THE MANY ROLES VIDEO GAMES PLAY
IN OUR CHILDREN'S LIVES

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What first comes to mind when you think about video games? Many of us picture a child alone in his bedroom, staring at a screen. Some may think about video games causing aggressive behavior, or even violent crimes. Today I'll talk about what we think we know, and what we don't know, about video games and kids; what research suggests about the potential for video games to harm or benefit children; and ideas for helping children, and parents, get more out of their time with video games.

OUR "MENTAL FRAME" REGARDING VIDEO GAME INFLUENCES

When we see stories about video games in the news, more often than not, it's bad news. We read about video game addiction, or a new study that links video games to school problems or fighting.

Why do we tend to focus on potential harms rather than potential benefits? Our concerns about video games, and even the way we design studies, are shaped by the mental frame that electronic games must somehow be harmful to youth. And that mental frame has its roots in historical fears about earlier new media.

Movies

Comic books

Television

A HISTORY OF CONCERNS ABOUT NEW MEDIA

For example, in America in the 1930s, there was panic over popular gangster films like "Little Caesar," "Public Enemy" and "Scarface." Local censorship boards edited out scenes that they felt glorified crime. There were stories of children learning and copying crimes from gangster movies.

In the 1950s, crime and horror comic books were the big concern. Millions were bought and traded every month. The U.S. Senate held hearings about whether comic books could contribute to "juvenile delinquency": youth crime and immoral behavior. Dr. Fredric Wertham, a child psychiatrist, wrote a best-selling book called *Seduction of the Innocent* (1954). He believed that comic books isolated children in an imaginary world of blood and horror.

Then it was TV's turn. For example, in the 1990s, articles were published in academic journals about children copying cartoon martial arts moves from programs such as *Teenage Mutant Ninja Turtles*. Teachers worried that pretending to be cartoon characters made children aggressive and undermined healthy imaginative play.

We hear echos of those old fears in today's discussions about video games. We read that video games will make children aggressive, isolated, and undermine healthy social or emotional development.

In 2010, the Supreme Court of the United States was asked to decide whether the state of California could make a law forbidding the sale of "ultra-violent" video games to players under age 18. (It's entertaining to note that the governor of California, Arnold Schwarzenegger, who approved the law in question, made money from lending his voice to violent games based on his movies.) The supporters of the California law believed there was strong evidence that video games could cause physical and psychological harm to youth. In 2011, the Court rejected the law, stating that "any demonstrated effects [of violent video games on children] are both small and indistinguishable from effects produced by other media." See my op-ed on the ruling, at <http://www.nytimes.com/2011/06/28/opinion/28olson.html>

BACKGROUND ON MY RESEARCH

In 2000, I co-founded the Center for Mental Health and Media in the psychiatry department at Massachusetts General Hospital/Harvard Medical School, along with psychologist Lawrence Kutner (who is also my spouse) and child psychiatrist Eugene Beresin. My doctoral training was in public health, specifically health and behavior. The purpose of our Center was to study the effects of media on mental and physical health, and ways to use media to promote mental health and healthy child development.

I first began studying video games and children in 2003. It all began with a U.S. congressman who was worried about the effects of *Grand Theft Auto* games on youth violence and society, and was asking for proposals to study the issue. My son was a young teenager at the time, so my husband and I were also interested in this issue as parents.

*Most research focused
on potential harms*

Is aggression the same as violence?

First, I looked at the existing body of research on video game effects, and I found it disappointing. There were few studies of actual children in their homes or schools; and those few involved small groups not representative of the larger population of kids. Most studies were of college students, typically playing games for 20 minutes in laboratory settings—not at all like children's real-world play conditions.

Perhaps because of our history of concerns about harmful effects of new media--the vast majority of studies on video games looked at potential harms, especially the potential for video games to promote aggressive behavior. This is important, because if you don't look for something—such as potential *benefits* of video games—then you won't find it.

Another serious problem was vague or shifting definitions of "aggression" and "violence." Aggression is not the same as violence. Some studies confuse aggressive play with violence, but children often engage in rough-and-tumble play without intending to hurt each other. In other studies, hostile thoughts or feelings are assumed to equal violent behavior. (Anyone who's dealt with a toddler's temper tantrum can tell you there's a big difference between thinking about slapping a child and actually doing it.)

Studies typically dismissed the complexity and variety of video game content, as if games were all alike. Often, children were not even asked what games they played, only how much time they spent. Or, they were asked vague questions such as how much violence, on a scale of 1 to 10, was in their three favorite games. When you think about it, this is equivalent to researchers assuming that all books are the same, or that all books with violent content—from classic religious texts to vampire novels to Shakespeare's plays—would have the same influences on readers.

In sum, most of the existing research was of little use to me as a researcher or as a parent. I realized we knew very little about what I'd call the epidemiology of video game play (who's playing what, where, with whom, how much, and why). I wanted to know what normal, healthy use of video games looked like among kids today, what play patterns were unusual, and what patterns might be associated with a higher risk of problems. In other words, were there "markers" of increased risk that parents, physicians or psychologists could watch for?

Based on my proposal, I received a large two-year government grant, from the U.S. Office of Juvenile Justice and Delinquency Prevention. We assembled a multi-disciplinary research team.

## HARVARD MEDICAL SCHOOL STUDIES OF VIDEO GAMES AND VIOLENCE

cartoon by Woody Hearn of GU Comics

One of the ways our research was different is that we left the academic setting and talked to children. Our research team did a series of structured group interviews (focus groups) with a diverse group of 13-year-old boys and their parents. At schools in two U.S. states, we conducted in-depth surveys of over 1250 children aged 13 and 14, plus surveys of 500 of their parents. The group was fairly representative of the general U.S. population.

OUR FINDINGS: YOUNG ADOLESCENTS' USE OF ELECTRONIC GAMES

We first wanted to fill in basic gaps in knowledge about what games kids were playing, why, where, with whom, and how often. In our survey, we asked children to "list 5 games that you have played a lot in the past 6 months," including computer, video or handheld games. We found that these children were playing a remarkably diverse range of games. Over half were listed by only one child; 119 were listed by 5 or more young people.

Almost all of the children in our study played electronic games; only 17 had never done so. It was clear that electronic games are a normal part of modern childhood.
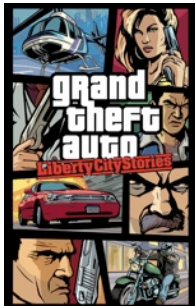
Which games were most popular among boys and girls?

Among the boys, by far the most popular game series was *Grand Theft Auto*, which they should not be able to buy until they are 17. Close to half played a *Grand Theft Auto* game regularly. Realistic sports games, such as American football, basketball, or skateboarding, were also popular.

Girls' game choices were more diverse. Simulation games, such as *The Sims* series or *Zoo Tycoon*, were popular; so were *Mario* games and *Dance Dance Revolution*.

One surprise for us was that 1 in 5 girls played a *Grand Theft Auto* game "a lot." I hope to eventually do focus groups with girls to find out how their perceptions and use of *Grand Theft Auto* differ from boys.

So, it's not only normal for young teens today to play electronic games; it's normal for them, especially boys, to play *violent* video games. In the U.S., games that are rated Mature, for ages 17 and older, almost always get that rating for violent content. Two-thirds of these 13- and 14-year-old boys, and 29% of the girls, played at least one M-rated game "a lot." I'll return to the issue of violent games later.

OUR FINDINGS: THE DIVERSE MOTIVATIONS FOR VIDEO GAME PLAY

An important goal of our research was to understand children's motivations for game play. We found that almost no research had been done from the perspective of the child game player. After a lot of discussion, our research team came up with 17 possible reasons for play, ranging from "I like to compete and win" to "because there's nothing else to do" to "it helps me get my anger out."

Children were asked whether each of these reasons applied to their own game play, on a 4-point scale from "strongly disagree" to "strongly agree." We found that a wide variety of motivations and goals were involved in video game play.

No surprise, the top reasons included "it's just fun," "it's exciting," and "it's something to do when I'm bored." But also very important were reasons such as "I like the challenge of figuring the game out" and "I like to compete with other people and win." Over half of children endorsed creative reasons for play, such as "I like to create my own world," "I like to 'mod' games," or "I like to learn new things."

To understand this better, we conducted a factor analysis: a statistical method that shows how these reasons for play clustered together. We found rough clusters of four types of game players:

Challenge gamers

They play mostly because: It's exciting; it's fun; I like the challenge of figuring the game out; I like to compete and win

It's developmentally normal for boys to compete in all kinds of games, and see where they rank in social status; video games are a fun way to do this. Boys can also gain status by being good at a popular game.

However, the urge to compete is not limited to boys. In our survey, well over half of girls who played games were motivated in part by the chance to compete and win.

It's also normal for many young teens to seek out excitement and new sensations; that's the attraction of roller coaster rides, horror films, and games with zombies.

Sociable gamers

They play mostly because: My friends like to play; to make new friends.

Many adults wrongly view video game play as an isolating activity (they picture a child playing alone in his bedroom or the basement). Kids see it as intensely social, and most play with friends. Boys were especially likely to play games with a group of friends, either in the same room or over the web. One boy told me that his peers at school mostly talked about "girls and games: the two Gs."

Children with mild learning disabilities, who were also more likely to report being bullied or excluded, were especially likely to choose "making new friends" as a reason they played video games.
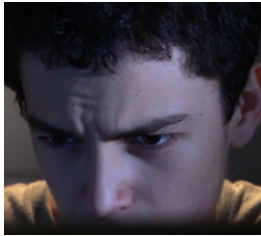
Bored gamers

They play mostly because: I'm bored; there's nothing else to do.

This needs no explanation.

Emotion-driven gamers
They play mostly: To forget my problems; to get my anger out; to feel less lonely.

 I was very interested to see how many children seemed to use games to manage their emotions, particularly boys. On the individual items, 2/3 of boys played to "help me relax," half said "it helps me forget my problems," and almost half agreed that games "help me get my anger out." In the factor analysis, almost 1/4 of children fit the emotion-driven gamer category. These teens were significantly more likely to play electronic games for more than 15 hours per week, to play almost every day, and to often or always play games alone.

Using video games this way may well be healthy up to a point (one might argue that it's better than using drugs or alcohol to deal with stress), but it needs more study.

OUR FINDINGS: THE APPEAL OF GAMES WITH VIOLENT CONTENT

In our survey, four reasons for play were endorsed significantly more often by boys and girls who regularly played Mature-rated games: to compete and win, to

get anger out, liking to 'mod' games, and liking "the guns and other weapons." (This was in retrospect a poorly worded question; it might mean that they liked explosions, or the interesting variety of weapons with different strategic uses. Also, a number of students had used guns in real life for deer hunting.)

Children who listed any M-rated games were much more likely to play 15 hours or more per week, and to play almost every day, compared to children who listed no M-rated games. Children with a game console and computer in their bedroom played more hours per week and more M-rated games. Children who often played with several friends, or with an older sibling, were more likely to play violent games.

In focus groups with young teenage boys, we also looked at this issue of what attracts kids to games. They said they liked games with a lot of action, that had enough variety and choice to keep them challenged, and that had environments and characters that *felt* realistic in some ways, without being real. Like other healthy young teens, these boys wanted to safely try on roles and test limits - to see what it feels like to be a "bad guy," and to see what consequences their behavior might have. The most popular violent games, such as the *Grand Theft Auto* series, let them do those things.

Many boys enjoyed fantasies of being powerful and respected, and doing things they couldn't do in real life. For example: "If I could be powerful like Jin in *Tekken*, when somebody's getting bullied and they can't defend themselves, I'd go help them out."

But the boys seemed very aware that game actions would have different consequences in the real world. When we asked boys to imagine what they'd do if they woke up tomorrow as their favorite game character, one said, "I don't know, because if I took the sword out in public, then I'd get arrested!" Boys also talked about using violent games to deal with stress, such as parents fighting; or get out anger.

THE ROLE OF VIOLENT OR SCARY CONTENT IN CHILDREN'S MEDIA

Of course, violence in entertainment did not start with video games. An attraction to violent themes seems to be part of normal development. Playing with those frightening images helps them master the physical and emotional sensations that go with being afraid. If you think about it, for our ancestors, learning to deal with fear, like running from danger instead of freezing, was a critical life-saving skill.

Scary stories and games let children experience and deal with those feelings at a time and place where they know they are safe. That's why fairy tales often dealt with themes like abandonment, murder, even cannibalism, and other content we now think of as "adult." (I still remember reading and being scared by European fairy tales when I was 8 or 9.)

Those old fairy tales gave a glimpse at adult secrets, the things we talk about be-

hind closed doors. When we asked one mother about the appeal of violent games for her son, she said "I think he would say that he wants to see the blood and guts…. It's something that in his world you don't see in real life. If the dragon gets his head cut off, he wants to know, is the blood red? Is it blue? Is it green?"

Violent games give children a chance to examine what they perceive as an adult world of power and mystery. All of this raises the question of whether violent media are inherently bad or problematic.

GRAND THEFT AUTO GAMES AND HEALTHY DEVELOPMENT?

Many parents worry that if their child enjoys playing a criminal in *Grand Theft Auto*, that this is rehearsal for real life. But in focus groups, boys told us repeat-edly that they liked the "unreality" of games such as *GTA*.

One said, "You get to see something that, hopefully, will never happen to you. So you want to experience it a little bit without actually being there."

Another said, "The whole thug thing seems kind of cool. But in real life, I wouldn't really want to have that life. In *Grand Theft Auto*, you don't mind just getting out of your car and killing somebody, because you're not going to get in trouble for it. You can just turn off the game system and you're done."

The open environment and choices, rather than the violence, may be the primary appeal of *Grand Theft Auto* games. As one boy explained, "*Grand Theft Auto* games were, I think, the first where instead of doing certain levels, you can just walk around, blow up cars and escape the police. Or work for the police, if you hap-pen to get a police car, or a tank, or a fire truck, or ambulance or whatever. You can catch criminals, or drive people places, or put out fires. It's more creative than just walking around, than shooting people and doing a mission when you feel like it."

You can be a "good guy" and a "bad guy"
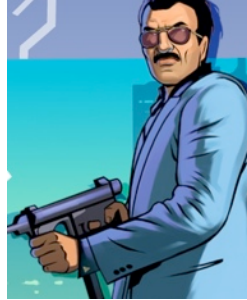
Another boy added, "And you can be a good guy and a bad guy at the same time!"

The mature content is an added attraction. Adults understand that *Grand Theft Auto* games are satires. The fact that something is taboo can pique a child's interest, even if he or she is too young to "get" many of the remarks and jokes.

Finally, as noted earlier, the violent content may attract children as a way to vent anger or stress. A boy gave me this example: "Last week, I missed one homework and my teacher yelled at me. When I went home, I started playing *[Grand Theft Auto] Vice City*, and did a cheat code to get a tank. I ran over everybody. And I smashed a lot of cars and blew them up.... Like, I was mad, and I turned happy afterwards."

WHAT YOUNG TEENS LEARN FROM VIDEO GAMES

Children learn a surprising variety of things from video games.

First, the content of games can *inspire new interests*, and encourage kids to read and research. A game such as *Age of Mythology* may stoke a child's interest in mythology, and related topics such as cultures, geography and history. The ability to "mod" this game through designing and exchanging maps and scenarios with other players adds to the appeal, and helps children acquire technical skills while having fun.

I give video games such as *Civilization* and *Age of Empires* credit for helping get my son interested in world history and international relations. He's now a college student majoring in politics and economics.

Sports games and real-world exercise: In focus groups, boys talked about learning new moves from sports games, and then going out and practicing them at the basketball court or on their skateboards. After hearing these comments, we went back to our survey data, recoded realistic sports games as a separate category, and did more analyses. We found that at least for boys, playing realistic

sports games was linked to spending more hours per week on physical activity.

As one boy said in a focus group, "In the games that are real, which are mostly the sports games, 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 you could possibly do that."

I'd like to study this in girls, and see if encouraging kids to play sports games could encourage exercise and promote health.

Visual-spatial skills: A few years ago, researchers at the University of Rochester in New York (Bavelier & Green) were studying how the brain processes complex visual information. They used college students in their studies, and noticed that video game players did better on many of their tests. So, they did an experiment and found that playing an action game, where you have to constantly monitor for enemies to pop out from anywhere, could improve visual-spatial skills, selective attention, and hand-eye coordination.

Playing action video games might be especially helpful to young teen girls; on average, girls tend to be behind boys on certain skills such as calculating the trajectory of a thrown ball, or imagining what a three-dimensional object would look like from different angles.

Planning and problem-solving: Games can help children's brain development in other ways. I noticed this when watching my son play *Legend of Zelda* video games: he had to search, negotiate, plan, try different approaches to advance. Games don't have to be labeled "educational" to help children learn to make decisions, use strategies and anticipate consequences.

Moral and life lessons: One unexpected theme that came up multiple times in our focus groups was a feeling among boys that violent games can teach moral lessons. With *Grand Theft Auto: Vice City*, for example, one said, "It depends on how you look at it. If you look at it for fun, it really doesn't teach you anything. But if you look at it as [Tommy's] life story, you go through a lot of changes. And you have to kill people to get where you're at.

"And the end of the game, you stop killing people because you don't want to be in that situation no more. Because, once you're in a gang, you really can't get out."

In some games, such as *Fallout 3*, coping with moral dilemmas is central to the story. And many war-themed video games allow or require players to take the roles of soldiers from different sides of a conflict, perhaps making players more aware of the costs of war.

WHEN IS VIDEO GAME PLAY A CONCERN?

I've talked about potential benefits of electronic games today because negatives get so much more attention. But we do need to consider them.

Sleep problems
In my research, children with a game console and computer in their bedroom played more hours per week and played more Mature-rated games. Other studies have found negative effects on sleep, health, or school performance when kids have free access to media in their bedrooms. I advise using the parental controls to limit game play time, or just keeping game consoles, computers and mobile phones out of bedrooms.

Isolation; mental health concerns
Playing video games alone all the time is not typical! This could even be a sign that a child is trying to cope with anxiety or depression by "self-medicating" with games. Again, keeping game systems out of bedrooms in a shared part of the home helps parents monitor for such problems, and to talk with their child about concerning behavior.

 If a child continues to isolate himself with games for weeks, his parent might consult a physician or mental health professional to check for other problems.

IS THERE A LINK TO AGGRESSIVE OR VIOLENT BEHAVIOR?

We analyzed our survey data looking for any relationship between playing Mature-rated games and behavior problems. We found that exposure to a higher "dose" of Mature-rated games (playing games for more days a week, and playing proportionately more games with violent content) was associated with a higher risk of bullying others and getting into physical fights.

When boys and girls were analyzed separately, these associations became weaker for boys and stronger for girls. (Remember that playing M-rated games is normal behavior for young teenage boys, and less common for girls.)

However, when we added other variables that might affect aggression into our analyses...we found that the violent video games/aggressive behavior link disappeared when we included measures of aggressive personality and stressful life events. It may be that aggressive children are more attracted to violent games, or that children under stress (facing family or school problems) use violent games to cope with that stress.

DOES VIDEO GAME BEHAVIOR SPILL OVER INTO THE REAL WORLD?

Some adults worry that teens will bring the violent behavior from video games into the real world. The concerns expressed by 13 year olds in focus groups demonstrate how well a healthy child can separate fantasy and reality.

While the boys felt that it was not a problem for them to play violent gory M-rated games, they were very concerned about two other things. First, what they called "swears." One said, "I don't like my little brother or sisters to watch me play *Grand Theft Auto: Vice City* because of the language. They might swear at other people 'cause of the attitude—how they do it in *Vice City*. They always give people attitude and swear at other people [in the game]. And that could make my family look bad, like my mom isn't raising us regular."

And their other big concern? Consider this excerpt from one of our focus groups: a dialogue between a researcher and three boys.

Researcher: "Are there any games that you think you shouldn't be allowed to play at age 13?"

Patrick: "Sort of like…*The Sims."* [A nonviolent game in which the player creates computer-simulated people and their environment]

Ramon: "Yeah, *The Sims*. 'Cause they go to people and, like…." (pause)

Patrick: "They go to, like, people and, like…." (pause)

Ramon: "Kiss."

Patrick: "Yeah."

Researcher: "So, because of the kissing, you don't think you should be able to play that game. How old should you have to be?"

Ramon: "Kissing? Like, 15."

Patrick: "15, yeah. Maybe 14."

Josh: "I agree with both of them."

Think about that. Swearing and kissing are two things that boys can do—in fact, are almost certain to do—in real life. They know that they won't have to fend off zombies. But they *will* have to face girls.

NEEDS FOR FUTURE STUDIES

So what don't we know about video game effects on youth? A lot.

For example, my research focused on children attending public schools, basically normal and healthy. We have almost no data on children who have emotional or intellectual disabilities, and how games may affect them (either benefit or harm). This fall, a psychiatrist colleague at Harvard and I will begin a study of gameplay among children who've been diagnosed with mental health problems.

If our real concern is that violent games may encourage children to act out in the real world, we need to study children in the juvenile justice system, who have already attempted to damage people or property, to see if their game play patterns are different.

We also need studies of children playing in groups, since the interaction among kids is a big part of gameplay and therefore of how games could influence children.

SOME FINAL THOUGHTS AND IMPLICATIONS

First, remember that video games are a medium, like books or films. They are not good or bad in themselves. It's all about content, context, developmental appropriateness, and balance with other activities (especially sleep).

Think about how the child views the game, and the various needs that gaming in general and particular games may meet for him or her. Consider what attracts teens to complex, open-ended games such as *Grand Theft Auto*. How might we take that into account when we design games for education, or if we want to steer children to less violent or more age-appropriate games?

Young teens like a game with the freedom to make a lot of choices, instead of one with a more structured story. This encourages healthy testing of roles: "What would it feel like to be this kind of person? How would people treat me if I acted this way?"

Children also like to see how those choices affected the evolution of their character over time, which perhaps could encourage moral development. Incorporating facts can make games feel more real. These could be anything from geographical locations and historical events, to weaponry, training procedures, or outcomes of behaviors (like getting arrested).

Real-life details may also encourage children to develop and pursue new intellectual interests—and that's something parents can support.

LET YOUR CHILD TEACH YOU

One thing children said they liked was teaching others how to play. Being able to teach can give a child a real sense of pride and self-esteem. If a parent talks about video games being a waste of time, she is really saying to her child, "Your interests aren't important." What if a parent instead were to say, "You're a smart kid, so if you like these games, there must be something to them. Can you teach me how to play one of your games?"

This photo shows a friend of mine; her ten-year-old daughter is teaching her to play a game called *Guitar Hero*. Look how proud the daughter looks, and how happy her mom is. In our survey, kids said they seldom played video games with a parent, but most said they'd like to play games with their parents.

And there's an extra benefit for parents: Playing video games together builds trust and respect, and may make your child more willing to talk about what's important to her, and the decisions and dilemmas of her everyday life.

If you'd like to find out more about video games and kids, download the full text of my research publications, or watch videos with advice for parents, go to www.grandtheftchildhood.com
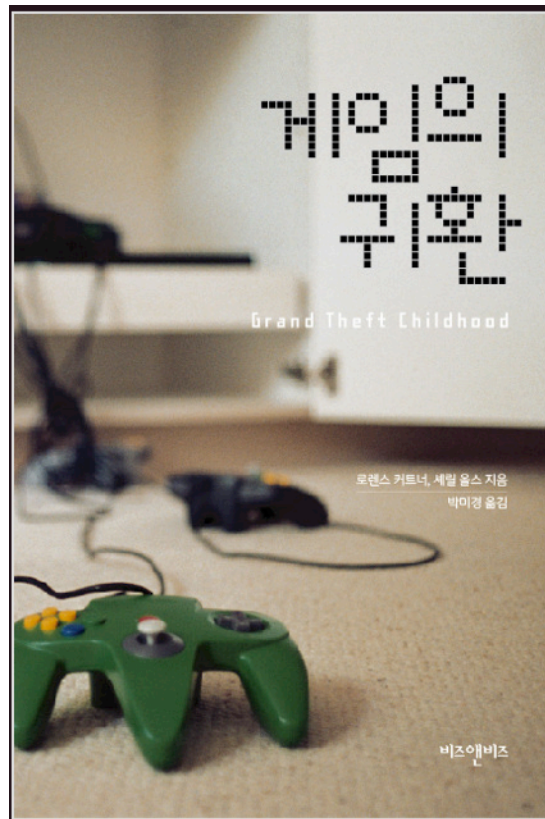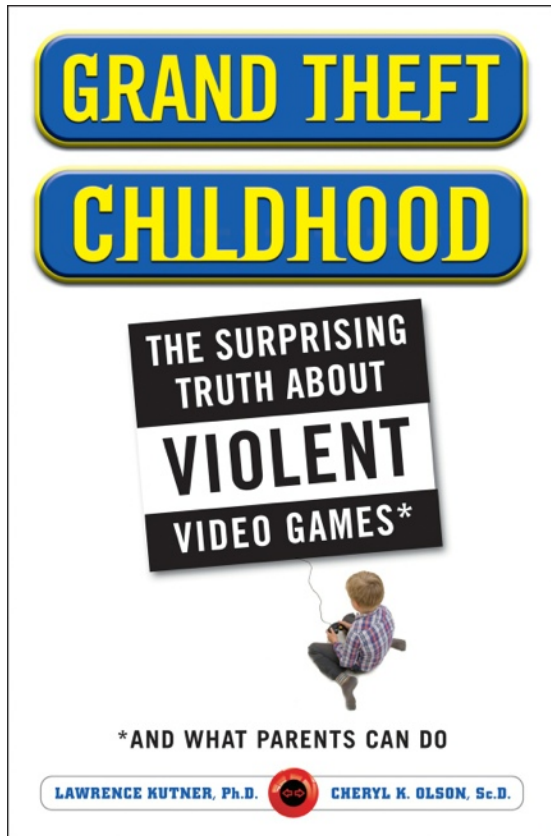
Cheryl K. Olson was the principal investigator for a two-year, $1.5 million research project on teens and video/computer games, funded by the Office of Juvenile Justice and Delinquency Prevention, U.S. Dept. of Justice. Along with a series of journal articles, she co-authored a popular book based on that research: *Grand Theft Childhood: The Surprising Truth About Violent Video Games, and What Parents Can Do* (Simon & Schuster, 2008). She holds a Doctor of Science degree in health and social behavior from the Harvard School of Public Health.