to range between 8 to 20 minutes, whereas real video-game users often play much longer than that and repeatedly for years.

The measures of aggression that have been used by most researchers are also questionable. For example, correlational studies have relied primarily on self-report data to collect information about the participants' history of aggressive behavior. Unfortunately, self-report questionnaires tend to encourage answers that respondents perceive to be socially preferable; at times this might lead them to either underreport or over report aggressive behaviors. The typical measures of aggression in experimental studies are mild and artificial, and lack the external validity of real violent acts. Finally, even though many researchers have found statistically significant results, their effect sizes have been relatively small in a real world sense.

Proposed Methodological Modifications: An Applied Research Paradigm

If psychological research on the effects of violent video games is to be used to change our laws in this area, it must answer the specific questions that our legislatures and courts need answered. This suggestion may seem obvious, but at least in this area of research, such common sense has not been commonly practiced. We think that one explanation for this fact is that, up to now, researchers in this area have been theoretically minded rather than applied. As most readers know, the primary objective of theoretical research is to demonstrate a psychological principle. For example, one might study the effects of violent video games on children as a way to better understand how aggression develops, or as a way to support one or more general theories on aggression (e.g., Anderson, Gentile & Buckley, 2007). This type of research may help answer some real-world problems, but that is incidental to its primary purpose. In contrast, the primary goal of applied research is to solve a real-world problem; its contribution to theory is also incidental. For example, one might study the effects of violent video games on minors in order to answer very specific legislative questions that may or may not be important to psychological theory.

Of course there are studies that are both theoretically important and vitally applicable to the real world at the same time, but they tend to be the exception. In addition, it is true

that one type of research complements and builds on the other. All we are asserting here is that most of the legal questions that are being asked with regard to violent video games are applied in nature, and that the researchers who have been engaged in this area of study so far have had a theoretical mindset. In turn, this has caused much of their findings to be tangential or unpersuasive in the public-policy context. We think that a paradigm shift needs to occur among those researchers who want their research to be optimally useful to legislatures and courts. More specifically, such researchers need to design studies that answer legally relevant questions, in externally valid ways, and with enough statistical power to demonstrate real-world significance. What follows are our concrete recommendations in this regard.

Legal Relevance

Researchers conducting studies for an applied, legal audience need to design them to answer questions that the legal system considers relevant. For example, courts have consistently expressed a need for research to test the extent to which violent games cause more or less harm than television or movies (*AAMA v. Kendrick*, 2001; *EMA v. Henry*, 2007; *ESA v. Blagojevich*, 2005; *ESA v. Hatch*, 2006; *VSDA v. Schwarzenegger*, 2007). Courts are wary of upholding restrictive video-game legislation if, for example, violent movies are just as harmful as violent video games; they don't want to pave the way for censorship of other types of speech inadvertently and create unintended consequences.

The courts have also expressed an interest in knowing whether violent games actually *cause* aggression in minors, or whether already-aggressive individuals are simply attracted to violent games (*ESA v. Blagojevich*, 2005; *ESA v. Granholm*, 2006; *ESA v. Hatch*, 2006; *VSDA v. Schwarzenegger*, 2007). They have commonly denigrated correlational findings of a statistical link between exposure to violent video games and aggressive behavior, which do not really prove a causal link. In addition, the courts have articulated the need to know whether violent video games alone cause an increase in aggression, or whether there are a myriad of other factors (e.g., age, gender, socioeconomic status) that interact with video games to cause such an effect (*VSDA v. Schwarzenegger*, 2007). The reasoning here is that, if other significant factors go unaddressed, such that restricting video games will not have a noticeable impact on youth violence, then it may not seem necessary to restrict a right as important as the freedom of speech. Therefore, future studies need to parse out the impact of violent video games in the context of other causes. Finally, several courts have articulated the legal relevance of whether violent video games cause long-term effects, or merely transient effects on minors (*ESA v. Blagojevich*, 2005; *ESA v. Hatch*, 2006; *VSDA v. Maleng*, 2004). Thus, experimental research designed to assess the long-term effects of video-game violence is also needed.

External Validity

External validity refers to whether the conditions in a study are representative of real-life conditions. To be probative in a legal context, studies on the effects of violent video

games need to employ participants and video games that are targeted by the legislation at issue (*AAMA v. Kendrick*, 2001; *ESA v. Blagojevich*, 2005; *IDSA v. St. Louis County*, 2003). Since restrictive video-game legislation is aimed at curbing youth violence by limiting minors' access to violent games, studies should be conducted with minors, and especially with male adolescents, as they tend to commit the most acts of youth violence (Kirsh, 2003). Similarly, video games played by research participants need to be ultra-violent games such as *Grand Theft Auto III* and *Manhunt*, since those are the games often cited in highly publicized incidents of youth violence. In addition, experimental conditions that involve playing violent video games need to be reflective of real-life video-game play in terms of duration (*ESA v. Blagojevich*, 2005). For example, having participants play a game for 10 minutes does not appropriately replicate the actual experience of playing a violent video game, since most gamers play for significantly longer periods of time in reality.

Courts have stated explicitly that they require evidence of actual incidents of aggressive behavior resulting from violent video games, not merely aggressive thoughts or feelings (*ESA v. Blagojevich*, 2005; *ESA v. Granholm*, 2006; *VSDA v. Maleng*, 2004; *VSDA v. Schwarzenegger*, 2007). Measures of aggression, therefore, need to be sensitive to that requirement and measure real-life aggression. Meeting this requirement is probably the most difficult research challenge of all, due to research design and ethical considerations.

One can attempt to measure real-life aggressive behavior in correlation research through the use of questionnaires. Self-report questionnaires, however, can be problematic when measuring aggressive behavior because participants can purposely distort their history. To overcome this challenge, researchers need to resort to providing anonymity to participants, so that they are more likely to reveal their true history. In addition, such revelations need be corroborated by the independent reports of other objective observers (e.g., school personnel) and records (police and school records). No matter what one does in this regard, however, correlational research tends to be weaker than experimental research in answering the all-important questions related to cause and effect.

The problem is, however, that a strict code of research ethics and laws prohibit researchers from conducting experimental studies that produce the kinds of violent behavior that courts are requesting, namely real-life physically aggressive behaviors (*ESA v. Granholm*, 2006; *VSDA v. Schwarzenegger*, 2007). There is a possible solution to this challenge, however. Researchers can design studies to observe the behaviors of a sample of naturally occurring, heavy, violent-video-game users. Under this design, the control group continues playing violent games as they would under normal circumstances. The experimental group is asked to play with alternative, non-violent video games. Researchers can then measure actual, real-life incidents of violent behavior committed by the experimental and control groups without violating any ethical or legal guidelines; if the experimental group experiences a reduction in violent behaviors, there is no harm done.

Statistical Validity

Statistical conclusion validity is the extent to which research findings can be attributed to an actual relationship between the scores being measured, as opposed to a chance occurrence (random variability). There are four factors that contribute to whether a study's results have statistical conclusion validity: sample size, statistical-significance level, statistical power, and effect size. (It is beyond our scope to discuss these concepts in detail here, but see Cohen, 1988, or Murphy, Myers & Wolach, 2008.) For our purposes, we want to direct the reader's attention to two factors that are particularly relevant to this area of applied research: statistical power and effect size.

Calculating the power of one's statistical analyses is very relevant to determining the probability that either the positive or the negative findings in a study could have occurred by chance (see Cohen, 1988; Murphy, Myers & Wolach, 2008). Legislatures and courts evaluating restrictive video-game legislation are interested in determining the statistical validity of studies that support either side of any relevant issue; studies suggesting that violent video games either do or do not cause aggressive behaviors are important in this context. However, the weight that is to be given to any study on either side of an issue can and should be affected by its statistical power. Thus, researchers in this area need to pay attention to statistical power considerations and report them in their findings; this is something that they have not done thus far.

The effect size refers to the magnitude or strength of an effect or relationship between two or more variables. In a theoretical-research context, the effect size is not as important as in an applied-research context; as long as a statistically significant relationship has been found between two or more variables, it may have theoretical importance. In an applied setting, however, the size of an effect is often critically important since the consumers of such research are looking for real-life significance. Thus, legislatures and courts evaluating restrictive video-game legislation want to know the strength of any effect that video games have on the aggressive behavior of minors. For instance, the *Blagojevich* court discussed the findings of one study in which on a ten-point scale "the most 'aggressive' violent video game players administered an average [noise] blast of 5.93, and the least 'aggressive' non-violent video game players administered an average blast of 3.98." Although this effect size was sufficiently large enough to be considered theoretically significant, the court declared its disappointment that "there was only a two point difference, and both averages were in the middle of the intensity scale" (*ESA v. Blagojevich*, 2005, p. 1061). Thus, researchers in this area need to design their studies with the advance knowledge that effect size and real-life significance will be critically important aspects of their results, regardless of which side of the legal argument their data will tend to support.

Conclusion

As technology improves and as consumers continue purchasing the most graphic, violent, and shocking new games, there appears to be no end in sight for the fight to restrict minors' access to violent games. Although attempts to penalize the distribution

of violent games to minors have failed so far, legislators continue to propose new bills in the hope that they will ultimately be upheld. Because the First-Amendment protections of freedom of speech are such a valuable aspect of our culture, however, the resolution of this controversy really does deserve “strict scrutiny” and needs to be based in part on valid psychological research. Improvements to the research methodology used in this area, such as addressing legally relevant questions and strengthening the external and statistical conclusion validity of studies, should help us develop more effective and well-grounded public policies regarding violent video games. At the very least, strengthening the research used on both sides of the restrictive video-game legislation battles will allow legislatures and courts to make more informed decisions.

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References

- A.B. 1179, 2005 Reg. Sess. (Cal. 2005).
- Abbott, K. (2002, March 5). Sanders' videogame lawsuit dismissed. *Rocky Mountain News*. Retrieved May 1, 2007, from <http://www.rockymountainnews.com/news/2002/mar/05/sanders-videogame-lawsuit-dismissed/>
- Abrams v. United States*, 250 U.S. 616 (1919).
- American Amusement Machine Association v. Kendrick, 244 F.3d 572 (7th Cir. 2001).
- Anderson, C. A. (2003). Video games and aggressive behavior. In D. Ravitch & J. P. Viteritti (Eds.), *Kid stuff: Marketing sex and violence to America's children* (pp. 143-167). Baltimore, MD: Johns Hopkins University Press.
- Anderson, C. A. (2004). An update on the effects of violent video games. *Journal of Adolescence*, 27, 113-122.
- Anderson, C.A., Berkowitz, L., Donnerstein, E., Huesmann, L. R., Johnson, J. D., Linz, D., et al. (2003). The influence of media violence on youth. *Psychological Science in the Public Interest*, 4, 81-110.
- Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science*, 12, 353-359.
- 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.
- Anderson, C. A., & Dill, K. E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology*, 78, 772-791.
- 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.
- Anderson, C. A., Gentile, D. A., & Buckley, K. E. (2007). *Violent video game effects on children and adolescents: Theory, Research, and Public Policy*. Oxford University Press.

- Ballard, M. E., & Wiest, J. R. (1995). *Mortal kombat: The effects of violent video technology on males' hostility and cardiovascular responding*. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Indianapolis, IN.
- Blasi, V. (1977). The checking value in First Amendment theory. *American Bar Foundation Research Journal*, 2, 521-649.
- Bollinger, L. C. (1986). *The tolerant society*. New York: Oxford University Press, Inc.
- Bradley, E. (2005, March 6). Can a video game lead to murder? *CBS News*. Retrieved July 4, 2007, from <http://www.cbsnews.com/stories/2005/03/04/60minutes/main678261.shtml>
- Brady, S. S., & Matthews, K. A. (2006). Effects of media violence on health-related outcomes among young men. *Archives of Pediatric and Adolescent Medicine*, 160, 341-347.
- 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.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd ed.)*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Cooper, J., & Mackie, D. (1986). Video games and aggression in children. *Journal of Applied Social Psychology*, 16, 726-744.
- Dill, K. E., & Dill, J. C. (1998). Video game violence: A review of the empirical literature. *Aggression and Violent Behavior: A Review Journal*, 3, 407-428.
- Dominick, J. R. (1984). Videogames, television violence, and aggression in teenagers. *Journal of Communication*, 34, 136-147.
- Eekelaar, J. (1986). The emergence of children's rights. *Oxford Journal of Legal Studies*, 6, 161-182.
- Entertainment Merchants Association v. Henry*, 2007 U.S. Dist. LEXIS 69139 (W.D. Okla. 2007).
- Entertainment Software Association v. Blagojevich*, 404 F.Supp.2d 1051 (N.D. Ill. 2005).
- Entertainment Software Association v. Foti*, 451 F.Supp.2d 823 (M.D. La. 2006).
- Entertainment Software Association v. Granholm*, 426 F.Supp.2d 646 (E.D. Mich. 2006).

- Entertainment Software Association v. Hatch*, 443 F.Supp.2d 1065 (D. Minn. 2006).
- Feinberg, J. (1980). The child's right to an open future. In W. Aiken & H. LaFollette (Eds.), *Whose child?: Children's rights, parental authority, and state power* (pp. 124-153). Totowa, NJ: Littlefield, Adams, and Co.
- Fling, S., Smith, L., Rodriguez, T., Thornton, D., Atkins, E., & Nixon, K. (1992). Video games, aggression, and self-esteem: A survey. *Social Behavior and Personality*, 20, 39-46.
- Funk, J. B., Bechtoldt-Baldacci, H., Pasold, T., & Baumgardner, J. (2004). Violence exposure in real-life, video games, television, movies, and the internet: Is there desensitization? *Journal of Adolescence*, 27, 23-39.
- Funk, J. B., Buchman, D. D., Jenks, J., & Bechtoldt, H. (2003). Playing violent video games, desensitization, and moral evaluation in children. *Journal of Applied Developmental Psychology*, 24, 413-436.
- Funk, J. B., Hagan, J., Schimming, J., Bullock., W. W., Buchman, D. D., & Myers, M. (2002). Aggression and psychopathology in adolescents with a preference for violent electronic games. *Aggressive Behavior*, 28, 134-144.
- Gentile, D.A., & Anderson, C.A. (2006). Violent video games: Effects on youth and public policy implications. In N. Dowd, D. G. Singer, & R. F. Wilson (Eds.), *Handbook of children, culture, and violence* (pp. 225-246). Thousand Oaks, CA: Sage.
- Gentile, D. A., Lynch, P. L., Linder, J. R., & Walsh, D. A. (2004). The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. *Journal of Adolescence*, 27, 5-22.
- Graybill, D., Kirsch, J., & Esselman, E. (1985). Effects of playing violent versus nonviolent video games on the aggressive ideation of aggressive and nonaggressive children. *Child Study Journal*, 15, 199-205.
- 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(3), 1-8.
- Greenawalt, K. (1989). Free speech justification. *The Columbia Law Review*, 89, 119-155.
- Grossman, D. (1996). *On killing: The psychological cost of learning to kill in war and society*. Boston: Back Bay Books.
- H.B. 1009, 58th Leg., Reg. Sess. (Wash. 2003).

- Ihori, N., Sakamoto, A., Kobayashi, K., & Kimura, F. (2003). Does video game use grow children's aggressiveness?: Results from a panel study. In K. Arai (Ed.), *Social contributions and responsibilities of simulation and gaming* (pp. 221-230). Tokyo: Japan Association of Simulation and Gaming.
- Indianapolis, Ind., City-County General Ordinance No. 72, § 831.1 (2000).
- Interactive Digital Software Association v. St. Louis County, 329 F.3d 954 (8th Cir. 2003).
- Irwin, A. R., & Gross, A. M. (1995). Cognitive tempo, violent video games, and aggressive behavior in young boys. *Journal of Family Violence, 10*, 337-350.
- Jones, G. (2002). *Killing monsters: Why children need fantasy, super heroes, and make-believe violence*. New York, NY: Basic Books.
- Jones, K. C. (2003, June 3). Ban on violent video games struck down. *Missouri Lawyers Weekly*. Retrieved February 20, 2007, from <http://www.molawyersweekly.com/mobn0603.cfm>
- Kelly, G. (1999, June 15). Lawsuits damage grieving community. *Rocky Mountain News*. Retrieved July 3, 2007, from <http://denver.rockymountainnews.com/shooting/0615pad1.shtml>
- Kestenbaum, G. I., & Weinstein, L. (1985). Personality, psychopathology, and developmental issues in male adolescent video game use. *Journal of the American Academy of Child Psychiatry, 24*, 325-337.
- Kirsh, S. J. (1998). Seeing the world through Mortal Kombat-colored glasses: Violent video games and the development of a short-term hostile attribution bias. *Childhood: A Global Journal of Child Research, 5*, 177-184.
- Kirsh, S. J. (2003). The effects of violent video game play on adolescents: The overlooked influence of development. *Aggression and Violent Behavior: A Review Journal, 8*, 377-389.
- Krahe, B., & Moller, I. (2004). Playing violent electronic games, hostile attributional style, and aggression-related norms in German adolescents. *Journal of Adolescence, 27*, 53-69.
- La. Act 441 (2006).
- Lin, S., & Lepper, M. R. (1987). Correlates of children's usage of video games and computers. *Journal of Applied Social Psychology, 17*, 72-93.

- Massey, C. (2005). *American Constitutional law: Powers and liberties*. New York: Aspen Publishers.
- Meiklejohn, A. (1948). *Free speech and its relation to self government*. New York: Harper & Brothers.
- Meyer, E. (2003, September 15). Reading a troubled mind. *Akron Beacon Journal: Ohio.com*. Retrieved October 3, 2007, from <http://www.antidepressantsfacts.com/2003-09-15-Beacon%20Journal-Dustin-Lynch.htm>
- Mich. P. A. 108 (2005).
- Mill, J. S. (1947). *On liberty*. New York: Appleton.
- Milton, J. (2006). *Areopagitica: A speech of Mr. John Milton for the liberty of unlicensed printing*. The Lawbook Exchange, Ltd.
- Minn. Stat. § 325I.06, subd. 2 (2006).
- Moshman, D. (1989). *Children, education, and the First Amendment*. University of Nebraska Press: Lincoln and London.
- Murphy, K., Myers, B., & Wolach, A. (2008). *Statistical Power Analysis: A simple and general traditional and modern hypothesis tests (3rd ed.)*. New York: Routledge.
- NPD Group. (2007, January 19). *2006 U.S. video game and PC game retail sales reach \$13.5 billion exceeding previous record set in 2002 by over \$1.7 billion*. Retrieved August 1, 2007, from http://www.npd.com/press/releases/press_070119.html
- Okla. Stat. tit. 21, § 1040.75(3)(b) (2006).
- Prince v. Massachusetts*, 321 U.S. 158 (1944).
- Saunders, K. W. (2003). *Saving our children from the First Amendment*. New York: New York University Press.
- Schauer, F. (1985). Free speech and its philosophical roots. In T. Daniel Shumate (Ed.), *The First Amendment: The legacy of George Mason* (pp. 132-155). Fairfax, VA: George Mason University Press.
- Schutte, N. S., Malouff, J. M., Post-Gorden, J. C., & Rodasta, A. R. (1988). Effects of playing videogames on children's aggressive and other behaviors. *Journal of Applied Social Psychology*, 18, 454-460.

- Scott, D. (1995). The effect of video games on feelings of aggression. *Journal of Psychology, 129*, 121-132.
- Siegel, A. F. (2003, December 9). Psychologist says Malvo agreed to martyrdom. *Baltimore Sun*. Retrieved July 2, 2007, from <http://www.baltimoresun.com/news/bal-te.md.malvo09dec09,0,1339395.story>
- Silvern, S. B., & Williamson, P. (1987). The effects of video game play on young children's aggression, fantasy, and prosocial behavior. *Journal of Developmental Psychology, 8*, 453-462.
- Slater, M. D., Henry, K. L., Swaim, R. C., & Anderson, C. A. (2003). Violent media content and aggressiveness in adolescents: A downward spiral model. *Communication Research, 30*, 713-736.
- St. Louis County Ordinance No. 20,193 (2000).
- U.S. Constit. amend. I. (1787).
- Van Schie, E. G. M., & Wiegman, O. (1997). Children and video games: Leisure activities, aggression, social integration, and school performance. *Journal of Applied Social Psychology, 27*, 1175-1194.
- Video Software Dealers Association v. Maleng*, 325 F.Supp.2d 1180 (D. Wash. 2004).
- Video Software Dealers Association v. Schwarzenegger*, 2007 U.S. Dist. LEXIS 57472 (N.D. Cal. 2007).
- Williams, D., & Skoric, M. (2005). Internet Fantasy Violence: A Test of Aggression in an Online Game. *Communication Monographs, 72*, 217-233.
- Winkel, M., Novak, D., & Hopson, H. (1987). Personality factors, subject gender and the effects of aggressive video games on aggression in adolescents. *Journal of Research in Personality, 21*, 211-223.
- Yi, M. (2003, October 23). Gamemaker sued over highway shootings. *San Francisco Chronicle: SFGate.com*. Retrieved October 1, 2007, from <http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2003/10/23/BUG0N2H5M41.DTL>
- Zamora, J. H. (2006, February 6). 'Nut Case' trial set to begin. *San Francisco Chronicle: SFGate.com*. Retrieved October 2, 2007, from <http://www.sfgate.com/cgi-bin/article.cgi?file=/c/a/2006/02/06/NUTCASE.TMP>