

Violent Video Games and Children: What Everyone Should Know

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- November 21, 2008

Professional 30 Year History

- 1979-94—Early career phase, training in Boston at Harvard; beginning interest in how media influences children
- 1994—Move to Baltimore, clinical experiences motivated involvement at the national level with professional organizations
- April 2001—The Impact of Media Research Review article published AACAP
- 2001-Present—Two chapters, many speaking engagements and ongoing involvement with professional organizations

Overview: Four Goals for What Everyone Should Know

- I. Think about the Information Age and the evolution of the Entertainment Generation
- II. Understand the Video Game Industry
- III. Understand the Video Game Research
- IV. Implications for Parents, Schools, Clinicians and Government



I. The Information Age and the Entertainment Generation

- Children born after 1994 will not know the world without the Internet.
- As entertainment media has become less expensive it has expanded to being everywhere.
- There has become an expectation for entertainment even in education.

Media Availability in Bedrooms

- Television 65%
- VCR 36%
- Radio 86%
- CD player 75%
- Video game player 45%
- Computer 21%; Internet access 10%
- Cable/satellite 30%; Premium cable 15%

Gender and Race/Ethnicity

- Boy homes (59%) more likely than girl homes (32%) to contain a video game system
- African-American and Hispanic youth are more likely than white to have TV in their bedroom
- African-American more likely than white to have video game or VCR in their bedroom

Relationship to Income

- Youth in low-income communities are more likely than those in high-income to report having their own television (73% vs. 56%), their own VCR (44% vs. 31%), and their own video game system (50% vs. 40%)

Time Spent Playing

- 1993 ave. time spent playing 4.2 hrs./wk.
- 2000 ave. time spent playing 7 hrs./wk.
- Gentile published 2004 for children age 14 ave. time 9 hrs. per wk, males 13 and females 5 hrs.
- MMORPG—15 hrs. per wk is considered a casual player, with 30 hrs. per wk common

Harris Interactive Survey 2007

- Ave. 8-12 yr.old 13 hrs per wk
- Ave. 13-18 yr.old 14 hrs per wk
- Tween boys (8-12) ave. 18 hrs per wk
- Tween girls (8-12) ave. 8 hrs per wk

Same Harris Survey

- 23% of youth say they have felt "addicted to video games"
- 31% of males report feeling "addicted"
- 13% of females report feeling "addicted"
- 44% report that their friends are addicted

Same Survey

- Pathological use was associated with lower grades, game system in the bedroom (65%), and more time playing (ave. 24.5 hrs per wk), and a diagnosis of attention deficit problems
- Overall 81% of youth play and 8.5% are addicted

Gallop Poll Survey 2003

- 62% teens play at least 1 hour per wk.
- 25% teens play 6 or more hours per wk.
- 70% American teenage boy have played Grand Theft Auto
- 34% of boys in a physical fight in the last year had played GTA while 17% who were in a fight had not played

Other Facts of Note

- 2001 FTC sting operation 78% of children age 13- 16 were able to purchase a M-rated game
- Of the 600 new games introduced in the first 9 months of 2003, one third carried a warning of violence or sexual themes, compared to 5% of games released 3 yrs. ago

Grand Theft Childhood by Kutner and Olson

- Survey of 1200 middle school students and where, when and why they play 2004 (book 2008)
- 94% played video games
- 45% of boys played more than 6hrs/wk and 13% more than 15 hrs./wk
- 20% had video games in their bedrm and twice as likely to be in high utilizer grp and three times in highest use grp

Kaiser Foundation

- 1000 children 8-18 yrs
- 80% had a video game console in the home
- 50% had one in their bedroom
- Average play was 49 minutes per day



II. Understanding the Video and Computer Game Industry

- Growth Industry
- All about Money
- Driven by Global Markets
- Self-governed

Evolution of the Video and Computer Game Industry

- 1970's Pong, 1980's Pac-Man
- 1993 Mortal Combat, 1999 Doom
- 2003 Grand Theft Auto, 2007 Halo
- 2003 MMORG--massively multiplayer online role-playing games--Everquest 2003, World of Warcraft 2004, Warhammer Online: Age of Reckoning released Oct. 2008

Growth Industry

- 1985---\$100 million
- 2001---\$9.4 billion
- 2002---\$10.3 billion
- 2002---Globally \$28 billion
- 2007 forecast for Portable Game Market in excess of \$10 billion
- 2011 forecast for Video Game Market \$44 billion

The Video Game Industry is all about Money....

- Halo 3---best seller 2007, \$170 million the first day on the market September
- Grand Theft Auto IV (GTA IV)---\$310 million its first day April 29, 2008 and \$500 million in the first week
- Industry currently spends \$90 million in advertising with a goal of \$804 million in the next 5 years

The Market is Global and by Platform

- Best selling games are rated by market---North America, Japan and Europe
- And rated by platform---Nintendo Wii, Xbox 360, and PlayStation
- In Europe---Xbox 1, Guitar Hero III, 2, GTA IV, 3, Soul Calibur IV, 4, Halo 3; Playstation 1, Metal Gear 4 (released June 2008)

GTA IV

<http://www.youtube.com/watch?v=JbZ2zoNCww>

Think Big Business

- Game Daily website reported---GameStop Acquires France's Micromania for \$700 million, 322 retail locations in France, world-wide presence of 5,889 locations, 1077 in Europe with the addition of France
- Subject to clearance by the European Commission

MMORPG Growing

- 2004---8% pay to play
- 2006---Revenue \$2 billion, 6.5% of market
- 2007---30 million subscribers, 73% Pacific market
- By 2011 revenue prediction \$11.5 billion, (Online Games: Global Market Forecast published Sept. 2007)

The Industry is Self-Governing

- 1994---Entertainment Software Association (ESA), a lobbying group, suggested to the United States Congress, the creation of a rating board, the Entertainment Software Rating Board (ESRB)
- Criteria for board members---not professional gamers
- Games are not played completely due to time constraints

The ESRB System

- Two components---an age symbol on the front and content descriptor beside the age symbol on the back
- Thompson JAMA July 2001---list of 672 E games, played the first 55, 35 depicted intentional violence
- To advance 60% required injuring or killing
- 44% with no content descriptor of violence contained violence

More about ESRB System

- The System does not cross platforms--an E game on Nintendo might be a T game on Playstation
- There is ambiguity about what constitutes minimal violence
- The System is not parallel to other media rating systems such as the Motion Picture Industry or the Television Industry

What the ESRB does not say

- Is violence rewarded? Does one have to be successful at violence to advance in the game?
- Is violence treated with humor?
- What kinds of weapons are used by the player?
- Is there gun violence with the player shooting the gun?
- Is there a story with positive moral value?

III. Understanding Video Game Research--First the Broad Issues

- Ethical issues with designing definitive research
- Technology advances rapidly and research lags behind
- Disagreement about models for aggression
- Aggression and/or bullying, and/or lack of empathy
- Vulnerable viewers--those more likely to mimic or reenact

Newly Emerging Areas

- Impact of play on sleep
- Impact of play on memory and executive functioning
- The potential for addiction
- Possible benefits

Second: The Types of Research

- Experimental studies of exposure---short term exposure and long term exposure
- Laboratory based experiments
- More recently the effect of violent media exposure on brain functioning
- The presence of traits which increase vulnerability

Anderson and Dill 2000

- "Video Games and Aggressive Thoughts, Feelings, and Behavior in the Laboratory and in Life"--Two studies
- General Affective Aggression Model
- Study 1: Short term exposure increases aggressive behavior
- Study 2: Aggressive personalities will behave more aggressively

Study 1--Effects of Long-term Exposure

- 227 college students--78 male, 149 female
- Self-report questionnaire aggressive behavior, delinquency, and world view
- Video game questionnaire--exposure to game violence, amount of time playing, regardless of content

Results

- Violent video game play was a predictor of delinquency compared
- Positive correlation between violent video games and aggressive personality
- Total time spent playing has a detrimental effect on grades

Study 2---Short-term Effects

- 210 college students, 104 female, 106 male
- Exposure to Wolfenstein 3D and Myst
- Cover story of "Learning Curve"
- Follow-up of State Hostility and Aggressive Behavior

Result Study 2

- Playing violent video games increased accessibility of aggressive thoughts and behaviors
- Playing VVG did not increase state hostility

Important Points from Studies

- Violent video game effect was stronger for those high in trait aggressiveness than for those low in trait aggressiveness
- Long-term bidirectional causality effect
- Danger appears to be in what they teach versus the emotions they incite

Unique Dangers of VVG's

- Identification with the aggressor increases postviewing aggression
- Active participation
- Addictive nature
- "VVG's provide a forum for learning and practicing aggressive solutions to conflict situation."

Journal Of Adolescence Feb. '04

- Opening editorial: Contemporary issues in adolescent video game playing: brief overview and introduction to the special issue---Anderson, Funk, and Griffiths
- Special issue requested in May 2001
- Call for papers listed 7 topics of interest

Seven Topics

- Short term effects
- Long term effects
- Video game addiction
- Usage patterns
- Social and family relationships
- Positive aspects
- Parental controls, ratings systems, and/or other interventions

Gentile and colleagues

- The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance
- 607 8th and 9th grade students surveyed, ave. age 14 years
- Student habits, attitudes, and knowledge about video games, school performance, demographic data, and trait hostility

Variables

- Violent video game exposure
- Amount of video game play
- Trait hostility
- Parental limits
- Arguments with teachers
- Grades
- Physical fights

Descriptive Statistics

- Ave. time spent playing---9 hrs. per wk, with males 13 and females 5
- Boys prefer violence 68% vs. 22% girls
- 49% of the favorite games named by boys had high violent content compared to 20% for girls

More Descriptive Data

- By teen report, only 13% of parents always or often put limits on the amount of time they are allowed to play
- Only 31% think their parents understand the rating system
- Only 15% said their parents always or often check the rating with 53% saying never

More Descriptive Data

- 23% reported getting into arguments with their teachers almost weekly or almost daily
- 34% reported getting into a physical fight within the last year
- Gender differences--boys 28% for arguments versus girls 17%
- Fights--boys 47% versus 19% for girls

Associations

- Exposure to VVG and amount of play were both associated with trait hostility, the frequency of getting into arguments and with physical fight, and negatively associated with school grades
- Parental limits correlated negatively with arguments and trait hostility and positively with school performance

More Associations

- Adolescents who were more hostile consumed more media, played more VVG's and preferred more VVG's and have fewer parental limits on their video games

Exposure to video game violence

- Low hostility and low exposure teens had lowest incidence of fights--4%
- Highest hostility and low exposure relatively low incidence---28%
- Low hostility and greatest exposure had incidence of 38%
- High hostility and high exposure---63%

More Path Analyses

- Amount of play, controlling for VVG exposure, negatively associated with school grades
- Effect of amount of play on arguments with teachers was indirect and mediated through trait hostility

Points from Discussion

- Low hostile students with highest exposure to VVG more likely than high hostile with lowest exposure to be involved in fights--38% compared to 28%
- Amount of play negatively related to school performance
- Parental involvement appears to be protective factor

Funk and colleagues

- Violence exposure in real-life, video games television, movies, and the internet: is there desensitization?
- 150 students from elementary schools and daycare center
- 82 boys and 68 girls, ave. age 9.99

Four Measures

- Background questionnaire for demographic information and ave. time with various media forms
- KID-screen for adolescent violence exposure
- The attitudes towards violence scale
- Children's empathy questionnaire

Results

- Violent Media Preference score-- multiplying the % violent choices by time spent per wk.
- High exposure to VVG was associated with lower levels of empathy and more positive attitudes towards violent behavior

Griffiths and Colleagues

- Online computer gaming: a comparison of adolescent and adult gamers
- 540 online gamers surveyed for the most popular online game "Everquest"
- MMORPG=massively multiplayer online role-playing games---400,000 players with typically 2000 players at one time

Sample

- 16% of the sample mean age of 17 yrs., with a range of 12-19 yrs.
- Mean age of the adult sample 30 yrs., with range of 20-70 yrs.
- 93.2% of the teen sample was male with the adult sample 79.6% male and 20.4% female
- Seven different countries---77.4% US

Data

- One-third of the adolescents had dropped out of school
- 80% of both adults and teens reported sacrificing at least one thing to play, with adults/social events and teens/education or work
- Almost one-fifth of both groups said they sacrificed sleep in order to play

Anderson

- An update on the effects of playing violent video games
- Meta-analysis of 32 independent samples involving 5240 research participants
- Effect size
- Age groupings under 18 and over

Results

- There was a significant effect of exposure to VVG's for each of the following variables:
- Increase in aggressive behavior
- Aggressive cognition
- Aggressive affect
- Physiological arousal
- Decreases in helping behavior

Best practices samples

- Correlational studies produced slightly larger average effect on aggressive behaviour than did experimental studies
- For four of the five variables the violent video game effect was significant for both experimental and correlational studies
- Exception of no correlational studies on physiological arousal

Final word from Anderson

- "The best estimate of the effect size of exposure to violent video games on aggressive behavior is about 0.26.
- This is larger than the effect of condom use on decreased HIV risk, the effect of exposure to passive smoke at work and lung cancer, and the effect of calcium intake on bone mass."

November 2008 Pediatrics

- Study with 3 groups: 181 Japanese a. 12-15; 1,050 Japanese a. 13-18; U.S. 364 a. 9-12
- Japanese---younger how often played five different violent video games; older violence in favorite game and how much time per wk.
- U.S.--listed their 3 favorite games and how often they played

Method

- Japanese rated their own behavior---physical aggression such as hitting, kicking, or getting into fights with other kids
- U.S. Kids rated themselves, but also reports from peers and teachers examined

Results

- In every group those exposed to more violent video games became more aggressive over time than their peers with less exposure
- This held when the researchers took into account those children who were low in aggression at the beginning of the study

Public Debate

- Huesmann—2 ways violent media link to violent behavior: imitation and desensitization
- Olson—it is the context and the goals of the violence; violent video game label is too broad
- Walsh—real impact is in shaping norms and shaping attitudes

Impact on Sleep and Memory

- Dwork—11 kids in a cross-over design
- 1hr violent game play prior to sleep; 1hr non-violent television watching; 1hr neither
- After violent game play longer sleep latency by 25 minutes and decrease in slow wave sleep/restorative sleep
- Performance on verbal memory test the next day poorer when violent games played

Impact on Executive Functioning

- Two studies using the same sample
- Sample includes normals compared to those with Disruptive Behavior Disorder
- First study uses standard measures
- Second study uses fMRI

Kronenberg, Mathews, et al 2005

- Media Violence Exposure and Executive Functioning in Aggressive and Control Adolescents
- Same sample---27 DBD matched with controls
- Measured MVEI, deficits in self-report, parent-report, and laboratory based measures of executive functioning

Results of CS Task

- Control faster reaction times and more accurate responses than DBD for activation phase, control phase and entire task
- No sig diff's between all high MVEI and all low MVEI
- Low MVEI DBD had sig greater accuracy during the activation phase and the entire task compared to high MVEI DBD

Results

- Moderate to strong relationships between high MVE and deficits in self-report, parent-report and laboratory measures of executive functioning
- MVE interaction effect with Connors' Continuous Performance test stronger for DBD group
- MVE related to poorer executive functioning and stronger relationship for DBD

Mathews, Kronenberger et al May 2005 Functional MRI Study

- Media Violence Exposure and Frontal Lobe Activation Measured by Functional Magnetic Resonance Imaging in Aggressive and Nonaggressive Adolescents
- 71 adolescents a. 13-17: 28 withdx, DBD with aggression and 43 in control group
- Neuropsychologic evaluation, assessment of exposure to violent video games, and fMRI while performing counting Stroop task

Procedure and Measures

- Visit 1---Psychiatric screening and Media Exposure Measure (Media Violence Exposure Index, MVEI)
- Visit 2---Anatomic brain imaging and fMRI experiments (counting Stroop task, CS)
- Regions of interest---dorsolateral prefrontal cortex (DLPFC) bilaterally and divided into middle frontal (MFG) and inferior (IFG), anterior cingulate cortex (ACC)

Results of Matching Procedure

- DBD group---11 high MVEI and 8 low
- Control group---8 high MVEI and 11 low
- Control group---sig activation in the ACC, left MFG and left IFG
- DBD group---cluster activation only in the MFG bilaterally
- Entire low MVEI and low MVEI controls---sig ACC but not in any high MVEI group

More Results

- High MVEI or low MVEI DBD grp---no significant ACC clusters
- High vs low MVEI controls---clusters in the IFG and ACC only in the low MVEI and cluster in the left MFG only in the high MVEI
- High and low MVEI DBD---clusters in the MFG, and no sig in ACC or IFG

Conclusions

- Difference in activated network between control and aggressive---lack of sig activation in ACC and IFG in DBD
- Entire high MVEI showed activation in the MFG but not in the ACC or IFG just like the DBD subjects and dissimilar to the low MVEI controls
- Low MVEI unilateral activation of MFG

Potential for Addiction

- June 2007 American Medical Association reviewed; insufficient evidence and asked the American Psychiatric Association to review; they agreed for now, yet it remains under review for DSM V
- DSM IV Criteria for Substance Dependence: 3 or the following 7—tolerance, withdrawal, use more than intended, increase use over time, trouble stopping, time spent obtaining, give up other things for use in spite problems it is creating

Addiction Data

- Survey of 7000 video game magazine readers—12% endorsed criteria for addiction
- Charlton 500 online users similar %
- Brower—looked at time distortion, players underestimated the amount of time played; novices overestimated
- Had trouble stopping when a buzzer goes off

Benefits of video game play

- Simms—VG can improve visual spatial cognition with violent games giving greater improvement
- Greenfield 2003—VG can improve visual attention
- 2005 study of laproscopic surgeons trained with video games did better than those who did not receive the video game training

IV. Implications for Parents, Schools, Clinicians and Governments

- Media literacy movement
- Integrating media literacy into clinical practice
- Role of government in research, public education and regulations that protect children

The Media Literacy Movement

- This instrument can teach, it can illuminate; yes, and it can inspire. But it can do so only to the extent that humans are determined to use it to those ends. Otherwise it is merely wires and lights in a box. Edward R. Murrow, 1958.
- Media literacy began in 1992

Definition from The National Leadership Conference on Media Literacy 1992

- Media literacy, the movement to expand notions of literacy to include the powerful post-print media that dominate our informational landscape, helps people understand and negotiate meanings in a culture made up of powerful images, words and sounds. Patricia Aufderheide

The Role of Primary Care Providers and Schools

- Primary Care Providers—basic education for parents beginning before age 2 yrs. Printed material, educational videos in waiting rooms, and clear instructions about screen time. Clarity about increased health risks for: aggression and desensitization to violence, obesity, lower grades in school, and addiction.

The Role of Schools—A Media Literate Person Understands:

- All media messages are constructed for a purpose
- Media messages shape our understanding of the world
- Each person interprets media messages uniquely
- Mass media are driven by powerful economic and political forces (From the American Academy of Pediatrics 1998)

Integrating Media Literacy into Clinical Practice as Related to Video Games

- Take a history of all media and specifically video game play
- Understand the information in the history
- Develop a plan to intervene if necessary
- Involve the parents in the intervention while continuing to work with the child

How to Take a Media History

- Review the child's day
- Ask specifically what media is in the child's bedroom. Is video game play available in the bedroom.
- What are the child's preferred games
- Do the parents understand the rating system and utilize it?
- Are there rules about screen time?

What does the history mean?

- Content is important---check out the content using the web
- Amount of time spent watching or playing is important
- Parental monitoring and discussion is key

Clinical questions to be answered

- Is the child being over-stimulated by the games being played based on his/her age and developmental level?
- Is media contributing to sleep problems?
- Is media contributing to aggression?
- Is media contributing to hypersexual behavior?

More clinical questions

- Are there symptoms of executive functioning or aggression that playing violent video games may worsen?
- Is there a history of trauma which might be exacerbated by violent video games?
- Are the caregivers able to separate their needs for entertainment from their children's?

As a clinician

- Don't be afraid to ask about video games--- let the kids tell you about their world
- Check out content on the Internet
- Come back to the topic after you have become more knowledgeable about content and rating
- Encourage parents to actively monitor and use the rating systems

More tips for you as a clinician

- Talk with parents separate from the child/teenager about how they need to monitor and limit video game play
- For divorced couples, understand that the rules may be different at different homes
- Be active in providing parents with recommendations
- Adapt your recommendations to the parents' media literacy and ability

Media Education Sites:

- Center for Media Literacy
www.medialit.org
- Common Sense Media
www.common Sense Media.org (rates 926 video games)
- Kaiser Family Foundation
www.kff.org/entmedia/index.cfm

More Sites

- Media Education Foundation
www.mediaed.org
- New Mexico Media Literacy Project
www.nmmlp.org
- National Institute on Media and the Family
www.mediafamily.org
- Media Awareness Network www.media-awareness.ca/english (Canadian)

One More Important Site

- Center on Media and Child Health, Children's Hospital Boston, Harvard Medical School www.cmch.tv
Dr. Michael Rich, Director;
motto: Keeping Children Healthy in the Information Age

Content Sites

- Most all games have their own websites with trailers
- www.gamespot.com
- www.gamepro.com

Recommendations for Parents

- Limit children's total media time to 1 to 2 hours per day
- Remove video games and the Internet from bedrooms
- Become knowledgeable of the ratings systems and use them to monitor video games purchased

More Recommendations

- Use Internet sites to learn about video games and online games
- Support efforts for media literacy in schools
- Encourage alternative entertainment for children--reading, athletics, hobbies, and creative play
- Become media wise---visit media education websites to stay current

Role of Government in Research, Public Education, and Regulation

- Research—Fund brain research to understand more about brain functioning in at-risk populations compared to normal controls
- Longitudinal follow-up of at-risk groups with and without violent video play histories
- Morphology and functional MRI of at risk groups and controls with long term follow-up

Public Education

- Fund public education campaigns to explain risks to parents early in the parenting experience
- Public education akin to anti-smoking, healthy diet, going green, etc.
- Extend public education into schools in the form of media literacy

For Schools

- Promote alternatives to technology and media—for every dollar given to a school for computers, match with dollar for art, music, dance, play areas, etc.
- Provide teachers with education about the role media plays in the lives of children
- Provide guidance for teachers regarding the seductive nature of using media to teach

Government Regulation

- Free speech for adults/protection for children: The industry has the right to make violent games, however, children need to be protected from them until their brains have matured.
- Redesign the rating system and monitor for fidelity to design
- Limit the marketing of violent games to children—television ad placement, shelf placement, billboards, print ads

Government Regulation and Online Games

- Require the online game companies to publicize the addictive potential of their products, much like cigarette warnings
- Require the online game companies to cooperate with research into the outcome of those who subscribe
- Consider built-in warnings when play reaches a pre-set limit and consider automatic cut-off

Summary of What Everyone Should Know—10 Lessons

- 1. The content of video games matters.
- 2. The amount of time spent playing matters.
- 3. Some children are more vulnerable to the negative effects than others.
- 4. Children need alternatives to video games.
- 5. The public needs to be educated about video games and the potential negative effects.

The last 5 lessons

- 6. Parental supervision of amount time playing and of content is key.
- 7. Schools should teach media literacy.
- 8. Clinicians need to stay current with media trends and learn to take a media history.
- 9. Government has an important role in funding research and public education campaigns.
- 10. Government needs to consider how to better regulate the marketing of violence to children.

Final Perspective

- Our youth now love luxury. They have bad manners, contempt for authority; they show disrespect for their elders and love chatter in place of exercise; they no longer rise when elders enter the room; they contradict their parents, chatter before company; gobble up their food and tyrannize their teachers.
Socrates,
Fifth Century B.C.