

**Final Project Report
to the Office of Juvenile Justice and Delinquency Prevention**

Effects of violent game content on youth behavior

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Principal investigator: Cheryl K. Olson, M.P.H., S.D.

***Awarded to: Massachusetts General Hospital, Department of Psychiatry,
Harvard Medical School Center for Mental Health and Media***

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Senior project staff

Cheryl K. Olson, S.D. (study principal investigator) *colson@hms.harvard.edu*

Armand M. Nicholi Jr., M.D. (executive investigator)

Lawrence A. Kutner, Ph.D. (investigator)

Eugene V. Beresin, M.D. (investigator)

Dorothy E. Warner, Ph.D. (research associate)

Spencer Lynn, Ph.D. (research associate)

Jason Almerigi, Ph.D. (statistical consultant)

Danielle DeLuca (grants manager)

I. Project Summary

Video games—whether played on computers, game consoles, or in arcades—have evolved over the past quarter century from simple ping-pong or shooting games into elaborate interactive entertainments, with intricate plots and realistic graphics. Because of increased availability and falling prices, PCs, game consoles and handheld game systems are now found in most American homes. The variety of games has exploded, including many with adult or violent content.

There is growing public concern about the use of increasingly violent and realistic adult games by children. The amount of time spent playing games (especially video games by boys, often in groups) has reached new highs. At the same time, young teens are more able to gain access to games with extremely violent or sexual content—often without parental awareness. Dozens of new policies have been proposed at the local, state and national level to limit children’s exposure to game violence. However, more data are needed to develop targeted, effective policies—and to create educational programs for parents, children, health professionals, teachers, and industry employees to reduce potential harm to youth.

To address these concerns, the Harvard Medical School Center for Mental Health and Media (a division of the Massachusetts General Hospital Department of Psychiatry) conducted a multidisciplinary research program to examine potential relationships between violent content in video and computer games, and aggressive/violent behavior (or thoughts or feelings that support such behavior) among American pre-adolescent and adolescent youths. The overarching goal is to make progress toward the identification of key features of children, games and environments likely to lead to the greatest risk of harm, and to translate those findings into specific recommendations for policies and educational/practical interventions.

Project components included:

- A school-based survey of over 1200 young adolescents.
- Mail-back surveys of 500 parents of adolescents.
- Focus groups of parents and of teenage boys to provide insight into survey findings.
- An international Web-based survey of several hundred video game developers.
- Experimental research to study how thinking and emotions may be affected after playing violent vs. nonviolent video games, based on measures of electrical activity in the brain. (These are done with college students for ethical reasons.)
- A review and analysis of policies and regulations related to youth and video games, including game ratings systems.
- Creation and pilot-testing of a new game ratings system: for use as a tool in future academic research, and to suggest improvements to the U.S. game ratings system.

Our research focused on children aged 12 to 15 (7th and 8th graders) because this is a time when children may be both highly vulnerable to the influences of violent games, and most likely to start showing the results of those influences.

Suggestible young teens increasingly look for outside role models (from peers to celebrities, and perhaps game characters) and seek to imitate them. Learning ways to handle (or misuse) aggression and conflict is a critical part of development at this stage. Finally, more so than younger children, they have new insights into their behavior, and can talk about why they and their peers behave as they do.

In the real world, it's impossible to give all children a battery of tests to find out which ones have certain high-risk traits. We sought to identify "risk markers" (e.g., playing games more than 15 hours a week, or in certain social groups, or with a key combination of intense and realistic violence) that are easy to see and explain to children, parents and other stakeholders.

Since violent media are one price we pay for a free society, it's important to find ways to buffer the harmful effects of violent games on children. For example, it is clear that retail and marketing policies and practices have not kept up with the expansion of interactive games into more violent and sexual themes. Store shelves and game magazines have content for 8-year-olds and adults side by side. (By comparison, *Grand Theft Auto 3* was initially "refused classification" by the Australian Office of Film and Literature Classification due to its unsuitability for children—making it illegal to sell in that country.) There is a clear need for greater public awareness, debate, and eventual consensus on what is appropriate for young people, and how new options can be developed to minimize their exposure to inappropriate content.

Approximately 18 academic papers are expected to result from this project, to be published during 2006 and 2007. We also expect to present selected project findings that may inform state and national policy in Washington, D.C. in early 2006.

II. The Youth Survey

Background and goals

Information is essential to the development of policies and education programs to reduce any harms associated with violent video games. To date, few studies (whether by researchers, nonprofit organizations, government or industry) have explored the “epidemiology” of interactive electronic game play, i.e., how game use varies by child characteristics such as gender, attitudes, experiences, and behavior; times, places and amount of games played; game play companions; and the type of game content. Sales data on video and computer games, which are available from several commercial sources (e.g., NPD Funworld, IGN GamerMetrics), do not tell us the ages of purchasers or players, or describe overall consumption. Existing data quickly become out of date due to rapid changes in game technology and increased access to games. No data have been published regarding children’s game play companions—including play with parents; how the proportion of violent games children play correlates with play patterns or with parental oversight; and reasons children give for playing video games.

One goal of this study was to collect data on the “epidemiology” of young adolescents’ electronic game play. Another goal was to assess whether children’s exposure to violent game content, or children’s game play patterns, were linked to aggressive or destructive behavior, thoughts or feelings. This information can help health professionals, parents, teachers and policymakers identify atypical and potentially harmful patterns of electronic game use.

Study procedures

The self-administered questionnaire created for this study included questions on access to electronic games, game preferences and exposure, the context of and motivations for game use, and preferences for and exposure to other media. We defined electronic games as “computer games, video games (Xbox, PlayStation, GameCube, etc.) and handheld games (Game Boy, etc.)” Other questions addressed non-media activities such as sports and clubs; attitudes, beliefs and experiences related to aggression and conflict; symptoms of problems with attention or mood; feelings of connection to family, peers and school; perceptions of safety; and parental supervision and family structure.

To facilitate comparison with other studies, we drew some questions or subscales not directly related to media use from validated instruments such as the Olweus Bully/Victim Questionnaire, the Pediatric Symptom Checklist, and the Profiles of Student Life: Attitudes and Behaviors survey, or adapted them from the Youth Risk Behavior Survey and other public-domain instruments.

In August 2004, 31 children at a Boston-area youth club pilot-tested the survey to assess clarity and appropriateness of questions, whether children were able to provide the requested data, and whether the survey could be completed within a typical school class period of 45 to 60 minutes. Minor changes were made based on feedback received.

In the fall of 2004, we surveyed 7th and 8th grade students during English/Language arts class periods at two public middle schools in Pennsylvania and South Carolina. Class sizes ranged from 6 to 31 students, with a median size of 23. We asked all students in attendance on the day of the survey to participate, with the exception of those who had limited English skills or who had physical, emotional or intellectual limitations that prevented them from completing surveys. Our final sample included 78 students with mild learning disabilities who could complete the survey with extra time or assistance from staff (while still keeping their answers private).

We selected the schools for their demographic diversity and representativeness. At the suburban Pennsylvania school, the student population was 90% white, 4% black, 4% Asian and 1% Hispanic; median household income in that county for 2003 was \$60,700. At the urban South Carolina school, the student body was 50% white, 43% black, 5% Hispanic and 2% Asian; 2003 median household income in that city was \$40,600.

Parents received notice of the middle-school survey via school newsletters and information packets sent home in children's backpacks. The packets included a description of the survey and contact information for study staff, so that parents could ask questions or request that their child not participate. Only one parent directly requested that his child be excluded; other children excluded from the survey included those few children who either reported parent concerns about the study or who had just enrolled in the school (precluding parent notification).

On the day of the survey, in each classroom, the teacher introduced a researcher to the class. The researcher read an assent form explaining the nature of the study, privacy protections, and the voluntary nature of the survey, and answered student questions. (To increase students' perceived privacy and promote honest responses, teachers had no role in administering the survey.) Students then received surveys and pencils, along with a two-page alphabetical list of the names of nearly 300 video/computer games as an aid to memory and spelling. (Titles included best-selling games from the previous five years, and well-known classic games such as solitaire and Pac-Man, supplemented by titles from a Web site for girl gamers to minimize gender bias. Students were cautioned that the list might not be complete or fully up-to-date.) The researcher remained in the classroom during the survey, picking up surveys as they were completed and securing them in an envelope. The researcher collected all remaining surveys at the end of the class period.

Students wrote their names on a peel-off label on the survey, so that they could be matched with surveys sent home for a parent or guardian to complete. Once matching was completed and codes assigned to pairs, the name labels were removed and discarded. No list of names or identifying information was created. Schools received aggregate results of their students' responses to the questions regarding media use. The Partners HealthCare System human research committee approved all study procedures and materials.

Summary of Results

A total of **1,254** students took part in the survey; participation was considered evidence of consent. In Pennsylvania, 92% of the 7th and 8th grade students in attendance on the survey day, and 88% of all enrolled students completed the questionnaires. In South Carolina, 82% of students in attendance completed questionnaires, or 79% of the total 7th and 8th grade student enrollment. (This discrepancy in response rates reflects the larger number of special-needs classrooms in the South Carolina school; also, more classrooms of learning-disabled students at the Pennsylvania school were able to take the survey.) More than 98% of respondents were aged 12 to 14; the sample was 53% female and 47% male.

Key findings include:

- Most children aged 12-14 play video or computer games. Only 17 children out of 1254 had *never* played such games.
- Many children play games with violent content. Children were asked to “list five games that you have played a lot in the past six months.” About 37% of games listed by boys and 11% of games listed by girls were “violent” or “very violent,” based on Entertainment Software Ratings Board “content descriptors” for those games. The *Grand Theft Auto* game series was #1 among boys and #2 among girls (the *Sims* series was #1 for girls). Children who play a lot of violent games tend to play for more hours per week.
- Most children spend a moderate amount of time on video/computer games. While a third of boys and 10% of girls play games almost every day, 37% of boys and 43% of girls report that they usually play games only on weekends.
- Most children play games at home, or at the home of a friend or relative. Children most often play alone or with one or more friends; few play with a parent. Close to half (46%) have a video game console in their bedroom at home.
- The most common reasons children give for playing electronic games are: 1) It’s just fun, 2) It’s something to do when I’m bored, 3) I like the challenge of figuring the game out, 4) It’s exciting, 5) I like to compete with other people and win. Factor analyses suggest that a subgroup of children seem to play in part to manage their emotions (e.g., to get their anger out, to forget problems, to feel less lonely).
- Violent games are linked to aggression, particularly for girls. Girls who play mostly violent games (i.e., over half of the games on their list were described as violent or very violent by the ESRB) are significantly more likely to bully others *or* to be victims of bullying. Far fewer girls - about 5% - reported playing mostly violent games than did boys. Thus, playing a lot of violent games appears to be a marker of risk for girls. (Note that a survey is not able to show causality, so we

cannot say that playing violent games *causes* girls to bully.) Boys who play a lot of violent games are significantly more likely to admit to vandalism or weapon-carrying.

- The heaviest game users are more likely to be bullies. Boys and girls who play a lot of games (in hours per week and days per week) are significantly more likely to bully others. Even so, most children who play games are not bullies; 10.5% of children who played 15+ hours per week, and 11.6% of children who played nearly every day, admitted to bullying someone at school more than once or twice in the past couple of months.

We need to look more closely at how the relatively small percentage of heavy game users who are bullies may differ from the majority of heavy game users who are not bullies. For example, there may be differences in the types of games they play, their family relationships, school failure, etc., that would help us better identify children at risk for problems from heavy game use.

This was by far the largest and most detailed study of middle-school youth and their video/computer game habits. It also had an extremely high response rate, making the results easier to generalize to other U.S. middle-schoolers.

A half-dozen papers are being submitted to major academic journals based on various aspects of the survey results. We will make the survey instrument available for use by other researchers, so the study can be replicated with other populations.

The youth survey instrument is attached (see Appendix 1).

III. Parent survey

Background and goals

As the availability and use of video games proliferate, especially games with violent content, there is concern that parents may not be aware of the content of their children's games. Previous research suggests that parents are not well informed about the kinds of games their children play, where and how often they play, and who they play games with. More details are needed on parents' knowledge, opinions and behavior regarding their preteen or adolescent children's use of video and computer games. To date, most surveys of parents have been conducted by industry or by advocacy groups, to address their particular goals; details on the survey procedures or response rates are generally unavailable, so it's often difficult to judge the quality or generalizability of these surveys.

The parent survey was designed to help us understand what parents know, think and do regarding their children's use of video games - including restrictions parents place on game use and parent involvement in gameplay, and whether those are correlated with fewer hours of play or use of less violent games. By collecting data on a large sample of parents, and matching responses of parents/guardians with their children's responses to similar questions, we hoped to:

- Gain insights to help parents and policymakers better understand children's use of games
- Gather data to inform the creation of rules and policies for game use and access that will promote children's health and well-being, while also addressing the concerns of parents
- Pinpoint the areas where parents most need education about video and computer game use, and the subsets of parents who need it most.

Study procedures

Parents/guardians of 7th and 8th grade students (ages 12 to 15) at two middle schools in South Carolina and Pennsylvania received large bright-colored envelopes containing information about the parent and school surveys. Envelopes were sent home in children's backpacks - a common method of distributing information to parents. Parents were asked to complete a four-page survey by checking appropriate boxes. Questions included hours per week their child usually spends playing any kind of electronic game (and whether they believed their child spent more, less or an average amount of time playing games compared to peers), who their child plays with - and where, what they limit or allow regarding their child's game use, and what kinds of things affect their decision to select or reject particular games to buy or rent for their child. Finally, parents were asked about family income range and highest level of school they had completed, as a proxy for socioeconomic status. They were then asked to return the survey to researchers in the stamped envelope enclosed. As an incentive, parents who returned the survey became eligible to win one of four \$25 gift checks through their child's school.

Parents were asked to write their name, their child’s name and birth date, and their relationship to the child on a removable sticker, allowing matching of parent data with their child’s school survey (which asked solely for the child’s own name). Once the surveys were matched and given a code number, all peel-off name labels were removed and discarded; no identifying information was kept, and none was provided to the schools.

A total of **501** surveys were completed and returned; **454** were successfully matched with a child’s survey. Most surveys were completed by a mother (84%) or another female relative (2%); 12% were completed by fathers, and 1% by both parents. The response rate was an impressive 50% at the (suburban) Pennsylvania school, and a more typical 30% at the (urban) South Carolina school. As is common with mail-back surveys, parents who responded were disproportionately high-income.

Reported household income of responders	
Under \$15,000	4.0%
\$15,000-\$24,999	2.2
\$25,000-\$34,999	5.5
\$35,000-\$44,999	6.5
\$45,000-\$54,999	7.4
\$55,000-\$64,999	10.7
\$65,000-\$74,999	7.7
\$75,000-\$79,000	5.0
\$80,000 or more	51.1

Reported education level of responders	
8th grade or less	0.4%
Some high school	1.5
High school diploma/GED	14.6
Some college/assoc. degree	23.7
4-year college (B.A./B.S.)	30.3
Master's degree	16.2
Doctoral/Professional degree	9.1
Trade school or certificate program	4.2

The results of this survey are still being analyzed. Parents will be matched to their children to see how well they understand their children’s behavior regarding video and computer games.

Some excerpts of findings thus far:

- 39% believed that their child played video games for 2 hours or less per week; 4% believed their child played 15 or more hours per week.

- 54% reported never playing video games with their child, and 23% rarely; just 4% reported playing often with their child.
- Few parents thought that their children played games with strangers on the Internet (88% said never, 4% rarely, 6% sometimes, 2% often and 1% always); children report more such play (7% often or always, and another 7% sometimes play with strangers). However, the significance of this cannot be determined until matched responses are compared.

Parents were also asked, “When you decide to buy or rent an electronic game for your child, how often do you pay attention to the following? (What affects your decision to buy the game, or put it back on the shelf?)” Results are presented in Table 1.

Table 1: How parents decide what games to rent or buy for their preteen/teen child

	Never	Rarely	Sometimes	Often	Always
The drawings or photos on the box	11.7%	7.4%	29.5%	27.7%	23.7%
The writing on the box	10.1	6.4	24.5	28.3	30.7
The game’s title	8.1	7.3	22.0	32.3	30.4
The game’s rating (E, T, or M)	5.3	3.4	10.8	22.5	57.9
How much your child wants that particular game	5.1	9.7	37.2	31.5	16.4
What other parents say about the game	21.6	21.3	32.6	17.8	6.7
A review of the game (from a newspaper, magazine, or web site)	26.2	25.4	27.8	14.2	6.4
How much the game costs	8.6	12.6	34.9	25.0	18.8

The conclusion: Parents clearly rely heavily on the letter rating given to the game by the ESRB, and seldom read reviews that would provide detail on game content that might be desirable or objectionable. This suggests a need for parent education about limitations of the rating system and where to find additional information about games.

Two academic papers and/or presentations will be developed based on the parent survey results.

The parent survey instrument is attached (see Appendix 2).

IV. Focus groups – parents

Background and goals

Dozens of policies to restrict youth access to games with objectionable content have been proposed at the local, state and national level. However, little is known about parents' specific concerns about video games in general, and violent or sexual game content in particular, or about how parents are attempting to address these concerns. No qualitative studies on parent perspectives have been published in peer-reviewed journals. Further, while policy efforts emphasize limiting the access of children under age 16, 17 or 18 to inappropriate game content, there are also no published qualitative studies of the perspectives of young adolescents. Clinicians, researchers and policymakers need such information to counsel parents on wise media use, to plan or interpret quantitative studies, and to make recommendations for policy and for programs that educate parents about video games. Also, parents need to understand how their concerns may match or conflict with those of their adolescent children, i.e., do parents and sons see eye-to-eye when it comes to video games?

Study procedures

To answer these questions, we conducted a set of focus groups of parent-and-son pairs. We recruited 21 seventh- and eighth-grade boys aged 12 to 14, and one parent or legal guardian for each boy, for a total of 42 participants. The study was limited to boys, because previous studies found that boys are more likely than girls to play video games in general, and action or combat games in particular. Boys are also more likely to exhibit aggressive antisocial behavior (which is the primary concern of this research program). Adult participants included 12 mothers, eight fathers and one uncle, aged 29 to 51.

We recruited participants by sending emails to employees of a large Boston medical center, and through flyers posted in local businesses and near schools. We screened respondents by telephone. Boys were required to have had substantial experience playing video or computer games, including games featuring violent content (shooting, fighting and/or blood) , and to play at least two hours of games per week. They also needed experience playing two or more "T" (for ages 13+) or "M" (for ages 17+) rated games from a list of eight bestselling violent games. Recruited families came from 12 cities and towns in the greater Boston area, and represented a diverse mix of socio-economic and racial/ethnic backgrounds. Participating parents/guardians lived in the same home with the child at least half of the time. Each participant was paid \$50.

We held eight focus groups: four with the seventh and eighth grade boys and four with their parents/guardians. Groups averaged five participants and lasted 75 to 90 minutes. The Partners HealthCare System human research committee approved the study protocol and consent procedures.

When they arrived at the focus group site (a small office building in Waltham, MA), we gave parents and boys additional information about the study before they gave written

consent or assent to participate. Parent and child focus groups were held in separate rooms; each group was led by a senior researcher experienced at moderating focus groups paired with a trained research assistant. Moderators used a script with open-ended questions; standardized probe questions were used to elicit detail.

Participants were told during screening that the groups would discuss adolescent video game play, but were not informed of the specific emphasis. (Video games were defined as including games played on game consoles, computers, or handheld devices.) We recorded all focus groups on audiotape with permission from the participants; moderators also took handwritten notes.

Questions for the parent groups included:

- What are parents' concerns about their sons' use of video games, and of violent games in particular?
- Why do parents think their sons play video games?
- What reasons do parents believe their sons would give for playing video games, including violent games?
- What do parents know or think about the game ratings system, and do they use it?

(Questions and results for the boys' groups are given in the next section of this report.)

Summary of parent group results

The parent discussions revealed four primary areas of concern regarding their sons' use of video and computer games.

Time spent on games

Parents of young adolescent boys have strong opinions and concerns about their sons' use of electronic games. In all groups, parents first mentioned concerns about the amount of time their sons spent on electronic games. They worried that games might take time away from other activities, including academics, exercise, and socializing. Many parents tried to restrict game play to weekends, and used school grades and homework as markers of whether too much time was spent on games:

"He doesn't have any outside activities except this. But then, he has As and Bs. I'm trying to choose my battles."

"It's a constant battle, to keep him from spending too much time doing that. But he's a great kid, he does well in school, and he seems to do okay, so..."

Monitoring and limiting game use

Parents expressed frustration at the difficulty of monitoring children's game use:

"I don't know if it's an addiction, but he's just glued to it. I think most parents are concerned about it. It's the same with my daughter with her laptop computer in her room; instead of using the telephone, she's on that, and I can't be watching the both of

them all the time to see if they're talking to strangers, or to see if someone is getting killed in the other room on the PlayStation. I mean, it's just nerve-wracking."

While some parents regularly play video games, many parents did not know how to play video games or use the game controls, which made monitoring of content difficult.

Parents said they tried to restrict content of games children played at home, but noted the difficulty of monitoring play away from home:

"Well, I know that he does not play this game in my house, because I don't own it. But [Grand Theft Auto] Vice City—he seems to know all the characters, and what they say, so he must be playing it someplace."

To reduce exposure to inappropriate content, some parents try to rent and observe games before buying them, or talk with parents of their children's friends about games.

Game content concerns

There was surprisingly little consensus on what sort of violent content parents felt might harm their sons. Parents' concerns about and definitions of violence vary, but center around three often-interlinked issues: the *realism* of the violence, the *target* of the violence, and the *context or goal* of the violence. Parents believed these factors would determine the potential for harm.

"The violence in it, he sees as, 'It's like a comic book, mom. It's like the cartoons hitting each other over the head. It's not really happening.' He seems to have a good perspective on it. And my concern is always that he does keep a healthy concern."

"They can shoot as many trolls as they want, and it can be pretty bloody without really bothering me that much. But if you had a game where it looks like real people, that bothers me more; there might be some carryover."

"The way that women are portrayed, and the way that people of color are portrayed really bug me. And I don't know how [my son is] interpreting those images."

"I'm not concerned about the violence. I'm concerned about the way they portray the violence. It's not accidental. It's intentional. You know, they just are out to kill people in some of these games, and I don't think that kids should watch it. I don't think kids should participate in it."

There was clear agreement, however, that children should be protected from exposure to games containing nudity or sexual acts.

"Some [games] are worse than others, and some of them, I just say absolutely no. When they have nudity. It's bad enough to expose the body, but then they have the sexual thing where you can do this and do that, and that's just going over, that's way beyond."

Potential influence of games (and other media) on children

Parents made a number of comments related to the influence of games on children. A central concern was that game violence could distort children's view of reality, or lead to imitation.

Media stories linking games to real-life violence, such as school shootings, worried several parents:

"I know that there are a lot of kids out there that do act out—I've read anyway—from movies or games." But that concern was for other people's children. Most of the parents seemed confident that their own sons would not be adversely affected by violent video games:

"I don't have any fears of him going out and doing things that's in the game. I talked to him about it in the past, and he's like, 'I'm not that stupid.'"

Several parents mentioned that their sons had been upset by television news stories about violence, and felt these could be more influential on children than the fantasy violence of games.

Many parents commented on the role of games in their children's social relationships.

"We absolutely had no video games in our house and had a no-video-game rule for years. And it became a thing at his school where you either had video games or you didn't, and if you didn't, you had nothing to talk about.... We finally broke down and got a video game because that's exactly it. He kept coming home saying, 'I'm completely out of the conversation. I don't have anything to talk about. I don't have anything to add.'" (This took place when her son was in fourth grade.)

"One of [my son's] biggest pleasures is he'll have a couple of guys sleep over, and ask me to take them to the video store and rent a game that they've never played or that none of them owned.... And you'll see them all sitting on the couch together almost having a conference. They'll take turns who's going to manipulate the figures or whatever."

Conclusions

In line with proposed policies, parents are concerned about the influence of violent content. News coverage of potential links between games and violence have fed these concerns. However, there was surprisingly little consensus on what sort of violent content parents feel might harm their sons; opinions varied based on the realism, target and context of the violence. These nuances should be taken into account when interpreting surveys of parent opinions about video games, and in development of policies to restrict youth access to games.

Results of the parent and son focus groups are being submitted to academic journals.

V. Focus groups – boys

Background and goals

A total of **42** boys aged 12 to 14 (7th and 8th graders) participated in focus groups: half in simultaneous parent-and-son groups, and half in child-only groups. (See previous section for details on recruitment and procedures of the parent and son groups.)

Participants in the four child-only groups were recruited with the help of Boston-area youth organizations. Groups were conducted at the Charlestown and Chelsea branches of the Boys and Girls Clubs of Boston, and at the Youth Zone program at the Massachusetts General Hospital satellite clinic in Revere. (Two groups were held at Chelsea.)

Participants represented a range of racial/ethnic and socioeconomic groups.

Content for the two sets of focus groups overlapped, with some questions reserved for the parent-and-son groups, and some for the child-only groups. Research questions included:

- What attracts boys to these particular video games? Do boys identify with the video game characters? Which ones, and why?
- What influence do boys believe violent video games have on their lives? And, how do they believe violent games might affect younger children?
- What do boys identify as the reasons they play violent video games?
- How do boys view the role of video games in social relationships? (child-only groups)
- What do boys believe are their parents’ opinions of their playing video games? (parent-son groups)
- What do boys believe are their parents’ concerns regarding playing violent video games in particular? (parent-son groups)

Study procedures

In the focus groups for boys, printed images from the eight video games were scattered across the table to stimulate conversation and provide a visual reference. While all of the games include scenes of violence, only non-violent screenshots were presented, so that boys were not exposed to additional or novel violent content. The eight games (Table 1) were rated either “Teen” (for ages 13+) or “Mature” (for ages 17+) by the Entertainment Software Rating Board (ESRB), the self-regulatory body established by the Entertainment Software Association (an industry group) in 1994.

Table 1: The games used for screening focus group subjects

Game Title	ESRB Rating	Game Title	ESRB Rating
Def Jam Vendetta	T	Mortal Kombat: Deadly Alliance	M
Soul Calibur II	T	Grand Theft Auto: Vice City	M
Tekken Tag Tournament	T	Metal Gear Solid 2: Sons of Liberty	M
Grand Theft Auto 3	M	Resident Evil: Code Veronica X	M

Games were selected based on three criteria: availability on the industry-leading PlayStation 2 console (at minimum); the popularity of the game (based on sales data); and the presence of violent content (shooting, fighting and/or blood).

To start off the group discussion, each boy was asked to select a game “screen shot” from the table, and to describe what he liked about his chosen game.

Summary of results

1. What boys like; identification with game characters

Violent games are often vehicles for boys to express fantasies of power and glory. Here are typical descriptions of favorite characters:

“I like the way he dresses and talks.”

“He’s cool...he’s fast and powerful.”

“The swords are fun to use; they look cool.”

“What I like about *Vice City* is, I like Tommy Vercetti [the main character] because he never gives up and he never quits or anything. And it’s played by Ray Liotta; he’s one of my favorite actors.”

However, these boys were also aware that game actions would have very different consequences in the real world.

[Moderator: If you were going to wake up tomorrow and you were going to be Mitsurugi, in the armor and with the sword, what would you go out and do?]
“I don’t know, because if I took the sword out in public, then I’d get arrested.”

[Moderator: Would you like to be like any of the characters in some ways?]
“No, because I wouldn’t want to be wanted, and I wouldn’t want like, the cops to be on me. But, if they weren’t wanted, I would want to be them, because they’re rich, ‘cause they get paid a lot of money to do the missions and stuff.”

2. How boys perceive influences of video games

Boys repeatedly made distinctions between the game world and real life.

“When I play violent games like this, I mean, I know it’s a videogame. And I have fun playing it, but I know not to do stuff like that, because I know the consequences that will happen to me if I do that stuff.”

“It’s just a game. I mean, even if I saw a game that was really, really realistic, I’d be able to figure it out. It’s much different than things in real life, ‘cause then there’s an actual person behind it, not just a computer.”

“But I don’t really think video games will influence kids as much as, like, the news. That can influence kids and that’s real.”

Many boys expressed concern about protecting younger siblings from inappropriate game content. They were especially concerned about exposing siblings to content that could be easily imitated in the real world, such as swearing. (Note that some boys lived in rough neighborhoods, and talked about seeing violence in the real world.)

“I have a younger brother. And the age that he is at [*six*], he doesn’t know, he doesn’t get the meaning of, like, going to jail for life. [He might] think if you kill a person, nothing happens to you.”

“Little kids, they don’t know the basic meanings of life. So once they see that [bad behavior in games], they’re going to think, ‘Oh, that’s how life goes. You can swear and go around hitting people and stuff.’”

“Well, if he was younger than 8, then I wouldn’t let him play. But maybe 8, I’d probably let him play, but I’d probably lower down the volume so he wouldn’t hear the swears. I’ll let him play cause he’ll see killing in real life some day. And he’s going to get used to it.”

[Moderator: So you’ve seen killing in real life?]

“Yeah.”

“I don’t like my little brother or sisters to watch me play *Vice City* because...they might swear at other people ‘cause of the attitude, how they do in *Vice City* [where] they always give people attitude and take swears at other people. That could make my family look bad, like my mom isn’t raising us regular.”

Boys also mentioned positive influences from video game play, such as being inspired by sports games to take up new sports or learn new moves.

“You see them do amazing plays, and then if you were to go outside and try them, and keep practicing that, you could get better so sometime later on in life, you could possibly do that.”

3. Why boys play violent video games in particular

Boys were asked what made a game fun to play more than once, and whether a game could be fun without being violent. Part of the appeal stemmed from the action and excitement, and the more developed characters, found in many popular violent games. Here are different boys’ views:

“Some games I like with violence, and some games I like without violence. Because without violence it gets kind of boring after a little while, because you’re sitting around just doing nothing basically. But in a violence game it’s kind of fun because you actually go around, actually get to do violence stuff things.”

“You could still play a good game, say like sports games, like football—that’s not that violent, and it’s fun.... I like sports games a lot, and when I do play a violent game it’s fun too, because I like the action and stuff. I think there’s a little more action in violence games than there is in nonviolence games.”

“I think a game could have no violence at all and still be really good because I like the realism and the challenge and stuff.... I think the really violent games like *Vice City* where you can just go around killing anybody, that’s pretty much less realistic. The environment, the people are real, but not the actions.”

“Like [the boy above] said, the environment is a lot more real, but the actions the guy does will probably not really happen that much, except for if someone got weapons in the wrong hands. But it is kind of fun; the people actually say real things and stuff. It’s not just boring, it’s actually fun to play.”

Many boys seemed to use violent games as outlets for anger or frustration.

“Getting wrapped up in a violent game, it’s good—because if you mad, when you come home, you can take your anger out on the people in the game.”

“Last week, I missed one homework and my teacher yelled at me. I felt mad.... When I went home, I started playing *Vice City* and I did a cheat code to get a tank and I ran over everybody. And I smashed a lot of cars and blew them up.”

[Moderator: How did you feel afterwards?]

“I felt different. Like, I was mad, and I turned happy afterwards.”

The very popularity of violent games also makes them appealing.

“Yeah, [my mom] doesn’t like *GTA3* When it first came out, I got it, and it was on the news. And every parent, all my friends’ moms were talking about it to my mom. And they’re like, ‘Oh, it’s so violent and the language is so strong’ and stuff. And my mom doesn’t like when she hears stuff like that, so then she wants to take the game away. But I don’t want her to take the game away because that’s, like, the popular game.”

4. Games and social relationships

For many boys, games are a focus of social activities, similar to sports.

“If I didn’t play video games—it’s kind of a topic of conversation, and so I don’t know what I’d talk about. ‘Cause I talk about video games a lot.”

“Usually me and my friends, when we’re over at each others’ houses, and they have a good game, [we’ll play it]. Like *Madden 2005* [a football video game]— I’m the only one out of my friends who has it. So every time a friend comes over, they’re like, ‘Oh, I’ll kill you in *Madden 2005*.’ It’s fun to beat them.”

A surprising number of boys played games over the Internet, sometimes teaming up with players from different cities or countries to play against other virtual teams.

[Moderator: What do you like about playing games over the Web?]

“It makes me friends, like that you don’t even know; all I know is by computer. Never met them.” “You talk to them [on the headset] as you play, like ‘Oh, go this way and I’ll go that way.’”

5. Boys’ perceptions of their parents’ opinions and concerns

When asked what their parents think about video games, boys mentioned balance issues first (as did their parents).

“She probably thinks I play a lot, and I don’t really play that much.”

“As long as I do other stuff, chores, homework, they don’t really care [what games I play].”

Boys seemed aware of their parents’ concerns about violent and sexual content.

“When I’m playing a violent game, she says, ‘You can only play this game if you do not imitate them.’ Like in a couple of games, they actually swear sometimes. And my mom said, ‘I’m not going to allow you to play this game because it swears.’”

[Moderator: Do you think she’d mind video games, or violent ones only?]

Boy #1: “Violent ones she doesn’t really care about it. She doesn’t like me playing *BMX-XXX*, or something that has nudity.”

Boy #2: “Yeah, like nudity and stuff... I wouldn’t even want to play those games, even if I was allowed to.”

Boy #3: “Video games have nudity in it?”

Boy #2: “It’s kind of stupid.”

One boy, whose mother said she would “absolutely not” allow M-rated games in her home, said:

“My brother, he has friends and they sometimes had him borrow some games. So we don’t own them [M games] but yes, we play them.”

“[But] being around mom so much has told me which games not to even ask her to play. And those games, I now don’t even like.... So really, it’s like she’s given me the image of what to play, what not to play.”

Boys were also aware of parental concerns about exposing younger siblings to mature content.

“Well, I don’t really think my mom’s really worried about games, except when I play violent games, all the time. She’s worried about me playing violent games when my brother’s around.... He’s seven, and she doesn’t want him to think that he can just go around killing people. She doesn’t want him seeing blood everywhere. So I usually play at night when he’s sleeping.”

Conclusions

The boys we spoke with were surprisingly articulate about their attitudes and behavior regarding video games. They shared many concerns with parents, particularly the need to protect younger children (who are less sophisticated and more likely to imitate) from inappropriate game content. Boys’ use of violent games to regulate their emotions is a particularly interesting finding; it remains to be seen whether this is healthy, or could sometimes be unhealthy. The relationship of video game sports to real-world sports is also intriguing.

To our knowledge, this is the first qualitative study of boys’ behavior and perceptions regarding video games. Results will be submitted to academic journals for publication.

VI. ERP experiment

Neurocognitive experiment to study short-term effects of playing violent video games, using event-related potentials (ERPs)

Study background and goals

Until several years ago, research on the effects of violent media used one of two methodologies: *surveys* that examined correlations between someone's long-term history of exposure to violent media and the person's current violent or otherwise risky behaviors, and *behavioral experiments* that examined the causal role of violent media in producing short-term changes to people's mood, behavior, or in how people associated neutral stimuli with violent concepts.

A third and complementary method is now being used with increasing frequency: *neurocognitive studies that directly measure brain activity*. In these studies, measures of brain activity replace measures of mood and behavior. These brain processes can be either correlated with data obtained from a survey (e.g., looking at the responses of people who play a lot of games or particular types of games), or caused by an experimental treatment (e.g., exposure to a violent vs. a non-violent game). Although we had not included neurocognitive studies in our initial proposal, we seized the opportunity to build upon some work in the area already being conducted by the department of psychiatry at Massachusetts General Hospital and the neurocognition laboratory at Tufts University. By cooperating with these groups, we were able to conduct preliminary studies at minimal additional cost, thereby leveraging our funding significantly.

Some of the technologies used to measure brain activity in neurocognitive studies, such as functional magnetic resonance imaging (fMRI) are extremely expensive. Instead, we used a less-expensive, easily replicated technology—the measurement of electrical activity within the brain known as event-related potentials (ERPs)—to see if it might be useful in demonstrating whether and how a game player's key perceptions of the world can be influenced by playing a violent vs. a non-violent game. Also, while fMRI studies show the location of specific activities in the brain, ERPs show the timing of those activities following specific stimuli.

The violent game used was *Unreal Tournament*, a popular "first-person shooter" game. The exciting but nonviolent game used was *Gran Turismo*, a car racing game in which players cannot wreck the cars. The test stimuli, which were presented after 20 minutes of game play, were standardized sentences ("vignettes") containing an emotionally positive, neutral or negative word or phrase. For example:

People waited for Glen on the steps of the building. As he walked through, they **applauded for** (positive)/**booed at** (negative)/**passed by** (neutral) him.

The word that changes the emotional content of the sentence is called the "critical word." Subjects would see only one version of each sentence. Also, immediately following their ERP measurement, subjects filled out a written survey containing items related to their

emotional state, their exposure to media and their personality which have been shown in previous research to be related to violent or aggressive behaviors and thoughts. This included items from the Aggression Questionnaire.

Our hypothesis for this preliminary stage of the research was that the brainwave timing and amplitude as measured by ERPs would be different after subjects played a violent video game vs. after they played an exciting but nonviolent video game. This might indicate that different contents of games prime the brain to expect certain responses in the real world. This would be consistent with what some social scientists call "The Scary World Hypothesis," based on research showing that people who see a lot of violence on television (in entertainment programming and/or in news) tend to perceive their environment as more dangerous than it actually is. This exposure apparently primes their brains to interpret neutral stimuli as potentially threatening.

We explored whether we could find a correlate to this phenomenon. For example, if the neutral sentences were presented after playing the violent video game, would the brain's response look like it expected a hostile (negative) sentence? Would the brain's response be different after playing the non-violent video game?



Figure 1. A research assistant models the experimental set-up. The experiment took place while the subject was seated in a chair in front of either a video or computer monitor. The video games were played on a PlayStation 2. During game-play, physiological data were collected by an arm cuff and a small computer worn across the subject's chest. After game-play, ERPs elicited by words presented on a computer screen were recorded from electrodes embedded in a cap on the subject's head.

Study participants

Eighteen subjects were recruited (7 females, 11 males, 20 years old on average, range = 18-29 years old), seventeen of which completed both game-playing sessions. The eighteenth subject, a male, did not complete the violent game-play session. Subjects were recruited with fliers posted on and around New England college campuses. We specifically did not recruit subjects under 18 years old because the experiment required that they consent to playing an M-rated video game.

Summary of results

Subjects rated the violent game as more exciting and having a faster pace than the non-violent game, in addition to its very much higher violence rating. Although we attempted to select games that were similar in physiological arousal, it must be considered that the effects we found are due in some degree to differences in arousal (e.g., are reflected by ratings of excitement and pace) rather than differences in violent content.

Preliminary results indicate that *the two games produced the same pattern of ERP effects* during the subsequent emotional sentence reading task at most electrode sites. However, at some electrode sites, reflecting localized regions of the brain, there were *some subtle differences in the effects of the two games*.

As shown in Figure 2, following the violent game, some electrode sites in the right brain hemisphere showed a larger difference between positive and neutral words than the corresponding electrode sites in the left hemisphere. This difference was not found following the non-violent game. These effects were seen from around 500 ms after the onset of the critical word.

It should be stressed that little is known about ERP effects in a mood biasing study of emotion classification, such as ours. One possible interpretation of our findings is that following the violent game, positive critical words were more unexpected or required more cognitive resources to process. However, it could also be the case that positive critical words were made more salient with respect to the emotional classification task by their juxtaposition to the recently viewed violence.

In either case, the implication is that playing violent video games may influence emotional evaluation by affecting how one processes emotionally *positive* and neutral stimuli relative to one another, rather than how one processes emotionally negative stimuli. A replication, with better control of video game-linked physiological arousal differences, is needed in order to follow-up on this somewhat unexpected possibility.

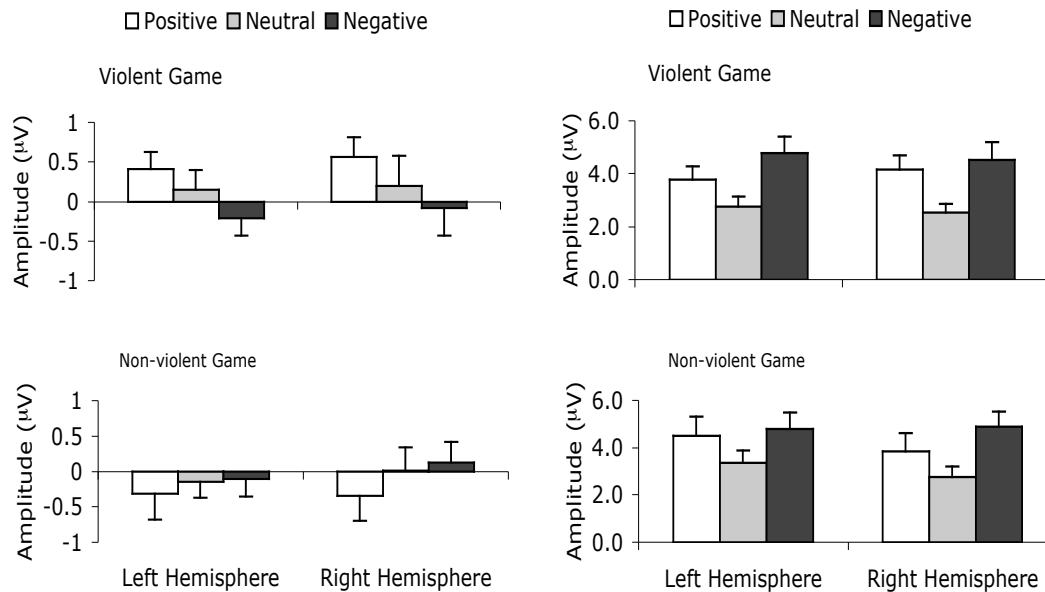


Figure 2. Mean amplitude (+/- standard error) for of ERPs elicited by three emotional conditions (positive, neutral, negative) over peripheral electrodes, by game and hemisphere. Left panel: In the 50-150 ms time window, a main effect of game was marginally statistically significant for emotionally positive words in social vignettes. Right panel: In the 500-700 ms time window, following the violent game, the difference between the positive and neutral words was larger in the right hemisphere than in the left.

Although there were no correlations between scores on the Physical Aggression subscale of the Aggression Questionnaire (AQ-P) and our ERP effects, subjects with high AQ-P scores tended to make more classification "mistakes." Although there were no correct answers *per se* in the vignette classification task, these subjects judged neutral vignettes to be emotionally charged more frequently than subjects with lower self-ratings of physical aggression. This correlation in the behavior suggests a link between the misattribution or polarizing of emotion (i.e., judging neutral situations to be emotionally charged) and physical aggression. The fact that such a correlation did not show up in the ERPs suggests that this association may occur at a late stage of conscious stimulus evaluation.

There was no difference in the frequency of classification mistakes between the two game exposures; our results do not indicate that after playing a violent video game subjects may be more likely to misconstrue positive situations as negative or neutral situations as emotionally charged. However, future studies might consider pre-screening for subjects with high AQ-P scores in order to focus on these subjects who may be more sensitive to the effects of violent video games.

Results of this ERP experiment will be submitted to peer-reviewed journals, along with a review of previous experimental research on effects of violent media on brain activity (to

put the current study into context), and an assessment of the role of cognitive development in effects of violent games on children.

VII. Game developer survey

Background and goals

Children's video game play is a topic of increasing concern throughout the country and the world, especially regarding video games with violent content. Social scientists, policy makers, physicians, game players, and game developers participate in the debate – however, the perspectives of game developers are rarely considered within the context of academia. Without this perspective, we run the risk of making impractical recommendations, and missing opportunities for meaningful change. Industry and technology experts can help us identify specific actions video game developers can take to minimize harm to children from violent game content.

The goal of this study was to survey an international sample of game development professionals, and to incorporate their knowledge, concerns and experiences into research and policy recommendations. To our knowledge, no academic surveys of this population have been published; consequently, this was intended to be a small, exploratory study. We sought the input of a range of game development professionals, including game designers, animation artists, marketing professionals, and others, about their experiences with and perspectives on how video games are developed, the role of violence in video games, and their relationships with video game rating boards.

Study procedure

In June of 2005, we posted a sixteen-question survey on an online survey Web site that specializes in confidential data management procedures for educational and market research. The survey was publicized through Web sites and listservs frequented by developers in North America, Europe and perhaps Australia/New Zealand.

Questions addressed

- Respondent demographics (country of residence, type of job, time working in industry)
- Perspectives on the role and the possible effects of violent content in games (including depiction of fantasy violence, realistic violence, or breaking of rules/laws, in games played by children age 6-11 vs. age 12-15)
- How game developers decide how violent a new game will be
- Perspectives on and experience with video game rating systems.

Respondents were required to certify that they were at least 18 years old. Since this type of survey had not been done before, and we had no financial incentives to offer, we hoped to attract 25 to 35 respondents.

Summary of results

The survey was completed by **406** participants from the United States (66%), Canada (10%), the United Kingdom (8%), continental Europe (7%), Asia (6%), and Scandinavia

(3%) – a number far higher than anticipated. An additional **280** individuals partially completed the survey. Participants' positions ranged from artists and engineers to executive-level professionals.

Initial analyses show that game developers are concerned about the level of violence to which children under age 12 are exposed. Participants also voiced concerns over the efficacy of video game rating systems, and they cited the importance of improving rating systems in order to facilitate parents' decision-making processes regarding the games that their children play. This knowledge, along with specific information regarding how games are created, will help us to make feasible recommendations for policy and improvements to the rating system.

Here are examples of comments typed in by some of the survey respondents:

Possible influence of violent content on children:

“I fundamentally believe that if a child is affected by violence in a video game then there is more to it than the child's interaction alone – problems may stem from [mental health] issues, or issues with relatives or the area they are brought up in.”

“Listen, if viewing violence was harmful to kids, all kids with TV's would be mass [murderers]. There has ALWAYS been violence in entertainment and there always will be.”

“Violence treated lightly or without any consequence may be harmful to young children's understanding of the consequences of real violence.”

“Of course violent content *could* be harmful. The question is if it's substantively harmful, to which I answer 'no.' Also, violence is a label that can be broadly applied. *GTA [Grand Theft Auto]* and Bugs Bunny cartoons both contain violence, but with substantially different depictions, contexts, and outcomes.”

“...Children 12 and above go through many changes (physiologically, mentally, etc) as they enter their teens. The 'harm' done greatly depends on the individual's environment, what they're currently experiencing in life, the family background, and many, many other factors. Therefore it is very difficult to say, 'yes it is harmful' or 'no it is not.' It is more prudent to examine the individual's background before a clear conclusion can be made as to whether violent games are actually harmful or not to individuals of this age group. At this period of their life ANY kind of media (good or bad) can have a heavy influence on the individual.”

“I'm not a master of human development but it seems that it might be possible that violence depicted in games might numb a child to violence or breed some

types of violent behaviour. In the very least it would elevate community levels of fear and that's almost as bad.”

“I find with my own children, after playing a game with more violence, their behavior is changed. They are impatient, and often rude, ‘grumpy,’ and disrespectful.”

Need for parental oversight

“The more violence a child (or adult, for that matter) is exposed to, the more desensitized they become to it – it becomes more and more detached from reality, making any violence into fantasy violence. Additionally, if the child doesn't have proper parental influence in their life, the child will get their teaching from any source they can, and learn that the way to resolve problems is through violence. However, this doesn't mean that violence in media CAUSES the child to act that way. It provides an option, which should be countered by proper parental influence.”

“Children should not play MATURE games. Period. Especially with extreme graphic violence. Children tend to emulate anything that they think is cool. As parents we have to be smart about putting all entertainment into the correct context for our children.”

“If the game is rated M there is no reason a young child should be playing that game. Ratings let you know who should be playing the game. These games that are rated M are made for older players like me (25 years old). Stores should not sell them to young kids and parents shouldn't let their kids play M rated games.”

“[As] a father of 4, I think it is anything but academic...I can go to a school function and ID 5 kids that I would guess are ‘allowed’ to play games like *GTA* and after conferring with my kids, I am right on 4 on average. I don't know if the lousy parenting came first, but exposing the kid to *GTA* themes is not going to help, regardless of extraneous factors.”

As these quotes suggest, some game developers think that it is unreasonable or does not make sense to single out games as harmful influences, while others are concerned about possible desensitization or imitation when children are exposed to games designed for adults. They also note the importance of context and parental oversight. Some are parents who are personally struggling with these issues.

One-hundred-seventy-eight participants provided us with contact information so that we could obtain follow-up information and clarification as we analyze the results of the study. This unprecedented number of respondents, and the large number who provided contact information in particular, indicates the willingness of persons employed in the game industry to participate in the public debate regarding violent content in video games.

The results of this study will be presented at the 2006 Game Developers Conference in San Jose, California, in March. In addition, a paper detailing the results of this study will be submitted for publication in a media-related journal.

The game developer survey instrument is attached (see Appendix 3).

VIII. Game ratings

Background on the ESRB ratings system

The current U.S media rating systems (for movies, television, music, and electronic games) are designed by the respective entertainment industries to help parents to choose age-appropriate media for their children. These systems were created in response to pressure from the public through grass roots efforts, from Congress, and from regulatory agencies, the Federal Communications Commission (FCC) and the Federal Trade Commission (FTC), and to avoid potential government oversight. The United States is unique among major nations in its use of voluntary, industry-sponsored ratings; in other countries, government regulation (e.g., the Australian Office of Film & Literature Classification) or cooperation between government, industry and consumer groups (e.g., the new Pan European Game Information age rating system for interactive games) is standard.

The first modern U.S. media ratings system, and the template for the rest, began in 1968 as a joint venture of the Motion Picture Association of America (MPAA) and the National Association of Theatre Owners. The Classification and Ratings Administration (CARA) determines ratings and provides a brief explanation for those films not rated G (e.g., “rated R for violence and language”). The CARA rating board has 10 to 13 full-time members, whose qualifications (according to the CARA Web site) include “a shared parenthood experience” and “intelligent maturity.” Each member watches a film “as a parent would” and fills out a form; ratings are then determined by majority vote.

In 1994, a consortium of game producers founded the Interactive Digital Software Association (now the Entertainment Software Association). In turn, the IDSA created and funded a self-regulatory body called the Entertainment Software Rating Board (ESRB). While academics and educators were involved in the founding of the ESRB, and its first director was a child psychologist, experts are not currently known to be involved.

The ESRB rating system consists of two components: an age symbol to be placed on the front of the game, and “content descriptors” to be placed beside the age symbol on the back. The age-based ratings include EC-Early Childhood (ages 3 and older), E-Everyone (ages 6 and older) T-Teen (ages 13 and older), and M-Mature (ages 17 and older). In March 2005, the ESRB added the category E10+ to bridge the developmental gap between E and T. There is also an AO-Adults Only rating, but major retailers generally do not sell such games. Games submitted for rating, but not yet rated, may be labeled RP (Rating Pending) in pre-release advertising. Additional content descriptors have been added by the ESRB over time, most often in response to feedback from game raters. According to the ESRB, over 550 publishers have submitted games to be rated, and more than 1,000 are now rated each year.

Some information on ESRB ratings is available on their Web site (www.esrb.org). In response to our request, the ESRB provided us with further details on their process for rating games.

Video games are rated by part-time workers at the ESRB offices in Manhattan. Raters are not expected to have experience playing games, but “experience with children is preferred.” Raters do not play the games; they view videotapes of representative and pertinent game content submitted by game developers. They may review additional material such as dialogue scripts or soundtracks to get a fuller picture of game content. Raters work independently at computer workstations. If a game’s three raters cannot reach majority consensus on the rating, additional raters may be assigned to the game until consensus can be reached. Because games may not be in final form when rated, ESRB gaming experts play a sample of finished games on a random basis or in response to queries from consumer or publishers, information found on gaming Web sites, etc. This is part of the enforcement process to ensure compliance.

While participation in the rating system is voluntary, participating game publishers sign a terms-and-conditions contract, which binds them to follow ESRB rules and regulations. This includes full disclosure of content pertinent to ratings. If publishers do not comply, they are subject to enforcement actions, including fines, pulling games from shelves, and relabeling game packages with new rating information. (For example, this was done in 2005 with *Grand Theft Auto: San Andreas*, published by Rockstar Games/Take-Two Interactive, when unlabeled sexual content—referred to as “Hot Coffee,” based on dialogue in the game—was discovered on the game disk by a game “modder.” The rating of the existing game was changed from M to AO, and a version of the game with the offensive material deleted was later released.) It is not known how often such sanctions have been applied by the ESRB. Game publishers are allowed to ask the ESRB in advance about the ratings of previously submitted, similar games in order to help inform adjustments to games in development, but the ESRB does not make suggestions for changes.

While these media rating systems provide parents with useful information, all ratings are subjectively assigned by board members whose training and expertise are unknown, using instruments and methods that are not publicly available. Greater transparency in the process, and greater involvement of child development experts (especially those with children who play such games) might reassure parents. The Family Entertainment Protection Act, introduced in 2005 (see below), includes a proposed annual independent analysis of the game rating system to “help ensure that the ESRB ratings system accurately reflects the content in each game” and that ratings “remain consistent and reliable over time.”

To reduce confusion, some professionals and parents have proposed the creation of a simplified, content-based media rating system that crosses all types of media. Such a system would include descriptors in areas of concern to parents such as violence, sex, nudity, strong language and drug use. A review of systems used in other countries may be helpful; for example, the EU game ratings system includes icons for fear—material that might scare young children, and discrimination—content that depicts or may encourage discrimination against groups of people. (The EU also has a Complaints Board that will investigate complaints about games filed by members of the public.) Comprehensive

labeling of media would be analogous to food labels that explain content. However, there are many practical obstacles to major revisions in the game rating system. For example, all of the new-generation game consoles from Microsoft, Nintendo and Sony have parental controls (similar to V-chips in televisions) that are based on the current ESRB system.

Study goals and importance

To address some of the ESRB rating system's problems and limitations, we created the *Center for Mental Health and Media (CMHM) Video Game Rating Scale*. The CMHM rating scale is an important development for researchers; the rating information provided by the ESRB is neither appropriate nor sufficient for use as a research tool. The new scale allows sophisticated, valid and reliable analyses of the content of electronic games, and how that content may have differential effects on children.

The CMHM scale also has the potential to influence public policy and education. Aspects of the CMHM rating scale *could be incorporated into the current ESRB rating system* to improve rating methods and quality, and to offer more relevant information to parents, teachers, and health professionals.

Development and description of the new ratings scale

The Entertainment Software Rating Board (ESRB) rating system provides a global rating (Early Childhood, Everyone, Everyone 10+, Teen, Mature, or Adults Only), as well as over 30 content descriptors (e.g., Cartoon Violence, Strong Language, Suggestive Themes, Alcohol Reference) for the games it rates. While this system was an important first step for rating games in a commercial context, it is not appropriate for research purposes: the system lacks reliability and validity, due to the subjective nature of the rating procedures.

Unlike the ESRB rating system, the ratings created by the CMHM system allow researchers to rank games on an ordinal scale for each section of content. In addition, the CMHM rating scale rates all content and does not exclude any information from the rating for any reason—unlike the ESRB rating system, which only lists content descriptors for elements in games that may affect the global rating, or that raters think may be of particular concern.

The CMHM rating scale includes the following sections that are not directly incorporated or reported by the ESRB: *body dysmorphia*, *centrality of physical violence*, *social context of violence*, and *consequences of violence*. The CMHM rating scale also assesses the degree to which game content is *accessible to imitation* by children or adolescents, including questions about whether weapons and their effects “look real,” and whether ordinary objects are used as weapons in the game.

As part of the CMHM rating process, trained raters play the game and complete a 90-item scale, which is divided into ten sections: 1) technical realism; 2) environment realism; 3)

frequency and intensity of physical violence, blood, and gore; 4) body dysmorphia (unrealistic/unhealthy exaggerated body proportions); 5) frequency and intensity of sexual content; 6) language and relational aggression; 7) risk-prone behavior (e.g., drug use, criminal acts); 8) centrality of physical violence; 9) social context, motivation, and intentionality of physically harmful acts; and 10) consequences of violence.

Raters play each game until they've observed enough content to be able to answer each question—a minimum of one hour. Raters complete the scale's questions during and after play, recording their answers in an Excel spreadsheet. Questions are either multiple choice or "check all that apply." Scores for each section are automatically generated through pre-established formulas (i.e., adding the total number of points for each section). Raters do not include "cut scenes" in their ratings, unless these scenes include content that is more extreme than what is seen during actual play, such as more graphic violence.

Description of scale sections

Note: Text in italics below denotes aspects of the CMHM Video Game Rating System that are *not* included as content descriptors in the ESRB rating system. While the ESRB does ask for some of this information from game publishers, and while some of this information may influence ESRB global ratings, this information is not directly given to parents.

Technical realism of the game engines.

- *how the player interacts and communicates with aspects of the electronic game's software (both graphical and non-graphical)*
- *whether this interaction contributes to the game's realism.*
- *game's dimensionality (e.g., 2D versus 3D),*
- *perspective (e.g., first person versus third person)*
- *range of exploration (e.g., whether the player can wander freely in the game environment or can only follow specific paths)*
- *action system (e.g., whether the player has full control versus limited control over character actions)*
- *quality of the game's audio-visual rendering (e.g., highly detailed versus low quality graphics).*

Realism of the game environment.

- *degree to which the game world imitates real-life time periods, people, places and groups, i.e., popular skateboarders, rap artists, 1980s New York City, police officers.*

Physical violence.

- *frequency and intensity of exposures to viewing violent game content (visual), as well as hearing violent game content (audible, including moaning or screaming sounds during injury or death).*

- *whether game content is accessible to imitation, including questions about whether weapons and their effects “look real,” and whether ordinary objects are used as weapons in the game.*

Body dysmorphia.

- *whether the humanoid characters portrayed in the game reflect unhealthy or unrealistic body proportions, such as exaggerated breast size.*

Sexual content.

- frequency and intensity of exposure to sexual content, including sexual references, nudity and sexual acts
- whether a link exists between occurrences of sexual behavior and occurrences of violence.

Language and relational aggression.

- exposure to strong language in the game
- exposure to verbal taunts or racial slurs.

Risk-prone behavior.

- presence of addictive behaviors, such as alcohol, tobacco, drug use and gambling
- crimes against property
- whether the player can take part in vandalizing or stealing.

Centrality of physical violence.

- *how central physical violence is to proceeding towards the completion of the game*
- *whether the game features alternative non-violent methods to complete in-game objectives.*

Social context of violence.

- *social context, motivations, and intentions underlying depictions of violence in video games.*

Consequences of violence

- *whether physical violence is differentially rewarded or punished in the game (i.e., “winning” or “beating” the game).*

Here are sample questions from the CMHM Video Game Rating Scale:

CONSEQUENCES OF VIOLENCE

Rewarding Consequences of Violence

Can violence against allies ever gain you rewards? (e.g. property, health, points or abilities)

Unknown/ Not Seen

You cannot harm allies

NO

YES, but the rewards do not help you to proceed through the game

YES; the rewards make progress through the game easier, but are not necessary to proceed

YES, and the rewards are necessary to proceed

Can violence against antagonists ever gain you rewards? (e.g. property, health, points or abilities)

Unknown/ Not Seen

You cannot harm antagonists

NO

YES, but the rewards do not help you to proceed through the game

YES; the rewards make progress through the game easier, but are not necessary to proceed

YES, and the rewards are necessary to proceed

Unrewarding Consequences of Violence

Can violence against allies ever lose you rewards? (e.g. property, health, points or abilities)

Unknown/ Not Seen

You cannot harm allies

NO

YES, but the rewards do not help you to proceed through the game

YES; the rewards make progress through the game easier, but are not necessary to proceed

YES, and the rewards are necessary to proceed

Can violence against antagonists ever lose you rewards? (e.g. property, health, points or abilities)

Unknown/ Not Seen

You cannot harm antagonists

NO/ Not Seen

YES, but the rewards do not help you to proceed through the game

YES; the rewards make progress through the game easier, but are not necessary to proceed

YES, and the rewards are necessary to proceed

Can violence against allies lose you the mission?

Unknown/ Not seen/ NA

YES

NO

Can violence against antagonists lose you the mission?

Unknown/ Not seen

YES

NO

Can violence against allies lose you the game?

Unknown/ Not seen/ NA

YES

NO

Can violence against antagonists lose you the game?

Unknown/ Not seen

YES

NO

Does the game contain any explicitly stated message about violence?

NO/ Not Seen

Violence is never justified

Violence is sometimes justified for the protection of yourself or others

Violence is sometimes necessary for other reasons

- please write in comments on Page 1.

Conclusion

While originally developed for research use, to overcome the subjectivity and limited scope of the ESRB system, the content and methods of the CMHM rating scale have the potential to greatly improve the ESRB system.

By incorporating the CMHM scale via new “content descriptors” and more valid/reliable ratings methodology, the ESRB could give parents new information that they’ve asked for to help with their purchase decisions (such as the context of violence in the game). It would also address gaps in the current ESRB system that—according to years of media research on what encourages imitation of violence—inadvertently leave children vulnerable to harmful effects.

IX. Review of recent U.S. legislation to limit access of minors

Motivated by concerned constituents and research demonstrating the prevalence of electronic game play among American youth, state and federal legislators have proposed a number of bills in recent years with the goal of limiting minors' access to violent video and computer games.

2005 Federal legislative activity

S. 579 and S. 1902. The Children and Media Research Advancement Act (CAMRA) was introduced in March, calling for an amendment to the Public Health Service Act to authorize funding to establish a \$90 million, five year program, to be housed within the National Institute of Child Health and Human Development, that would examine the role and impact of electronic media in the development of children. An updated bill, S. 1902, was introduced in October by Senator Lieberman (with cosponsors Bayh, Brownback, Clinton, Durbin and Santorum), now requesting the funding to be routed through the Centers for Disease Control and Prevention. The bill was referred to the Committee on Health, Education, Labor and Pensions.

HR. 4124. The house version of the bill, introduced in October 2005 by Rep. Markey (with Reps. Baca, Ford and Hart), also called for research to be done via the CDC. This bill was referred to the Committee on Energy and Commerce, and to the Subcommittee on Health in late November.

S. Res. 212 was submitted in July by Senator Brownback (in conjunction with **H. Res. 376**, submitted by Reps. Upton and Markey) to express outrage over the *Grand Theft Auto* "Hot Coffee" undisclosed sexual content scandal. These bills requested an investigation of whether Rockstar Games engaged in deliberate fraud. The bills were referred to committee.

H.R. 1145. The Software Accuracy and Fraud Evaluation Rating Act or "SAFE Rating Act" was introduced in the House of Representatives in March by Rep. Joe Baca, with 30 cosponsors including Reps. Wolf, DeFazio, Napolitano, Spratt, Ford, Moran (VA), Cardoza, Payne, Berry and Hinojosa. This bill would require the Federal Trade Commission to study the rating system and labeling practices of the video game industry to determine if they were unfair or deceptive. It was referred to the Subcommittee on Commerce, Trade and Consumer Protection.

S. 2126. In December, Senators Clinton, Lieberman and Bayh proposed the Family Entertainment Protection Act, triggered in part by publicity over the undisclosed sexual content ("Hot Coffee") in *Grand Theft Auto: San Andreas*. Among other provisions, this bill would restrict sales and rentals of games to minors (under 17) based on the ESRB rating system, applying to M, AO, or Rating Pending games. Retailers would be required to post information on ratings and ratings policy, put prompts on cash registers, and ask for identification. Business managers would be subject to fines of \$1000 and 100 hours of community service for a first violation, and \$5000 and 500 hours of community service for each subsequent violation. Other provisions include an FTC investigation into

misleading ratings, and a search for inconsistent “embedded content” (such as “Hot Coffee”). The bill was referred to the Committee on Commerce, Science and Transportation.

2005 state legislation

According to data collected by the Interactive Entertainment Merchants Association, legislators in 20 states and the District of Columbia put forth at least one bill to restrict the access of minors to violent video games in 2005: Alabama, Arkansas, Arizona, California, Connecticut, Delaware, DC, Florida, Georgia, Illinois, Louisiana, Maryland, Michigan, Minnesota, Missouri, Mississippi, North Carolina, New Jersey, Pennsylvania, Texas, and Washington.

Three states passed bills in 2005:

Illinois. Bill signed into law in September; enforcement blocked by a federal judge in December. The bill prohibits retailers from selling or renting games to minors (under 18) that contain depictions of or simulations of human-on-human violence in which the player kills or otherwise causes serious physical harm to another human, or contain sexually explicit material, imposing a \$1,000 fine on retailers who violate the law.

Michigan. Bill signed into law in September; blocked by a federal judge in November. The bill restricts the sale or rental to minors (under 17) of "ultra-violent explicit" video games that “continually and repetitively depict extreme and loathsome violence.” Penalties include fines of \$5,000 to \$40,000 and up to 93 days in jail.

California. Signed into law in October; blocked by a federal judge in December. The bill prohibits retailers from selling or renting "ultra-violent" video games to minors (under 18), imposing a \$1,000 fine on violators. It attempted to target a small number of games that were “especially heinous, cruel or depraved in that it involves torture or serious physical abuse to the victim." This bill was aimed at both retailers and game makers: Manufacturers would be required to label such games intended for retail sale in California with a solid white “18” outlined in black on the front of the package.

Criticism of these state laws centered on vagueness and restriction of First Amendment freedoms coupled with what judges perceived as inadequate evidence that access to violent games causes psychological or other harm to children. None of the three laws were based on the ESRB ratings system, and gave no clear guidance on how or by whom games would be classified as restricted.

Other policy approaches

Some proposals have tried to circumvent these problems by redefining games as “harmful substances” to minors, that warrant restrictions similar to those on cigarette and alcohol sales. This was briefly proposed by Leland Yee of California. In January of 2006, Rep. David Hogue of Utah proposed legislation that would treat violent games as

pornography. In another novel approach, Los Angeles city attorney Rocky Delgadillo filed suit in Los Angeles Superior Court in 2006 against Rockstar Games/Take-Two Interactive over the sexual “Hot Coffee” content found in *Grand Theft Auto: San Andreas*. The suit seeks civil penalties (disgorging a portion of profits as a fine) for making misleading statements in marketing and engaging in unfair competition.

The video game industry is much more amenable to what it views as parent education, as opposed to direct regulation of game content or access. The industry’s trade group, the Interactive Entertainment Merchants Association (IEMA) has “voluntarily committed to” carding programs for its members, whereby youth would be asked for identification to verify their age when purchasing M-rated games. Members are also requested to post in-store signage to educate parents.

X. Preliminary recommendations for education and policy

Game ratings

Currently, ESRB ratings don't consider the context or goals of violent acts. Parents can't tell from the ratings whether the violence serves some greater good or is an expression of hatred. This means that games like *SOCOM: US Navy Seals*, in which characters fight to protect the United States, or *SWAT 4*, where characters are rewarded for not killing, receive the same age rating and content descriptors as a game like *Grand Theft Auto: Vice City*, where characters fight and kill to get ahead (a “beat people up and go higher” game, as one parent put it).

In addition, the ESRB ratings fail parents in providing information on the consequences of violent acts. For example, a game that leaves killed or wounded characters lying on the ground after they've been shot is more likely to receive an M rating, while a game in which dead or wounded bodies (magically) vanish may receive a T rating. We know from years of TV research that violent acts shown without consequences (no pain, blood or sadness) are more likely to be imitated by children. This discrepancy between the ESRB system and what we know about media violence effects on children means that even well-informed parents could inadvertently choose games that are potentially more harmful than they realize.

As noted in Chapter VIII of this report, the Center for Mental Health and Media has developed an alternative video game rating system that includes information on both the social context and the consequences of violent acts within a game, as well as additional scales directly tied to prior media research and to parental concerns. We propose to adapt this research tool into practical information that parents can use, displaying key features in a clear and consistent manner that helps parents make more-informed decisions. Features from the new rating system could also be incorporated to substantially modify and improve the ESRB system.

Finally, the proposed Family Entertainment Protection Act would require that a random sample of games with ESRB ratings be compared annually “to independent, valid, and reliable rating systems ratings.” Since no such system currently exists, the CMHM Video Game Rating Scale might serve as a basis for comparison with the ESRB system.

Policy

As the federal judges' rulings blocking enforcement of legislation in California, Illinois and Michigan clearly demonstrate, the body of research on harmful effects of video game violence on children is inadequate to support broad changes in policy. The judge in the Illinois decision, for example, specifically noted that the experimental studies used to support the legislation used unclear definitions of aggression and violence (confounding aggressive play with aggression meant to harm, for example), used measures of aggression that did not translate well from the experimental setting to the real world, and did not address the context of game play (e.g., goals, location, companions, and length of

play). The assumptions, methods and conclusions of related fMRI studies were also found lacking.

Another difficulty with past bills is the lack of clear rules for determining which games would be restricted. While the bills in California, Illinois and Michigan tried to limit their scope to the most objectionable and heinous content (rather than simply restrict all M-rated games, for example), no individual or group was made responsible for determining which games would qualify—putting the burden on individual retailers. It is true, however, that restricting games based on age ratings would exclude many games that parents of young teens would not find objectionable (including some that include blood but have pro-social goals and positive role models, such as the *SWAT* series).

Legislators may be influenced by results from our youth survey showing how common it is for young people to access violent games—suggesting a more urgent need for policy or education efforts. According to our analyses, over 1/3 of children aged 12 to 14 had at least one M-rated video or computer game on their list of “five games played a lot in the past six months.” This obviously is a low estimate of total exposure to Mature games. (If our survey were to be replicated with an even larger sample of children, we could rephrase key questions to assess exposure to “restricted” games in greater detail.)

The findings from our parent survey and focus groups suggest that sweeping restrictions of M games would probably not address the concerns of parents, especially if based on the current ESRB system. It is possible that an improved ESRB system that addresses all key aspects of content would provide a more useful dividing line. *With a more comprehensive rating system, it might be possible to restrict access of minors to games based on content descriptors that consider social context of violence and other key factors, rather than simply on a letter rating.*

Education

Parent surveys and focus groups suggest the need for educational efforts aimed at parents to help them understand:

- what might be developmentally appropriate or inappropriate for their children
- types of content in games that may not be labeled (such as the context of violence) that could influence their children or be against their values
- where to go for information on games that goes beyond ratings and brief descriptors.

Results of our studies might form the basis of content that could be distributed through a cooperative effort with the Entertainment Software Association, the IEMA, and/or the ESRB. This would include well-designed, pre-tested information that emphasizes what parents are least aware of and most want to know.

As noted in the next section, we are already making plans to develop an educational Web site for parents based on our current findings and additional studies.

In addition to parents, other important audiences for educational campaigns include:

- Clinicians. Professional associations, such as the American Academy of Pediatrics, the American Academy of Child and Adolescent Psychiatry, and the Society for Adolescent Medicine are very interested in encouraging physicians to educate parents about media effects. These kinds of professional associations can be reached with targeted educational campaigns, as well as through their professional journals and conferences. (We are in the process of submitting some of our findings to such journals, and scheduling conference presentations.)
- School teachers and after-school program leaders. “Media literacy” programs provided through schools can reach parents and children with relevant and useful information that may protect against harmful effects of media. After-school program leaders, wishing to attract students away from less healthful activities, are concerned about whether and how to attract children through video games, and would welcome guidelines.

XI. Recommendations for future research

As the first video game research of its kind, our studies provide some preliminary answers, but also raise new questions that should be explored. For example:

- What are the specific predictors or correlates of children who are at greatest risk, i.e., those who get into trouble with the law? This is especially important for boys, who generally play more violent games and for longer periods than girls do. The ESRB rating system is not valid, reliable or sensitive enough to answer that question; a more sophisticated ratings approach, such as the one we have developed, could help.
- What are the specific patterns of play (e.g., hours per session or week, types of games) that are associated with problem behaviors? How can parents identify them? Our preliminary research has pointed us in the general direction. We now have a firmer grasp on what else we should look for and what questions we should ask.
- How do different children play violent games differently? We have some early indications, for example, that girls may play violent games with different goals and patterns than boys do, i.e., they may be more interested in exploring the game environment than in shooting or competing. Also, children with certain mental health problems (e.g., depression) and behavioral problems (e.g., bullying) may play violent games differently than other children. We don't yet know when and how using games to cope with angry feelings, for example, might be healthy or harmful.
- Might certain games, including some violent games, have a positive effect for some children? For example, children in our focus groups reported (and parents confirmed) that they study certain moves in sports games (e.g., basketball, football, skateboarding) and then go outside and practice those moves.
- How can parents optimize the positive effects of electronic games and minimize the negative effects of those games? Playing electronic games is clearly an integral part of today's childhood. We should explore which variables (e.g., parental involvement, game selection, discussions of consequences) can help "inoculate" children against any bad effects.

To develop effective policy and educational initiatives to protect children from harmful media influences, we need to know more about how interactive media are used and perceived by different types of children. *As a next step in our research, we have applied for funding from the National Institutes of Health to study additional important subgroups of children, and to develop an educational Web site for parents (with content in English and Spanish).*

Here is a summary of our proposed research:

- 1) A key concern of parents, researchers and policymakers is the potential of violent video games to increase aggressive behavior and violence—and thoughts, perceptions

and emotions that may support such behavior. We therefore propose to study a sample of male and female juvenile offenders, who are known to have committed aggressive/violent acts against people or property, to see how their use of violent video games, preference for other violent media, and patterns of risk and protective factors may vary from other youth.

2) According to the U.S. Census, Latinos are the fastest-growing minority group in the United States; youth under age 18 make up a large percentage of that group. But very little is known about Latino children's use of violent interactive games, nor about Latino parents' knowledge, behaviors and concerns regarding media violence. Issues of language and acculturation make such research more complicated. We propose to translate our youth survey and protocols into Spanish, and to test them for cultural appropriateness. We will then survey a population of Latino middle-schoolers and conduct focus groups with a sample of their parents.

3) Because adolescent boys are more likely both to play violent video games and to display aggressive and violent behavior, past research has tended to focus on boys. However, government data shows that proportionately more girls are displaying aggressive behavior and becoming involved in the criminal justice system. Our own preliminary analyses show that the large majority of girls do play video games, and that some violent games such as the *Grand Theft Auto* series are nearly as popular among girls as they are among boys. Anecdotal evidence suggests that just as girls often display aggression differently than boys do, they may also use violent games differently. To learn more, we propose to replicate a series of focus groups we conducted with boys and their parents, with a group of game-playing adolescent girls and their parents.

Finally, to apply information gained from our recently completed studies and the new studies described above, we propose to develop and evaluate an educational Web site on interactive games for parents, emphasizing issues related to young adolescents' use of violent video games and other violent media content. Drawing on the comments and ideas of parents as well as child development and media experts, the Web site will include information to increase the "media literacy" of parents, so that they can better understand:

- The kinds of content often found in games preteens and teens play, and how to find out more about what's in their child's games.
- What kinds of game content or game play patterns might be of concern for their particular child.
- How parents might attenuate harmful effects of media—not only on promoting aggression, but also on other health risks such as drug and alcohol abuse and eating disorders, by teaching media literacy skills to their children.

- How parents might use media to promote good parent-child relations, pass along their family's values, and nurture their child's academic and social skills.

The site will include content in English and Spanish (including original content culturally tailored to Latinos). It will also include material that teachers or clinicians can print out and use to educate parents and adolescents.

We also plan to apply for additional funding to follow up on intriguing aspects of our research, such as the mental health implications of video game play (especially for children with ADHD or depression), and whether some sports games can be used to promote real-world sports and exercise.

Focus groups of school teachers and after-school program leaders would help us develop materials they could use 1) to teach media literacy skills to children and 2) to identify positive uses of video games (even commercially available games) to attract children's interest and promote exercise, logical skills, and social skills. Programs proven to be effective could perhaps be distributed via industry partnerships, to offset costs.

Finally, we hope to replicate our youth and parent surveys with a large national sample, and to combine this with "media diary" data and observational studies of young teens playing games in groups (in person and/or over the Internet), to understand more subtle effects of violent video and computer games. This allows us to address important practical questions, such as the role that the social context of violent game play might have on how games influence young teens, and how violent games with story lines that draw the player into pursuing pro-social or antisocial goals might affect children differently.

In sum, future research should focus on specific risks for more efficient and effective interventions, provide a knowledge base for effective policies, and—since policies cannot limit all exposure to inappropriate content in a free society—empower parents to understand and control their children's use of interactive media.