

Notes for a Presentation on Media Violence Research Canadian Association for Victim Assistance Conference October 23-25, 2006 Presented by Valerie Smith

Introduction

A large body of research exists on the harmful effects of exposure to violent entertainment. While there are those who dispute the research findings, the majority of medical and mental health experts in North America agree that exposure to violent media can have harmful effects, particularly on children. This was reflected in a joint statement released in July 2000 by the American Academy of Pediatrics, American Psychological Association, American Academy of Child & Adolescent Psychiatry, American Medical Association, American Academy of Family Physicians and the American Psychiatric Association. Their *Joint Statement on the Impact of Entertainment Violence on Children* presented to a Congressional Public Health Summit stated:

At this time, well over 1,000 studies -- including reports from the Surgeon General's office, the National Institute of Mental Health, and numerous studies conducted by leading figures within our medical and public health organizations -- our own members -- point overwhelmingly to a causal connection between media violence and aggressive behavior in some children. The conclusion of the public health community, based on over 30 years of research, is that viewing entertainment violence can lead to increases in aggressive attitudes, values and behavior, particularly in children. Its effects are measurable and long-lasting.¹

In their 2003 position statement, *Impact of Media Use on Children and Youth*, the Canadian Paediatric Society (CPS) stated, "The influence of the media on the psychosocial development of children is profound", "data showing the negative effects of exposure to violence, inappropriate sexuality and offensive language are convincing", and the Society advises physicians "who see a child with a history of aggressive behaviour [to] inquire about the child's exposure to violence portrayed on television".²

To help counter these effects, the CPS created *Media Pulse*, an initiative designed to "raise awareness about the potential impact of media use and messages on the health and well-being of children and youth":

Media Pulse will help health professionals to understand the powerful influence of media in the lives of their young patients, become familiar with the current research and incorporate this knowledge into the practice setting.

The Media Pulse project also includes a guide for health practitioners. This handbook will present current research, provide physicians with an assessment tool for measuring media use in the home and offer practical tips for both physicians and parents.³

The *Media Pulse* Advisory Committee includes Dr. Simon Davidson, Chief of Psychiatry at the Children's Hospital for Eastern Ontario, Dr. Arlette Lefebvre, Staff Psychiatrist at the Hospital for

¹*Joint Statement on the Impact of Entertainment Violence on Children* presented to the Congressional Public Health Summit by the American Academy of Pediatrics, American Psychological Association, American Academy of Child & Adolescent Psychiatry, American Medical Association, American Academy of Family Physicians and the American Psychiatric Association, July 2000

²*Impact of Media Use on Children and Youth*, Canadian Paediatric Society position statement, 2003

³*Media Awareness Network and Canadian Paediatric Society Join Forces on Media's Impact on Health*, Media Awareness Network news release, Ottawa, April 10, 2003

Sick Children in Toronto, and Dr. Peter Nieman, Paediatrician at the Alberta Children's Hospital in Calgary.⁴

In 2001, the American Academy of Pediatrics issued a *Policy Statement* on media violence that said:

The American Academy of Pediatrics recognizes exposure to violence in media, including television, movies, music, and video games, as a significant risk to the health of children and adolescents. Extensive research evidence indicates that media violence can contribute to aggressive behavior, desensitization to violence, nightmares, and fear of being harmed.

...research studies have examined the association between media violence and violent behavior; all but 18 have shown a positive relationship. Consistent and strong associations between media exposure and increases in aggression have been found in population-based epidemiologic investigations of violence in American society, cross-cultural studies, experimental and "natural" laboratory research, and longitudinal studies that show that aggressive behavior associated with media exposure persists for decades. The strength of the correlation between media violence and aggressive behavior found on meta-analysis is greater than that of calcium intake and bone mass, lead ingestion and lower IQ, condom nonuse and sexually acquired human immunodeficiency virus infection, or environmental tobacco smoke and lung cancer - associations clinicians accept and on which preventive medicine is based without question.

Children are influenced by media - they learn by observing, imitating, and making behaviors their own. Aggressive attitudes and behaviors are learned by imitating observed models. Research has shown that the strongest single correlate with violent behavior is previous exposure to violence. Because children younger than 8 years cannot discriminate between fantasy and reality, they are uniquely vulnerable to learning and adopting as reality the circumstances, attitudes, and behaviors portrayed by entertainment media.⁵

In testifying before a U.S. Senate hearing on violent video games in 2000, Professor Craig Anderson⁶, one of the most prominent aggression researchers in North America, provided the following facts:

Fact 1. *Exposure to violent TV and movies causes increases in aggression and violence.*

Fact 2. *These effects are of two kinds: short term and long term. The short-term effect is that aggression increases immediately after viewing a violent TV show or movie, and lasts for at least 20 minutes. The long-term effect is that repeated exposure to violent TV and movies increases the violence-proneness of the person watching such shows. In essence, children who watch a lot of violent shows become more violent as adults than they would have become had they not been exposed to so much TV and movie violence.*

Fact 3. *Both the long term and the short-term effects occur to both boys and girls.*

Fact 4. *The effects of TV and movie violence on aggression are not small. Indeed, the media violence effect on aggression is bigger than the effect of exposure to lead on IQ scores in*

⁴ *Ibid*

⁵ Policy Statement on Media Violence, American Academy of Pediatrics, *Pediatrics*, Volume 108, Number 5, November 2001

⁶ Craig Anderson is Professor of Psychology and Chair of the Department of Psychology at Iowa State University, has studied human behaviour for over 25 years, and wrote the "Human Aggression and Violence" articles for both the *Encyclopedia of Psychology* and the *Encyclopedia of Sociology*.

children, the effect of calcium intake on bone mass, the effect of homework on academic achievement, or the effect of asbestos exposure on cancer.⁷

He also provided this explanation of how violent media increases aggression and violence:

There are several different ways in which watching or playing violent media can increase aggression and violence. The most powerful and long lasting involves learning processes. From infancy, humans learn how to perceive, interpret, judge, and respond to events in the physical and social environment. We learn by observing the world around us, and by acting on that world. We learn rules for how the social world works. We learn behavioral scripts and use them to interpret events and actions of others and to guide our own behavioral responses to those events.

These various knowledge structures develop over time. They are based on the day-to-day observations of and interactions with other people, real (as in the family) and imagined (as in the mass media). Children who are exposed to a lot of violent media learn a number of lessons that change them into more aggressive people. They learn that there are lots of bad people out there who will hurt them. They come to expect others to be mean and nasty. They learn to interpret negative events that occur to them as intentional harm, rather than as an accidental mistake. They learn that the proper way to deal with such harm is to retaliate. Perhaps as importantly, they do not learn nonviolent solutions to interpersonal conflicts.

As these knowledge structures develop over time, they become more complex and difficult to change. In a sense, the developing personality is like slowly-hardening clay. Environmental experiences, including violent media, shape the clay. Changes are relatively easy to make at first, when the clay is soft, but later on changes become increasingly difficult. Longitudinal studies suggest that aggression-related knowledge structures begin to harden around age 8 or 9, and become more perseverant with increasing age.

The result of repeated exposure to violent scripts, regardless of source, can be seen in several different aspects of a person's personality. There is evidence that such exposure increases general feelings of hostility, thoughts about aggression and retaliation, suspicions about the motives of others, and expectations about how others are likely to deal with a potential conflict situation. Repeated exposure to violent media also reduces negative feelings that normally arise when observing someone else get hurt. In other words, people become desensitized to violence. Finally, exposure to violent media teaches people that aggressive retaliation is good and proper.

Much of the research has concentrated on television violence, but can, according to the experts, be extrapolated to other violent media like video games. Professor Anderson explains why:

There are three main reasons. First, the psychological processes underlying TV and movie violence effects on aggression are also at work when people play video games. The similarities between exposure to TV violence and exposure to video game violence are so great that ignoring the TV violence literature would be foolish. Second, the research literature on TV violence effects is vast, whereas the research literature on video game violence is small. Researchers have been investigating TV effects for over 40 years, but video games didn't even exist until the 1970s, and extremely violent video games didn't emerge until the early 1990s. Third, because the TV/movie violence research literature is so mature, there has been ample time to answer early criticisms of the research with additional research designed to address the criticisms.

⁷Testimony of Professor Craig A. Anderson, Ph.D., before the U.S. Senate Commerce Committee hearing on The Impact of Interactive Violence on Children, March 21, 2000

Thus, the various shoot-from-the-hip criticisms and myths created by those with a vested interest in creating and selling various kinds of violent entertainment media have been successfully tested and debunked.⁸

Professor Anderson also provided responses to a number of myths relating to media violence:

Myth 1. The TV/movie violence literature is inconclusive. Any scientist in any field of science knows that no single study can definitively answer the complex questions encompassed by a given phenomenon. Even the best of studies have limitations. It's a ridiculously easy task to nitpick at any individual study, which frequently happens whenever scientific studies seem to contradict a personal belief or might have implications about the safety of one's products. The history of the smoking/lung cancer debate is a wonderful example of where such nitpicking successfully delayed widespread dissemination and acceptance of the fact that the product (mainly cigarettes) caused injury and death. The myth that the TV/movie violence literature is inconclusive has been similarly perpetuated by self-serving nitpicking.

Scientific answers to complex questions take years of careful research by numerous scientists interested in the same question. We have to examine the questions from multiple perspectives, using multiple methodologies. About 30 years ago, when questioned about the propriety of calling Fidel Castro a communist, Richard Cardinal Cushing replied, "When I see a bird that walks like a duck and swims like a duck and quacks like a duck, I call that bird a duck." When one looks at the whole body of research in the TV/movie violence domain, clear answers do emerge. In this domain, it is now quite clear that exposure to violent media significantly increases aggression and violence in both the immediate situation and over time. The TV/movie violence research community has correctly identified their duck.

Myth 2. Violent media have harmful effects only on a very small minority of people who use these media. One version of this myth is commonly generated by parents who allow their children to watch violent movies and play violent games. It generally sounds like this, "My 12 year old son watches violent TV shows, goes to violent movies, and plays violent video games, and he's never killed anyone." Of course, most people who consume high levels of violent media, adults or youth, do not end up in prison for violent crimes. Most smokers do not die of lung cancer, either. The more relevant question is whether many (or most) people become more angry, aggressive, and violent as a result of being exposed to high levels of media violence. Are they more likely to slap a child or spouse when provoked? Are they more likely to drive aggressively, and display "road rage?" Are they more likely to assault co-workers? The answer is a clear yes.

Myth 3. Violent media, especially violent games, allow a person to get rid of violent tendencies in a non harmful way. This myth has a long history and has at least two labels: the catharsis hypothesis, or venting. The basic idea is that various frustrations and stresses produce an accumulation of violent tendencies or motivations somewhere in the body, and that venting these aggressive inclinations either by observing violent media or by aggressive game playing will somehow lead to a healthy reduction in these pent-up violent tendencies. This idea is not only incorrect, but in fact the opposite actually happens. We've known for over thirty years that behaving aggressively or watching someone else behave aggressively in one context, including in "safe" games of one kind or another, increases subsequent aggression. It does not decrease it.

Myth 4. Laboratory studies of aggression do not measure "real" aggression, and are therefore irrelevant. This myth persists despite the successes of psychological laboratory research in a variety of domains. In the last few years, social psychologists from the University of Southern California and from Iowa State University have carefully examined this claim, using very

⁸Ibid

different methodologies, and have clearly demonstrated it to be nothing more than a myth. Laboratory studies of aggression accurately and validly measure "real" aggression.

Myth 5. The magnitude of violent media effects on aggression and violence is trivially small. This myth is related to Myth 2, which claims that only a few people are influenced by media violence. In fact, as noted earlier the TV violence effect on aggression and violence is larger than many effects that are seen as huge by the medical profession and by society at large. Furthermore, preliminary evidence and well-developed theory suggests that the violent video game effects may be substantially larger.⁹

In their report, *Youth and Violence - Medicine, Nursing, and Public Health: Connecting the Dots to Prevent Violence*, the Commission for the Prevention of Youth Violence included reducing exposure to media violence as one of their seven priorities. Their report stated:

Children and youth are greatly influenced by what they hear and see in movies, television, the Internet, video games, and music. Extensive evidence documents the strong, pervasive, and deleterious effects of media violence on children. The media industry must be responsive to these scientific data.¹⁰

The organizations comprising this Commission are the American Academy of Child and Adolescent Psychiatry, American Academy of Family Physicians, American Academy of Pediatrics, American College of Physicians-American Society of Internal Medicine, American Medical Association, American Medical Association Alliance, American Nurses Association, American Psychiatric Association, American Public Health Association, and the U.S. Department of Health and Human Services.

So, to recap, the following North American medical and mental health organizations have acknowledged the harmful influence of violent media and endorsed the research findings:

- American Academy of Child & Adolescent Psychiatry
- American Academy of Family Physicians
- American Academy of Mental Health
- American Academy of Pediatrics
- American College of Physicians-American Society of Internal Medicine
- American Medical Association
- American Medical Association Alliance
- American Nurses Association
- American Psychiatric Association
- American Psychological Association
- American Public Health Association
- Canadian Paediatric Society
- National Institute of Mental Health (U.S.)
- U.S. Department of Health and Human Services
- U.S. Surgeon General

Something to remember while considering the impact of media violence is recent research in Canada and the United States revealing that the brains of adolescents, who are huge consumers of violent media, are going "through a biological remodeling as critical to human development as that which takes place during the first two years of life, a discovery with

⁹Ibid

¹⁰*Youth and Violence - Medicine, Nursing, and Public Health: Connecting the Dots to Prevent Violence*, Commission for the Prevention of Youth Violence, December 2000

profound implications for educators, behavioural scientists, pediatric health professionals and... parents".¹¹ Until scientists began employing MRI technology a few years ago, the teenage brain was thought to be largely complete in its development.¹² New research proves that to be false.

Richard Restak, a neuropsychiatrist and author of *The Secret Life of the Brain*, points out that "the teenage brain is a work in progress", and an "adolescent's choices determine the quality of his brain".¹³ According to Ron Dahl, a pediatrician and child psychiatric researcher at the University of Pittsburgh Medical Center, adolescence "...is a sensitive time, when feelings are becoming linked with rational thought. The stakes are very high, and parents need to feel that it's OK to be monitoring what their adolescents are doing."¹⁴

Another thing to remember is that some children and youth are more vulnerable to the influence of violent entertainment than others. Children who are emotionally disturbed, have learning disabilities, or those living with abusive or distressed families are more at risk.¹⁵

What follows is additional research specific to video games, music and music videos, but there is, obviously, much more information available, including research into other segments of the entertainment industry, e.g., violent pornography, televised wrestling, etc. A listing of research resources is provided at the end of these notes and can also be found on my web site at www.fradical.com in the Research section.

Video Games

Although the first video games emerged in the late 1970s, violent video games came of age in the 1990s, with the introduction of *Mortal Kombat*, *Street Fighter*, and *Wolfenstein 3D*.¹⁶ At the turn of the century, ever more violent games with increasingly realistic imagery are available to players of all ages. Immersive violent virtual reality games, with their potentially mind-altering technology, loom on the horizon.

Violent games immediately raised concern among mental health professionals and researchers because the negative effects of violent television on behaviour had been extensively documented, and the games added a very troubling interactive component. The Canadian Paediatric Society policy statement says, "Violent video games should be discouraged because they have harmful effects on children's mental development".¹⁷

A May 2001 article in *Contemporary Pediatrics* stated:

Exposure to violent video games is of even more concern than exposure to violence on television because the games take advantage of many of the principles of learning-identification (or participant modeling), practice and repetition, and reward and reinforcement.

Identification with the aggressor increases the likelihood that the participant will imitate behavior; in most violent video games, the player must identify with one violent character and perform violent acts through his eyes. The interactive nature of video games may also increase

¹¹ *Please excuse the mess*, Globe and Mail, May 10, 2003

¹² *The teen brain*, USA Weekend.com, May 18, 2003

¹³ *Ibid*

¹⁴ *Ibid*

¹⁵ *Impact of Media Use on Children and Youth*, Canadian Paediatric Society position statement, 2003

¹⁶ *Effects of Violent Video Games on Aggressive Behavior, Aggressive Cognition, Aggressive Affect, Physiological Arousal, and Prosocial Behavior: A Meta-Analytic Review of the Scientific Literature*, Craig A. Anderson and Brad J. Bushman, Psychological Science, September 2001

¹⁷ *Impact of Media Use on Children and Youth*, Canadian Paediatric Society position statement, 2003

the likelihood that the participant will learn aggressive behavior. Adding to the increase in learning, the player of a video game is required to repeat behaviors. Last, video games reinforce violent choices with rewards of additional points, longer playing time, or special effects for certain acts of aggression or violence.

The profound effects of video games on learning were summed up by researchers J. B. Funk and D. D. Buchman, who wrote: "If, as many believe, violence is primarily a learned behavior, then the powerful combinations of demonstration, reward, and practice inherent in electronic game playing creates an ideal instructional environment... the lessons being taught are that violence is fun, obligatory, easily justified, and essentially without negative consequences." The Columbine shooters are chilling examples of this principle. They were "Doom" fanatics who reconfigured a version of "Doom" to be in the "God mode" (the format in which the player becomes indestructible). The pair graphically reenacted the behavior they learned from the video game - they said the planned shooting was "going to be like f -- ing 'Doom'... Tick, tick, tick, tick ... Haa! That f -- ing shotgun is straight out of 'Doom'." ¹⁸

An early study conducted by Simon Fraser University graduate student, Brent de Waal, examined the physiological impact of video games on players aged 10 to 16. The results showed that game play increased heartbeats and anxiety levels, with violent game play raising the levels higher than non-violent games. He discovered that the more the youths played, the lower their heart rate response, a result that suggested desensitization,¹⁹ (more on that later) and that the physiological response is an almost euphoric rush, an "adrenaline hit". This rush appeals most to adolescent boys, a group he describes as "the engine of the video game industry".²⁰

Paul Lynch of the University of Oklahoma Medical School also conducted research measuring physiological responses that again showed violent video games cause much greater physiological changes than non-violent games. His research showed increased heart rate and blood pressure, as well as the aggression-related hormones, adrenaline, noradrenaline and testosterone. Results also indicated that the harmful effect is much greater for males who already test high on measures of anger and hostility. In other words, violent games do not affect everyone the same, with angry youth reacting much more strongly to violent video games.²¹

Professor Craig Anderson explained to the March 2000 U.S. Senate hearing the reasons we can expect violent interactive media to have an even stronger effect on aggression and violence than traditional forms of media violence such as television and movies:

These several reasons all involve differences between TV and video games that influence learning processes. The following four reasons all have considerable research support behind them, but have not yet been extensively investigated in the video game domain.

Reason 1. Identification with the aggressor increases imitation of the aggressor. In TV shows and movies there may be several characters with which an observer can identify, some of whom may not behave in a violent fashion. In most violent video games, the player must identify with one violent character. In "first person shooters," for instance, the player assumes the identity of the hero or heroine, and then controls that character's actions throughout the game. This commonly includes selection of weapons and target and use of the weapons to

¹⁸How violent video games may violate children's health, Elisa Hae-Jung Song, M.D., and Jane E. Anderson, M.D., Contemporary Pediatrics, May 2001

¹⁹Kids' Heart Rates Show Effect of Video Games, Simon Fraser University News Release, May 4, 1995

²⁰Video violence too close to the real thing, Sterling News Service, July 26, 1995

²¹Testimony of David Walsh, Ph.D., President, National Institute on Media and the Family, before the U.S. Senate Commerce Committee Hearing on The Impact of Interactive Violence on Children, March 21, 2000

wound, maim, or kill the various enemies in the game environment. Common weapons include guns, grenades, chain saws and other cutting tools, cars and tanks, bombs, hands, and knives.

Reason 2. Active participation increases learning. *The violent video game player is a much more active participant than is the violent TV show watcher. That alone may increase the effectiveness of the violent story lines in teaching the underlying retaliatory aggression scripts to the game player. Active participation is a more effective teaching tool in part because it requires attention to the material being taught.*

Reason 3. Rehearsing an entire behavioral sequence is more effective than rehearsing only a part of it. *The aggression script being rehearsed is more complete in a video game than in a TV show or movie. For example, the video game player must choose to aggress, and in essence rehearses this choice process, whereas the TV viewer does not have to make any such choices. Similarly, in video games the player must carry out the violent action, unlike the violent TV viewer. Indeed, in many video games the player physically enacts the same behaviors in the game that would be required to enact it in the real world. Some games involve shooting a realistic electronic gun, for instance. Some virtual reality games involve the participant throwing punches, ducking, and so on. As the computer revolution continues, the "realism" of the video game environment will increase dramatically.*

Reason 4. Repetition increases learning. *The addictive nature of video games means that their lessons will be taught repeatedly. This is largely a function of the reinforcing properties of the games, including the active and changing images, the accompanying sounds, and the actual awarding of points or extra lives or special effects when a certain level of performance is reached.²²*

Speaking to the same Senate hearing, Professor Eugene Provenzo said video games "are the cultural equivalent of genetic engineering, except that in this experiment, even more than the other one, we will be the potential new hybrids, the two-pound mice."²³ After appearing before Chicago City Council to support a proposed video game ordinance, Dr. Michael Rich of the American Academy of Pediatrics told ABC News the problem "has gone from something that was irritating and worrisome to something that is truly a public health emergency." Dr. Rich told City Council that all the available research on violent video games indicates that they desensitize and promote violent acts among those who play, particularly those who play them most -- children.²⁴

First-Person Shooter Games

Another perspective on violent video games comes from Lieutenant Colonel Dave Grossman (retired), a former West Point psychology professor and professor of military science. After more than 25 years spent researching the psychology of killing for the U.S. Army, Col. Grossman believes that the willingness to kill does not come naturally to humans, but is a learned behaviour. It requires desensitization by repeated exposure to violence, and classical conditioning by associating aggressive acts with a pleasurable experience. Willingness to kill also relies on stimulus-response training, so that the conditioned response becomes automatic with the right stimulus.²⁵

²²Testimony of Professor Craig Anderson, Ph.D., before the U.S. Senate Commerce Committee Hearing on The Impact of Interactive Violence on Children, March 21, 2000

²³Testimony of Professor Eugene F. Provenzo, Jr., School of Education, University of Miami, before the U.S. Senate Commerce Committee Hearing on The Impact of Interactive Violence on Children, March 21, 2000

²⁴Testimony of Dr. Michael Rich, Harvard Medical School, representing the American Academy of Pediatrics, before Chicago City Council, October 30, 2000

²⁵*How violent video games may violate children's health*, Contemporary Pediatrics, May 2001

First-person shooter games function as conditioning devices of a type and quality used by the military and law enforcement to train personnel to both shoot with accuracy and reflexively. First-person shooter games allow the player to look along the barrel of an on-screen gun and feel as though he is pulling the trigger and killing someone. Simulators are used extensively and the scientific data on their effectiveness in behaviour modification is exhaustive.²⁶

For example, one of the most effective and widely used simulators developed by the United States Army -- Multipurpose Arcade Combat Simulator -- is a modified Super Nintendo game. The Fire Arms Training Simulator used by most law enforcement agencies in the United States, is almost identical to the ultra-violent video arcade game *Time Crisis*. Both teach the player to hit a target and rehearse the act of killing, and both come complete with guns that have recoil. Similarly, the U.S. Marine Corps licensed the game *Doom* and used it to train their combat teams in tactics and to rehearse combat actions of killing.²⁷ In 1997, the New York Police Department purchased the Ontario government's firearms' training system, described by an aide to then Solicitor General Robert Runciman as "a laser disk that essentially looks like a real-life video game police use for officer training."²⁸

A classic case of the influence of first-person shooter games can be found in the Paducah, Kentucky school shooting. Michael Carneal, a 14-year-old boy who had never fired a handgun before, fired a few practice shots with a stolen pistol the night before he went into his school with the gun and started shooting students. In this case, 8 shots were apparently fired, with 8 hits, all of them upper torso or head shots. According to Col. Grossman, this is astounding, unprecedented marksmanship, with the only training Carneal received having come from thousands of hours playing video games.²⁹

Virtual Reality

Virtual reality (VR) is a system in which a person interacts with a computer-generated world that appears real. Helmet-mounted systems include earphones and a screen in front of each eye onto which a computer image is projected. A pair of wired gloves can transmit motion signals to the computer, which then responds by moving the simulated objects. If the screen covers all the eye's seeing area, users feel as though they are playing inside the simulation.³⁰

The experience provided by simulators is so realistic that they are used to train people to fly airplanes and helicopters, drive tanks, pilot ships, etc. A 1995 article in the *Globe and Mail* reporting on the hazards of virtual reality pointed out the complete lack of government regulation, despite the well-documented physical and psychological problems the devices can cause. According to the *Globe*, "Various armed forces, including Canada's, as well as NASA have collected data on the negative experiences of thousands of people when they use highly realistic training simulators."³¹

The president of a California company that makes head mount systems used in VR applications said, "The big concern is little Johnny, who is eight years old and decides by himself that he is going to spend four hours a day inside his virtual headset. And there are things that VR can do

²⁶*Stop Teaching Our Kids to Kill: A Call to Action Against TV, Movie & Video Game Violence*, Lt. Col. Dave Grossman, Gloria DeGaetano, Crown Publishers, New York, 1999

²⁷Ibid

²⁸*Tory hits Big Apple in fight on crime*, Toronto Sun, July 9, 1997

²⁹Statement of Lt. Col. Dave Grossman to the New York State Legislature, October 1999

³⁰*Virtual reality too real for many*, *Globe and Mail*, March 4, 1995

³¹Ibid

to kids that aren't good".³² Back in 1993 when video games were much less realistic, Fred Ritchin, a teacher of interactive telecommunications and photography at New York University warned, "The potential for violence in virtual reality makes the discussion about televised violence seem prehistoric..."³³

Music

A study released in September 2001 revealed that music can stimulate the same parts of the brain as food and sex. Dr. Anne Blood, a researcher at Massachusetts General Hospital, and her co-author Robert Zatorre of McGill University in Montreal, used positron emission tomography (PET) scans to find areas of the brain stimulated by music. They found many of the brain structures activated by the euphoria of food or sex are stimulated by music too.³⁴ John Sloboda, a British music psychologist and expert in the study of the emotional response to music, says:

*Music can arouse an emotional response of intensity rarely experienced in everyday life. Yet no one has studied the relationship between human psychology and music until recently, because music was seen to have no immediate pragmatic value by the scientific and academic communities. Music, like language, is another form of patterned information, though far more complex than language.*³⁵

There are obvious differences between watching violent television and movies, playing violent video games and listening to violent music. One is the lack of a visual component, and another is that the aggressive lyrics of popular music are often not easily discernible. Violent visual media, on the other hand, make their violent content abundantly clear. Nonetheless, research has shown that there are valid reasons to worry about potentially harmful effects resulting from exposure to violent music lyrics, as "numerous studies have shown that aggressive words can prime aggressive thoughts, perceptions, and behavior" and that "such effects can occur even when the stimulus has not been consciously recognized".³⁶

In December 1996, the American Academy of Pediatrics issued a Policy Statement on the impact of music lyrics and music videos on children. The AAP noted that over the past forty years, rock music lyrics have become increasingly explicit, particularly concerning sex, drugs and violence, and expressed their great concern "that negative behavioral messages [were] being recorded and repeatedly broadcast". The AAP stated that, "in some cases, lyrics communicate potentially harmful health messages".³⁷

In 2003, the *Journal of Personality and Social Psychology* reported on five experiments conducted to determine the effect of violent music lyrics:

The consistent results from these five experiments provide strong evidence that songs with violent lyrics increase aggression-related cognition and affect and that this effect is the result of the violence in the lyrics.

³²Virtual reality too real for many, Globe and Mail, March 4, 1995

³³Arming video serial killers, Toronto Star, August 14, 1993

³⁴Music thrills the mind just like food and sex, Toronto Star, September 25, 2001

³⁵Music moves us, Toronto Star, October 6, 2001

³⁶Exposure to Violent Media: The Effects of Songs With Violent Lyrics on Aggressive Thoughts and Feelings, Craig Anderson, Nicholas Carnagey, Janie Eubanks, Journal of Personality and Social Psychology, 2003, Vol. 84. No. 5

³⁷Impact of Music Lyrics and Music Videos on Children and Youth, American Academy of Pediatrics Policy Statement, December 1996

*The increase in aggressive thoughts was shown in three different ways. Violent songs led to more aggressive interpretations of ambiguously aggressive words, increased the relative speed with which people read aggressive (vs. nonaggressive) words, and increased the proportion of aggressive word completions.*³⁸

The researchers explained the short-term effect:

*The violent-song-inspired increases in aggressive thoughts and feelings can influence perceptions of ongoing social interactions, coloring them with an aggressive tint. Such aggression-biased interpretations can, in turn instigate a more aggressive response (verbal or physical) than would have been emitted in a nonbiased state, thus provoking an aggressive escalatory spiral of antisocial exchanges. In sum, listening to angry, violent music does not appear to provide the kind of cathartic release that the general public and some professional and pop psychologists believe.*³⁹

Researchers believe there may also be an indirect effect similar to that found in the television research literature:

*... short-term increases in aggression due to violent lyrics affect the person's social environment as well as the person... In other words, repeated short-term media violence effects (lyrics, TV, movies, video games) can indirectly create a more hostile social environment, which further promotes the development of chronic hostility biases in the person's internal makeup -- their perceptual and social scripts and schemata and related knowledge structures -- in short, their personality.*⁴⁰

The long-term effect of repeated exposure to violent music lyrics is that it may contribute to the development of an aggressive personality.⁴¹

Music Videos

Several experiments have examined the effects of aggressive music videos. A 1989 study found "that exposing males to nonerotic violent music videos led to a significant increase in adversarial sexual beliefs and negative affect".⁴² Another found that "males who had been randomly assigned to view violent rap music videos became more accepting of the use of violence in dealing with interpersonal problems. Related research found that males and females exposed to violent rap music videos became more accepting of teen dating violence. College students exposed to rock music videos with antisocial themes produced a greater acceptance of antisocial behavior."⁴³

Music videos are much like other visual media (television, movies), in that they combine a story with violent imagery. As researchers note, "the finding that they produce similar effects is not surprising".⁴⁴ Following are excerpts from statements issued by three medical organizations:

Canadian Paediatric Society:

³⁸*Exposure to Violent Media: The Effects of Songs With Violent Lyrics on Aggressive Thoughts and Feelings*, Craig Anderson, Nicholas Carnagey, Janie Eubanks, *Journal of Personality and Social Psychology*, 2003, Vol. 84. No. 5

³⁹Ibid

⁴⁰Ibid

⁴¹Ibid

⁴²Ibid

⁴³Ibid

⁴⁴Ibid

... music videos may have a significant behavioural impact by desensitizing viewers to violence... more than half contain violence that is often committed against women. Attractive role models are the aggressors in more than 80% of music video violence... the potential negative impact of explicit music lyrics should put parents and paediatricians on guard -- paediatricians should bring this up in anticipatory guidance discussions with teenagers and their parents.⁴⁵

American Academy of Pediatrics:

Music video formats are popular among children and adolescents. When music lyrics are illustrated in music videos, their potential impact is magnified. Teenagers who may not "hear" or understand rock lyrics cannot avoid the often disturbing images that characterize a growing number of videos. In addition, music videos are self-reinforcing: if viewers hear a song after having seen the video version, they immediately "flash back" to the visual imagery in the video. Music videos may represent a relatively new art form, but it is one that often contains an excess of sexism, violence, substance abuse, suicides, and inappropriate sexual behavior.

A handful of experimental studies indicate that music videos may have a significant behavioral impact by desensitizing viewers to violence, and by making teenagers more likely to approve of premarital sex. In one study, eliminating access to MTV decreased the frequency of violent acts among teenagers and young adults in a locked treatment facility.⁴⁶

American Medical Association:

The AMA is concerned about the possible impact of destructive themes depicted in certain types of popular rock music. The vivid depiction of drug and alcohol use, suicide, violence, demonology, sexual exploitation, racism and bigotry could be harmful to some young people, especially vulnerable children and adolescents who are socially alienated from traditional value systems and positive support groups.⁴⁷

Brain scan research⁴⁸

Recent brain scan research indicates that there is a correlation between the amount of media violence children see and their ability to think logically. Over a two-year period, researchers at Indiana University School of Medicine studied two groups of adolescents between the ages of 13 and 17. The first group was made up of normal teenagers. The second group consisted of teenagers who had been diagnosed with disruptive brain disorder or DBD.

In step one of the study, the teenagers and their parents were surveyed about the teenagers exposure to violence in video games, movies and television. Some of the teenagers had viewed a lot of media violence throughout their lives and some had viewed very little.

In step two, the teens were tested in a very sophisticated MRI, called fMRI. The fMRI produces pictures of the activity in the logical part of the brain, the pre-frontal cortex. This part of the brain produces what we think of as adult behavior. The pre-frontal cortex is responsible for controlling behaviour, moderating impulsive urges, thinking about future consequences and decision-making. If children do not fully develop their pre-frontal cortex, they can become problem adults.

⁴⁵ *Impact of Media Use on Children and Youth*, Canadian Paediatric Society position statement, 2003

⁴⁶ *Impact of Music Lyrics and Music Videos on Children and Youth*, American Academy of Pediatrics Policy Statement, December 1996

⁴⁷ *Statement of Concern Regarding Destructive Themes Contained in Rock Music*, American Medical Association, 1995

⁴⁸ Center for Successful Parenting web site, August 2006

After studying and comparing the brain scans of all the teenagers, the researchers concluded the following:

- Normal teenagers with a high amount of exposure to media violence had reduced activity in the logical part of the brain similar to those of teens with disruptive behaviour disorder.
- All of the teens with disruptive behaviour disorder had less activity in the logical part of their brains than normal teens. The more violence they had seen, the more pronounced the deficit.
- The normal teens that had seen very little media violence had the most activity in the logical part of the brain - the part that parents want to develop in their children.

All of these results indicate that there is a correlation between the amount of media violence children see and their ability to think logically.⁴⁹ Additional information on this study is available on the Center for Successful Parenting web site.

Desensitization

At the Hincks Institute conference on television violence in 1993, Dr. Edward Donnerstein spoke about the desensitization that occurs even in "very healthy" people when exposed to brutally violent media:

In the research that we've done for many, many years, we found that if we expose very healthy individuals to ten hours over two to three weeks of very graphic forms of violence, particularly violence against women, and then have them, for instance, act as a juror in a rape trial and ask them their evaluations of a real victim of violence, we find changes in their perceptions. They don't see as much injury, they don't see as much pain, they don't see as much suffering to a real victim of violence after exposure to media and fantasy violence; desensitization has occurred.

That doesn't mean these people are going to go out and commit a rape; it doesn't mean they're going to go out and commit violent acts; but how they view violence is much different. They're not as sympathetic, they're not as empathetic, and their perceptions about reality for some transient time, have been altered. That's a real affect and it occurs in study after study.⁵⁰

In 2006, psychologists at Iowa State University released the results of the first study demonstrating that exposure to violent video games desensitizes individuals to real-life violence, with "desensitization" defined as "a reduction in emotion-related physiological reactivity to real violence." The study showed that playing violent video games, even for just 20 minutes, can cause people to become less physiologically aroused by real violence. Participants in the study who had played violent games subsequently had relatively lower heart rates and galvanic skin responses while watching footage of people being beaten, stabbed and shot than did those who played nonviolent video games.

⁴⁹ Ibid

⁵⁰ *Reclaiming Childhood: Responsible Solutions to TV Violence & Our Children*, transcript of the C.M. Hincks Institute conference on television violence, Toronto, 1993

"It appears that individuals who play violent video games habituate or 'get used to' all the violence and eventually become physiologically numb to it," said Nicholas Carnagey, one of the researchers.⁵¹

The researchers conclude that the existing video game rating system, the content of much entertainment media, and the marketing of those media are combining to produce "a powerful desensitization intervention on a global level."

Professor Craig Anderson, who was also involved in the study, said "...the modern entertainment media landscape could accurately be described as an effective systematic violence desensitization tool. Whether modern societies want this to continue is largely a public policy question, not an exclusively scientific one."⁵²

Media Consumption

A few statistics on the media consumption habits of children and youth may help put the research in perspective.

A 1999 report by the American Kaiser Family Foundation (KFF),⁵³ *Kids & Media @ the New Millennium*, contained the results of a study on the media use of more than 3,000 children aged 2 - 18. The study examined their non-school use of television, videos, movies, video games, CDs and tapes, radio, books, magazines, newspapers and computers. We don't have equivalent Canadian data -- we do have information, but its not as comprehensive -- but because our media diet and societies are similar, it's fairly safe to assume the situation in Canada is much the same.

Kids & Media revealed that the "typical American child spends an average of more than 38 hours a week -- nearly five and a half hours a day (5:29) -- consuming media outside of school". The amount is "even higher -- nearly six and three-quarter hours a day (6:43) -- for kids eight and older".⁵⁴ Drew Altman, Ph.D., president of the Kaiser Family Foundation said, "Watching TV, playing video games, listening to music and surfing the Internet have become a full-time job for the typical American child. This study really underscores the importance of paying attention to the messages and the information kids are getting from the media, both good and bad."

Among kids eight and older, 24% spend more than five hours a day watching TV. While computer access is widespread, "kids still spend a comparatively small amount of time with computers, averaging less than half an hour a day (:21) using a computer for fun, compared to two and three quarters hours a day (2:46) watching TV". Vicky Rideout, director of the Foundation's *Program on the Entertainment Media and Public Health*, said, "Computers may be the wave of the future, but TV still dominates kids' time and attention today."

A more recent KFF study examined the media habits of children age zero to six and found that even children in this age group spend "an average of two hours a day using screen media

⁵¹ ISU psychologists produce first study on violence desensitization from video games, Iowa State University news releases, July 24, 2006

⁵² Ibid

⁵³ The Henry J. Kaiser Family Foundation is a non-profit, independent national health philanthropy dedicated to providing information and analysis on health issues to policymakers, the media, and the general public.

⁵⁴ *New Study Finds Kids Spend Equivalent of Full Work Week Using Media*, Kaiser Family Foundation news release, November 17, 1999

(1:58)". The study, *Zero to Six: Electronic Media in the Lives of Infants, Toddlers and Preschoolers*, revealed:

New interactive digital media have become an integral part of children's lives. Nearly half (48%) of children six and under have used a computer (31% of 0-3 year-olds and 70% of 4-6 year-olds). Just under a third (30%) have played video games (14% of 0-3 year-olds and 50% of 4-6 year-olds). Even the youngest children -- those under two -- are widely exposed to electronic media. Forty-three percent of those under two watch TV every day, and 26% have a TV in their bedroom (the American Academy of Pediatrics 'urges parents to avoid television for children under 2 years old'). In any given day, two-thirds (68%) of children under two will use a screen media, for an average of just over two hours (2:05).⁵⁵

Many children, the study said, are "growing up in homes where the TV is an ever-present companion: two-thirds (65%) live in homes where the TV is left on at least half the time or more, even if no one is watching, and one-third (36%) live in homes where the TV is on 'always' or 'most of the time'".

Conclusion

Given the conclusions of the research community and the incredible volume of violent material to which we are exposed, I would like to repeat the comments made by Dr. Michael Rich of the American Academy of Pediatrics when he spoke about violent video games -- the problem has gone from something that was worrisome to something that is truly a public health emergency. I hope some of you will take that message away with you today and spread the word to politicians and others with the ability to effect change.

If you would like suggestions on how to combat the problem, the *Action Agenda: A Strategic Blueprint for Reducing Exposure to Media Violence* in Canada has 42 recommendations from which to choose. The report was funded and published by Ontario's Office for Victims of Crime and it's posted on my web site at www.fradical.com and other sites including the Canadian Centre for Abuse Awareness and Victims of Violence.

Research Resources

Action Agenda: A Strategic Blueprint for Reducing Exposure to Media Violence in Canada
Office for Victims of Crime, Ministry of the Attorney General, 2004
www.fradical.com

American Academy of Child and Adolescent Psychiatry
<http://www.aacap.org>

American Academy of Pediatrics
<http://www.aap.org>

American Medical Association
<http://www.ama-assn.org>

American Psychiatric Association
<http://www.psych.org>

American Psychological Association

⁵⁵*New Study Finds Children Age Zero to Six Spend as Much Time With TV, Computers and Video Games as Playing Outside*, Kaiser Family Foundation news release, October 28, 2003

<http://www.apa.org>

Canadian Paediatric Society

Impact of Media Use on Children and Youth

Media Pulse: Measuring the Media in Kids' Lives - A Guide for Health Practitioners

<http://www.cps.ca>

Canadian Teachers' Federation

Kids' Take on the Media

www.ctf-fce.ca

Children, Violence, and the Media: A Report for Parents and Policy Makers

Senate Committee on the Judiciary (U.S.), 1999

Center on Media and Child Health

www.cmch.tv

Center for Successful Parenting

www.sosparents.org

Effect of video game violence on physiological desensitization to real-life violence

Nicholas Carnagey, Craig Anderson, Brad Bushman

Journal of Experimental Social Psychology, 2006

Effects of Media Violence on Society

Craig Anderson and Brad Bushman

Science Magazine, March 2002

Effects of Reducing Children's Television and Video Game Use on Aggressive Behavior, A Randomized Controlled Trial

Thomas Robinson, Marta Wilde, Lisa Navracruz, K. Farish Haydel, Ann Varady

Archives Pediatric Adolescent Medicine, January 2001

www.archpediatrics.com

Effects of Violent Video Games on Aggressive Behavior, Aggressive Cognition, Aggressive Affect, Physiological Arousal, and Prosocial Behavior: A Meta-Analytic Review of the Scientific Literature

Craig A. Anderson and Brad J. Bushman

Psychological Science, September 2001

Exposure to Violent Media: The Effects of Songs with Violent Lyrics on Aggressive Thoughts and Feelings

Craig Anderson, Nicholas Carnagey, Janie Eubanks

Journal of Personality and Social Psychology, May 2003

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Influence of Media Violence on Youth

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Linz, Neil Malamuth, Ellen Wartella

Psychological Science in the Public Interest, December 2003

Joint Statement on the Impact of Entertainment Violence on Children

Congressional Public Health Summit

American Academy of Pediatrics, American Academy of Child & Adolescent Psychiatry, American Psychological Association, American Medical Association, American Academy of Family Physicians, American Psychiatric Association, July 26, 2000
<http://www.aap.org>

Kaiser Family Foundation

<http://www.kff.org>

Longitudinal Relations Between Children's Exposure to TV Violence and Their Aggressive and Violent Behavior in Young Adulthood: 1977-1992

L. Rowell Huesmann, Jessica Moise-Titus, Cheryl-Lynn Podolski, and Leonard D. Eron
Developmental Psychology, Vol. 39, No. 2, 2003

Media Violence and the American Public: Scientific Facts Versus Media Misinformation

Brad Bushman and Craig Anderson
American Psychologist, June 2001

National Institute on Media and the Family

www.mediafamily.org

Video Games and Aggressive Thoughts, Feelings, and Behavior in the Laboratory and in Life

Craig Anderson and Karen Dill
Journal of Personality and Social Psychology, April 2000