

Detrimental Effects of Video Games – A Compilation of Research Studies

By Michael Burris, last updated 11/4/2016

I've been teaching drums full-time since 1998 and have seen the effect of increased video gaming first hand. As the new and better gaming systems came out, I started to see a rise in attention problems and behaviors associated to ADHD, ADD, and ADS (Autism Spectrum Disorder) that have made it very difficult for many of my students to succeed not only in drumming but in any of their school subjects. I've had to design many more specialized methods to combat the decline in learning ability. I've collected the following research studies to help parents understand what educators and childhood development specialists have known all along – that excessive TV and video game playing can have far-reaching and often irreversible consequences. The consensus is to allow no more than 2 hours a day of any fast-moving media source (phone, I-pad, car display, TV, computer)! See other recommendations at the bottom of this compilation. There are literally hundreds of research studies on this, but there's enough here to take this seriously.

Increases Inattention Problems:

Another, more colloquial use of the term “attention,” refers to the ability to maintain attention on a singular target – especially a target that does not naturally capture attention from viewers (e.g., a school lecture). It is this form of attention that several studies have identified decrements resulting from high television viewing in childhood (e.g., Christakis et al. 2004, 2013; Landhuis et al. 2007; Levine and Waite 2000; Mistry et al. 2007). Others have linked this propensity to habitual video game play in particular (Gentile 2009; Bioulac et al. 2008; Mistry et al. 2007).

Video games (and screen media generally) are naturally exciting and stimulating. They possess a number of cues that naturally draw players' attention such as violence or sexualized imagery (Ivory 2006; Linder and Gentile 2009), as well as more basic attention grabbing features such as sound effects, video editing, or flickering lighting (Kubey and Csikszentmihalyi 2002). This continuous attentional “grabbing” may increase individuals' threshold for stimulation required to draw attention, and, therefore, they may find more menial tasks such as listening to a teacher, parent, or employer more difficult. Alternatively, it may simply be the case that children who have attention problems are more attracted to video game play and other electronic media. In the work by Gentile et al. (2012), support was found for both of these accounts. In other words, it appears **that video game play exacerbates attention problems** (also seen by Swing et al. 2010), **and individuals with attention problems are also attracted to video games.**

“Many researchers speculate that screen media increases attention problems due to rapid-pacing, or the natural attention grabbing aspects that television and video games use” - Edward Swing, 2010. “Brain science demonstrates that the brain becomes what the brain does. If we train the brain to require constant stimulation and constant flickering lights, changes in sound and camera angle, or immediate feedback, such as video games can provide, then when the child lands in the classroom where the teacher doesn't have a million-dollar-per-episode budget, it may be hard to get children to sustain their attention” - David Gentile. A theoretical explanation for these effects is dubbed the Excitement Hypothesis (Gentile et al. 2012).

A study of 51 undergraduate college men of “low volume gamers” (less than 2 hours a week) versus 51 “high volume gamers (more than 40 hours per week) were given a standard psychology “Stroop” task to identify a color of a word that is flashed on a screen, even if the word “red” is seen in green letters. Their responses were timed and their brain's event-related potentials recorded. The real difference in the brain was just before the words were flashed on the screen: the “low volume gamers” showed evidence of paying more attention during these “wait and see” moments, but “high volume gamers” seemed to have trouble sustaining their attention. Their brain activity resembled someone who has less “proactive control,” i.e., more trouble keeping his mind focused on what is about to happen – Bailly, West, Anderson 2010.

A 2010 study found that kids who spend too much time watching TV or playing video games may have more trouble paying attention in school. Researchers found that children who had more than 2 hours of screen time per day were twice as likely to have trouble paying attention - *Pediatrics*

The 1300 American kids, in grades 3-5, were asked to keep track of how much time they spent playing video games. These tallies were cross-checked against their parents' reports. Researchers also asked teachers to evaluate each child's attention skills at 4 different points over the 13-month study. The results revealed a statistically significant link between video games and teacher-reported attention problems. And the pattern was consistent with the idea that playing video games causes attention problems: Kids who played more at the beginning of the study experienced increased attention problems at the end. This was true even after controlling for prior student attention problems. Teachers said the kids got worse over time" - Edward Swing and his colleagues, 2010.

"Kids spending too much time playing video games may . . . have attention problems" - *Journal of Psychology and Popular Media Culture*, 2012

"Adolescents who play more than 1 hour of console or Internet video games may have more or more intense symptoms of ADHD or inattention than those who do not" – Philip Chan and Terry Rabinowitz 2006.

"ADHD children exhibited more problems associated with videogame playing" – Bioulac, Arfi, Bouvard, *European Psychiatry* 2008.

"A child with ADHD may be easily distracted or easily bored and have difficulty sustaining attention. But video games are constructed differently. They require short bursts of attention and fast responses. But that doesn't do much good for the child when taken to excess." Dr. David Anderson of Child Mind Institute, *WebMD*.

Video games take away the need for what Eugene Arnold calls, "effortful attention." According to Arnold, "the game controls what you pay attention to. But kids with ADHD need practice in controlling their attention." So, he stresses restraint. - Eugene Arnold, MD, child psychiatrist at Ohio State.

"A study has found that games can hurt and help children's attention issues — improving the ability to concentrate in short bursts but damaging long-term concentration" - *Psychology of Popular Media Culture*, 2012.

Decreased School Performance:

"Given the possible negative effects these conditions may have on scholastic performance, the added consequences of more time spent on video games may also place these individuals at increased risk for problems in school" – Philip Chan and Terry Rabinowitz 2006.

Subsequent analysis revealed that time spent playing was linked with low school competence—but only for violent video games. Kids who played educational video games (like Math Blaster or Reader Rabbit) did not suffer academically - Erin Hastings, 2010.

"In one representative sample of American adolescents, aged 10 to 19, kids who played video games spent 30% less time reading and 34% less time doing homework" - Cummings and Vandewater 2007.

"Researchers tracked the boys' academic performance at school after 1 group got their game system immediately and those who didn't until months later, and found evidence of an effect: Not only did the kids who received game systems spend less time doing homework, they also performed worse on standardized tests of reading and writing four month's later. Moreover, their teachers were more likely to report academic problems" - Robert Weis and Brittany Cerankosky, 2010.

"Academic achievement may be negatively related to over-all time spent playing video games. Studies have shown that the more time a kid spends playing video games, the poorer is his performance in school" - Anderson & Dill, 2000; Gentile, Lynch & Walsh, 2004.

If your child devotes more than 1-2 hours a day to television or video games, he may have trouble falling asleep, have problems paying attention and have lower test scores than other children who don't spend as much time in front of a television or video game console" - Drea Christopher 2015.

Results found that "for boys, but not for girls, a stronger preference for each of the three types of violent games was associated with lower self-competence scores in one or more developmentally important areas, including academic, interpersonal, and behavioral skills" - Cesarone, 1998.

"Results revealed that time spent playing games was related ... to school competence. In particular, violent games were directly related to attention problems and generally led to a greater decline in academic performance" - *Issues in Mental Health Nursing*.

Physical Health Impairment:

"Along with increased gaming can come sleep deprivation, especially among young people" - *Pediatrics International*.

"7 out of 10 children are vitamin D deficient. Vitamin D, of course, is commonly absorbed from exposure to sunlight. Unfortunately, being holed up in front of video games system does not afford the same exposure to sunlight as, say, being outside" - *Pediatrics*.

Based on a study of 59 young adults, 80% of video games used a memorized sequence of turns to navigate a virtual-reality maze rather than attention to environmental cues, whereas only 42% did this of the non-gamers. Playing video games could be building up their brain's striatum at the expense of their brain's hippocampus, so video gamers brains look like older adults. And that has implications for overall brain health, since a shrunken hippocampus is associated with risk of neurological disorders such as Alzheimer's and schizophrenia" – Psychologist Gregory West, *Proceedings of the Royal Society B*.

School children who played "excessive" amounts of video games were much more likely to develop black rings in the skin under the eyes and to suffer from a displacement of the shoulder blade, which can be caused by poor posture and muscle stiffness" - *Pediatrics International*.

"29 % of patients with epilepsy suffered video-game-induced seizures. Stress, fatigue, and hyperventilation during video games can trigger seizures in children with epilepsy" – *Journal of Neurology, Neuropsychology, and Psychiatry*.

"Childhood obesity and inadequate activity levels to video games. In children, ages one to 12, "results indicated that while television use was not related to children's weight status, video game use was" - *Journal of Adolescence*.

"Video games may also have bad effects on some children's health, including obesity, video-induced seizures. and postural, muscular and skeletal disorders, such as tendonitis, nerve compression, carpal tunnel syndrome" - *Raise Smart Kid* website.

"The obvious reason why video games are not beneficial to a child's development is obesity. By spending much of their free time on the computer or on their game console, kids are not going out and participating in activities that will keep them physically fit in healthy. Kids get the lazy mindset and would rather not go play outside" - Danielle Dai and Amanda Fry, 2014

"Children who spend more than two hours a day in front of a television or video games in lieu of participating in physical activity may suffer from childhood obesity" – Drea Christopher 2015.

"The addiction can lead to such medical issues as backaches, headaches, eyestrain and carpal tunnel syndrome-pain and numbness that your child may feel in his wrists, hands, shoulders and elbows" - University of Texas at Dallas.

Studies found that "students who had played a violent virtual reality game had a higher heart rate, reported more dizziness and nausea . . . than those who had played a nonviolent game" - Cesarone, 1998.

Impairs Emotional Health:

“A study suggests that video games can be addictive for kids . . . and increases their **depression** and **anxiety** levels . . . exhibit **social phobias** - Minneapolis-based National Institute for Media and the Family.

"Where we get into trouble is when kids use games to replace other things that are important for emotional development" - Dr. David Anderson of Child Mind Institute, *WebMD*.

“A study examined the correlation between violent video games and suicide capability. Suicide capability is defined as “the ability to overcome fear of death and a tolerance to pain to commit suicide.” It simply means that they are more comfortable with the idea of death and dying than others. Once a participant had completed a violent video game, the effects stayed with them. People who played more violent video games had less fear of death but not an increase in pain tolerance” - Auburn University.

Impairs Normal Social Relationships

People can become completely immersed in video games, losing awareness of the passage of time, of their real lives outside the game - Rao 2006.

“Too much video game playing makes your kid socially isolated. Also, he may spend less time in other activities such as . . . sports, and interacting with the family and friends. - *Raise Smart Kid* website:

“If kids are allowed to play video games on the way to school, the trip will be quiet, but it’s not what kids need. They need time to daydream, deal with anxieties, process their thoughts and share them with parents, who can provide reassurance.” - Catherine Steiner-Adair, a Harvard-affiliated psychologist.

Relationships with friends and family members may suffer if your child is spending more time gaming than he is talking to or going out with loved ones. Gaming may be negatively affecting your child's life if he only wants to talk about video games, lies to cover up the amount of time he spends playing, and argues with you over his excessive gaming - *On-Line Gamers Anonymous* website.

“By spending so much time (studies shows 13-14 hours per week average) on their game console or on the computer, children are missing out on their social life. Children are less likely to go out and compete in extracurricular activities which inhibit them from meeting new people and making friends” - Danielle Dai and Amanda Fry, 2014.

Increased Vulgarity and Associated Behavior:

“When playing online, your kid can pick up bad language and behavior from other people” – *Raise Smart Kid* website.

“An experiment investigated effects of profanity used by protagonist and antagonist characters in a first-person shooter game on players’ hostile expectations, accessibility of aggressive thoughts, aggressive feelings, and other responses. Profanity used by both protagonist and antagonist characters increased hostile expectations, a direct precursor to aggressive behaviors. Findings suggest that profanity in video games may affect aggressive outcomes” – Dr. Adrienne Holz Ivory, Department of Communication, Virginia Tech and Christine E. Kaestle, 2013.

After playing violent video games for 10 minutes, participants in one study now under peer review were able to write down significantly more swear words than those who had played a (presumably less exhilarating) golf video game” - “Swearing as Emotional Language”, Zile and Stephens, 2014.

Susceptibility to Online Predators:

“When playing online, your kid . . . and may make your kid vulnerable to online dangers” – *Raise Smart Kid* website.

Read “Stranger in the Console: Predators lurking in your child’s gaming devices” by Kimberly Suiters, 2015.

Read “I couldn’t save my 14-year old boy who loved gaming from being killed by an online predator”, Anna Moor, January 2015.

Read “Bunny Hunting is a Common Tactic of Online Child Predators”, by Conor Swanberg, 2016.

Increased Impulsive Behavior

“Kids spending too much time playing video games may exhibit impulsive behavior” - *Journal of Psychology and Popular Media Culture*, 2012

The effect of video game play on impulsivity has also demonstrated a bidirectional relationship (Gentile et al. 2012). Individuals who played violent games in particular were more likely to agree to statements such as “I do things without thinking” and “I act on the spur of the moment” (Swing and Anderson 2014). Further, this finding supported a unique route through which violent media use increased aggressive behavior (Swing and Anderson 2014).

Increased Risk Taking

Related to the observed effects of violent game play on impulsivity, risk-taking behaviors are also seen to result from certain types of video game play, such as increased inclinations for reckless driving, and this effect was partially fueled by changes in participants’ perceptions of themselves as risky drivers. In other words, participants who were randomly assigned to play a racing video game were consequently more likely to view themselves as risky drivers and therefore displayed more risk-taking tendencies. Such increased risk-taking behavior included speeding and “fun riding” (taking risks while driving to make driving more entertaining). Racing game players tended to have more positive attitudes toward these risk-taking behaviors, and these attitudes predicted intentions to engage in the behavior, which, in turn, predicted actual speeding behaviors. When they played mature-rated games, their video game engagement resulted in a number of risk-taking behaviors including smoking, sex without a condom, and binge drinking, thus the authors found increases in all of the measured risk-taking behaviors” – Groves and Anderson, Center for Study of Violence, Dept of Psychology, Iowa State University, 2015

Increased Aggression and due to Decreased Sensitivity:

“Another route through which violent video game play increases aggression is by **desensitizing** individuals to violence. This is a reduced emotional and physiological response to viewing violence in real life. In one major study on the topic, they found that individuals who had played the violent game displayed less physiological arousal than their nonviolent game-playing counterparts” – Carnagey, 2007.

This tendency is not only present in the short term. One study measured the neurological responses of participants while they viewed images of actual violence. They found that the amount of long-term exposure to violent media was associated with reduced neural responding in an area of the brain that has been associated with the aversive motivational system. Further, this reduced response predicted increases in aggressive behavior” – Bartholow, 2006.

The American Psychological Association (APA) concluded that there is a “consistent correlation” between violent game use and aggression.

“Teenagers who spent more time playing violent video games at the beginning of the study were more likely to have committed acts of physical aggression 30 months later” - Möller and Krahé in Germany, 2009.

Aggressive children tend to demonstrate a **hostile attribution bias**. This is a tendency to interpret ambiguous provocations (i.e., a behavior that could be interpreted as either benign or hostile) in hostile terms (Crick and Dodge 1994; Dodge 2010; Orobio de Castro et al. 2002). These individuals tend to perceive the behaviors of others as hostile, while most others would interpret the same behavior as accidental or otherwise. Violent video game play has been associated with this tendency in multiple longitudinal studies in which violent video game players demonstrated increases in this tendency” - Anderson et al. 2007; Gentile et al. 2011; Möller and Krahe 2009. In these studies, individuals who reported high violent game play were more likely to make **hostile attributions** regarding the ambiguous behavior. In one of these longitudinal studies, high-frequency violent game play early in the school year predicted increases in hostile attribution biases, which, later in the school year, predicted physical aggression” - Anderson, 2007. For example, exposure to violent media (television and movies) increases individuals’ beliefs that the world is dangerous (Bryant et al. 1981; Gerbner et al. 1982).

In fact, research findings illustrate the relationship between violent video game play and pro-violence attitudes (Funk et al. 2004) and that this relationship, in turn, leads to increases in aggressive behavior (Möller and Krahé 2009).

When individuals play violent video games, they repeatedly view aggressive behavior in a rewarding context. Heroes who slay enemies are rewarded with social praise by other characters in the game; they receive monetary rewards, new weapons and armor, and the like. Further, the consequences of aggressive behavior are frequently not present at all in violent games. In reality, aggressive and violent actions lead to pain, death, fear, collateral damage, and Social consequences that are rarely portrayed in video games. There are no grieving family members on the streets of the Grand Theft Auto franchise following a player’s rampage. These qualities of games make the act of aggression appear more attractive and less threatening than in reality.

Players are better able to imagine themselves experiencing reward for aggressive actions and simultaneously do not fully appreciate the consequences of such actions. For example, violent television use is associated with aggressive fantasizing in boys (Viemerö and Paajanen 1992). Further, imagining oneself engaging in behavior increases the individual’s intentions to actually enact the behavior (Anderson and Godfrey 1987). In addition, individuals who imagine themselves as the character within a violent game are also more likely to behave aggressively (Konijn et al. 2007).

One study required that participants fill in the blanks of incomplete words as fast as they are able. Critically, some of these words can be filled complete either aggressive or nonaggressive words. For example, the word fragment “explo_e” can be completed to form the word “explode” or “explore.” Research using these tasks has observed that participants asked to play violent games are more likely to complete these fragments with aggressive words, relative to those asked to play nonviolent games (Carnagey and Anderson 2005; Barlett and Rodeheffer 2009).

“These studies and others illustrate an increase in aggressive cognitions (an umbrella term which encompasses aggressive thought accessibility) which appear to be stronger drivers of violent video game effects on aggression than other routes (e.g., affect, arousal)” - Anderson and Dill 2000; Barlett and Anderson 2013; Carnagey and Anderson 2005.

Research found that players of violent video games in a pro-social context (such as helping a fellow character) were less aggressive than players of violent video games in a morally ambiguous context. Although both were aggressive, participants playing the pro-social zombie game were much more lenient than the morally ambiguous players when deciding the intensity of the white noise to blast into the headphones of the losers. The most benevolent players were the puzzle game participants” - National Science Foundation.

A study found that personalizing an avatar (a game character to represent themselves) increased a person’s level of aggression when playing violent video games. Researchers noted that it didn’t matter if they made the character look like themselves. As long as they took the time to customize the avatar, aggression increased.” - University of Sussex and the University of Innsbruck.

For instance, a number of experiments show that people *feel* more hostile after playing violent games—especially games that simulate real-life situations – Bartlett, 2007 and Bartlett and Rodeheffer, 2009.

In a clever experiment on college students, researchers Brad Bushman and Craig Anderson assigned participants to play either a violent video game or a nonviolent video game. After 20 minutes of play, the participants were left alone in a room while they filled out a lengthy (and bogus) questionnaire about video games. Then researchers staged a fake fight in outside hallway with loud threatening shouts, a chair crashed on the ground, and a door kicked. Then a dialogue about a broken ankle and the other person unwilling to help the other off the floor. How would they react? People who had been playing violent games were more likely to pretend they didn't hear the fight. When they did acknowledge the fight, they rated it as less serious and they took longer to help the victim” - Bushman and Anderson 2009.

They tracked kids and teenagers in two countries—Japan and the United States—for up to 6 months. By measuring aggressive tendencies at the beginning of the study, researchers controlled for prior aggressiveness (which might reflect all sorts of influences, including family violence, socio-economic status, and genetics). Then, 3 or 6 months later, researchers asked kids to report on how often they show physical aggression, like hitting or kicking another person. The results? “The more time kids spent playing violent games at baseline, the more likely kids were to confess to physically aggressive acts 3 or 6 months later” – Psychologist Craig Anderson and colleagues, 2008.

But when researchers assigned school kids to play violent video games, they found that afterwards, during a free play session, boys who'd played the violent game were rated by their peers as more aggressive” - Polman, 2008.

In one recent experiment, researchers randomly assigned 77 adult volunteers to play either a violent video game or non-violent alternative. Then, after 20 minutes, the researchers gave players an opportunity to blast a stranger with loud noise. Players who'd spent time with the violent game chose longer, louder blasts” – Hassan, 2012.

“The research demonstrated a consistent relation between violent video game use and increases in aggressive behavior: aggressive cognitions and aggressive affect. The data, from more than 300 video game studies published between 2005 and 2013, comprised thousands of statistics from previous tests and surveys. "While there is some variation among the individual studies, a strong and consistent general pattern has emerged from many years of research that provides confidence in our general conclusions." - Dr Mark Appelbaum of the American Psychological Association.

Some studies indicate that young people who show more rapid desensitization to violent pictures are going to be more accepting of violence, which is dangerous to the community at large – *Health Central* website, 2016.

“Studies show that video games with violent content are linked to more aggressive behavior in teens. This is a concern because most of the popular video games contain violence. Part of the increase in aggressive behavior is linked to the amount of time children are allowed to play video games—and daily media use by children is increasing significantly. In interactive video games, players are encouraged to identify with and role play their favorite characters. Players move up in game levels as their character masters skill and wins. But in many of the popular games, players move up levels by winning fights or battles. Players directly benefit from engaging in acts of violence”- *Sutter Health* website.

Studies found that “students who had played a violent virtual reality game . . . exhibited more aggressive thoughts in a post-test than those who had played a nonviolent game” - Cesarone, 1998.

“A study found that video game addicts argue a lot with their teachers, fight a lot with their friends, and score lower grades than others who play video games less often. Other studies show that many game players routinely skip their homework to play games, and many students admitted that their video game habits are often responsible for poor school grades. - Argosy University's Minnesota School on Professional Psychology.

“Children who play more violent video games are more likely to have increased aggressive thoughts, feelings, and behaviors, according to a scientific study” - Anderson & Bushman, 2001, 2009

“Those who watch a lot of simulated violence, such as those in video games, can become immune to it, more inclined to act violently themselves, and are less likely to behave emphatically” - Dmitri A. Christakis of the Seattle Children’s Research Institute.

In many games, kids are rewarded for being more violent. The act of violence is done repeatedly. The child is in control of the violence and experiences the violence in his own eyes (killings, kicking, stabbing and shooting). This active participation, repetition and reward are effective tools for learning behavior. Indeed, many studies seem to indicate that violent video games may be related to aggressive behavior, such as Anderson & Dill, 2000 and Gentile, Lynch & Walsh, 2004.

“Playing video games may increase aggressive behavior because violent acts are continually repeated throughout the video game. This method of repetition has long been considered an effective teaching method in reinforcing learning patterns” – Gentile & Anderson, 2003.

“Players who become engrossed in first-person shooter-style video games, for example, may adopt a detached view of society or develop aggressive thoughts and tendencies” - Richard Gallagher of NYU Child Study Center’s Parenting Institute.

“Research has also found that, controlling for prior aggression, children who played more violent video games during the beginning of the school year showed more aggression than other children later in the school year” - *Pediatrics*, 2008.

Increased Relational Aggression

This behavior occurs with the intent of harming another by manipulating another’s relationships. This form of aggression can be either direct, as when someone threatens to withdraw their friendship from the target, or indirect, as when spreading rumors about another person. Sometimes relational aggression is verbal, but it also can be nonverbal or even a non-behavior (e.g., intentionally not inviting a classmate to a party that includes most other classmates). Some content analyses have been conducted on this topic, finding that relational aggression is well represented in some forms of media such as reality TV shows (Coyne et al. 2010) and popular adolescent TV shows (Coyne and Archer 2004).

For instance, Coyne et al. (2011) found that viewing relationally aggressive media was associated with increases in relational aggression between intimate partners (e.g., threatening to break up with one’s romantic partner as a coercive tactic) and this effect occurred for both males and females. Möller and Krahe (2009) found that playing violent video games was related to increases in relational aggression in a cross-sectional analysis (both measures taken at the same time); however, this cross-domain relationship did not persist over time as violent game play did not predict relational aggression 30 months later. In the work by Coyne et al. (2008), participants were randomly assigned to watch a relationally aggressive video clip, a physically aggressive video clip, or a nonaggressive video clip. The researchers found that viewing either aggressive clip led to increases in both relationally aggressive behavior and physically aggressive behavior, suggesting that a relatively “general” aggression-related knowledge network is activated by viewing either of these forms of aggression.

Aggressive or violent people are attracted to violent games

Indeed, a study of kids in Belgium and the Netherlands found that boys who were rated as less empathic and more aggressive were especially attracted to violent video games” – Lemmens, 2006.

A study of Korean youth found that aggressive and narcissistic personalities were more likely to become addicted to online games” – Kim, 2008.

Decreases in Pro-Social Helping:

Violent game play has been found to reduce pro-social behaviors (Anderson et al. 2010; Greitemeyer and Mügge 2014). In two studies on this effect, researchers examined the influence of violent media use on ecologically valid (i.e., applies well to real-world events) measures of helping behavior (Bushman and Anderson 2009).

In the first study, participants were randomly assigned to play a violent or a nonviolent game. After playing the game, they were asked to complete a questionnaire. While filling out this questionnaire, a staged fight occurred outside of the laboratory. Individuals who had played the violent game were less likely to rate the fight as serious and were less likely to “hear” the fight in the first place, relative to those who had played a nonviolent game.

In their second study, they asked a woman to stand outside of a movie theater and struggle in picking up her crutches. Of primary interest was whether the length of time it took for movie goers to help would vary as a function of the type of movie they watched. As the researchers predicted, they found that it took longer for individuals to help if they had just watched a violent movie compared to a nonviolent movie. Importantly, when she struggled to pick up her crutches before the movie, violent and nonviolent movie goers helped her in an equivalent amount of time, suggesting that the violent movie viewing itself was responsible for the helping decrements, not characteristics of the people going to the movie. These findings of violent media effects on pro-social behavior are not unique to these two studies.

Negative effects of video game play have been demonstrated by several research groups (Anderson et al. 2010; Rothmund et al. 2011; Sheese and Graziano 2005).

“Children who play more violent video games are more likely to have decreased pro-social helping, according to a scientific study” - Anderson & Bushman, 2001, 2009

“The research demonstrated a consistent relation between violent video game use decreases in pro-social behavior, empathy and sensitivity to aggression. The data, from more than 300 video game studies published between 2005 and 2013, comprised thousands of statistics from previous tests and surveys. “While there is some variation among the individual studies, a strong and consistent general pattern has emerged from many years of research that provides confidence in our general conclusions.” - Dr Mark Appelbaum of the American Psychological Association.

Decreased Empathy, Sympathy, Compassion for Victims, especially Women due to Sexism

“The research demonstrated a consistent relation between violent video game use **decreases in empathy and sensitivity to aggression**. The data, from more than 300 video game studies published between 2005 and 2013, comprised thousands of statistics from previous tests and surveys. “While there is some variation among the individual studies, a strong and consistent general pattern has emerged from many years of research that provides confidence in our general conclusions.” - Dr Mark Appelbaum of the American Psychological Association. Further, desensitization from video game play also reduces empathy (Anderson et al. 2010; Funk et al. 2004)

After playing Grand Theft Auto, in which women are presented as sexual objects, a large sample of teenage boys reported significantly lower levels of **sympathy and compassion** when shown a photo of a female victim of domestic violence. Most people would look at these images and say the girl pictured has to be terrified. But males who really identified with their characters in the sexist, violent games didn't feel as much **empathy** for the victim. The extent to which schoolboys feel they identify with the protagonists of violent and sexist video games was the most troubling discovery of the study. If you see a movie with a sexist character, there's a certain distance, but, in a video game, you are physically linked to the character. You control what he does. That can have a real effect on your thoughts, feelings, and behavior, at least in the short term” – Brad Bushman, co-author of the study and Professor of Communication and Psychology at The Ohio State University.

In the study participants were randomly assigned to watch a series of events within a video game in which violence and sexual exploitation against women are portrayed in the game Grand Theft Auto IV or watched a video of a baseball video game being played. They found that individuals viewing the sexually-stereotyped game were more likely to endorse rape myth attitudes, and that sexual harassment was more tolerable after viewing sexualized images of video game characters.” - Beck, 2012.

The bystander effect: Psychologists discovered that if there are more people in a given area, it becomes less likely that one of them will help a person in trouble. Most people assume that someone else nearby will take care of the problem. A study by the University of Innsbruck found that the bystander effect also happens in video games and can linger after the game is over. When there are more non-playable characters (NPCs), players are less likely to help other NPCs. Research has proven that even if the presence of other people is imaginary, people are still less likely to help out.

Addiction:

“ It seems that a subgroup of ADHD children could be vulnerable to developing dependence upon video games” – Bioulac, Arfi, Bouvard, *European Psychiatry* 2008.

“Video game addiction can be as problematic as gambling and affects players as young as 8 years old” - Keith Baker of Smith and Jones Addiction Consultants.

Signs of Addiction:

Video games dominate their lives. Playing gives them a sense of euphoria, or at least a sense of relief from unpleasant feelings. Kids experience “withdrawal” if they are denied access to games. And gaming interferes with everyday life, including school and social relationships” – Gentile, 2009.

The *On-Line Gamers Anonymous* website notes that it may be a sign of an addiction if your child is constantly thinking about his next video game session, devising ways to get back to the game, abandoning former hobbies that don’t relate to video games or declining social events with personal interaction because he's spending time discussing video games on the Internet.

According to Gentile, a “Yes” or “Sometimes” answer to a majority of these questions: Over time, have you been spending much more time thinking about playing video games, learning about video-game playing, or planning the next opportunity to play? Do you need to spend more and more time and/or money on video games in order to feel the same amount of excitement? Have you tried to play video games less often or for shorter periods of time, but are unsuccessful? Do you become restless or irritable when attempting to cut down or stop playing video games? Have you played video games as a way of escaping from problems or bad feelings? Have you ever lied to family or friends about how much time you play video games? Have you ever stolen a video game from a store or a friend, or have you ever stolen money to buy a video game? Do you sometimes skip household chores in order to spend more time playing video games? Do you sometimes skip doing homework in order to spend more time playing video games? Have you ever done poorly on a school assignment or test because you spent too much time playing video games? Have you ever needed friends or family to give you extra money because you spent too much money on video game equipment, software, or game/Internet fees?

Recommendations – Raise Smart Kid website (and other sources).

- Although playing video games can be a learning experience, give your kid a variety of entertaining things to learn from, so your kid will not be addicted to just one thing. Be sure to make him read books, play sports, interact with other kids, and watch good TV. Everything should be taken in moderation.
- Some studies suggest that the most “addictive” video games are the fantasy role-playing games, especially for kids who are shy or unpopular (Lee, 2007). So, perhaps concerned parents should try to steer susceptible kids away from such games, and towards less overwhelming options, like electronic board games, puzzles, sports games, or simulation games. And maybe parents can offer kids other, more productive or developmentally stimulating ways to enjoy a sense of flow. Kids can lose themselves in the exploration of local wildlife or the construction of a model bridge.
- Follow the **“Setting Time Limits” section below** (also *Sutter Health* website), **but additionally limit:**
 - When you see him spending less time doing homework and that he is getting lower grades.
 - When you observe him having a sedentary lifestyle, and not engaging in sports and exercise. You can let him play video games that require physical action as there are a number of games that can be as physically intense for younger gamers as playing outside. But this shouldn’t take replace his actual engaging in outdoor play and exercise.
 - When he displays signs of addiction or experience “video game withdrawal”.
- Use the video game ratings to determine the violence and adult content of the game. (also *Sutter Health* website).
- Do not install video game equipment in your child's bedroom where you can’t effectively monitor usage (*Sutter Health* website).
- Monitor all forms of media (video games, television, movies, and the Internet since there are many online video games) – Raise Smart Kid (also *Sutter Health* website).
 - Monitor the effect of video games on your child. Observe his behavior. If it appears that he is becoming more aggressive with his siblings or friends during the period that he is playing violent games, stop him from playing the games. If he becomes interested in history after playing historical games, then the game is beneficial to him.
 - Take the time to discuss with your children the games they are playing or other media they are watching. Ask your children how they feel about what they observe in these video games, television programs or movies. This is an opportunity to share your feelings and grow closer with your child.

Setting Time Limits:

Eugene Arnold, MD, child psychiatrist at Ohio State:

- Preschoolers: Limited and supervised time only
- Elementary school: 1 to 1.5 hours a day, including television time
- Middle school: 1.5-2 hours a day, including TV and cell-phone time
- High school: 2 to 2.5 hours a day (negotiable, depending on academic needs)

The American Academy of Pediatrics recommends that children not spend more than **1-2 hours per day** in front of **all electronic screens**, including TV, DVDs, videos, video games (handheld, console, or computer), and computers (for non-academic use). This means seven to fourteen hours per week total.

Pediatrics International recommends that video games should be limited to less than one hour per day.

“He shouldn't be getting anymore than **2 hours of screen time per day** and this includes time playing games, watching television and surfing the Internet” - HealthyChildren.org.

Recommended Websites:

<http://public.psych.iastate.edu/caa/> Iowa State University – Department of Psychology (search for “game” or “gaming”)

<http://drdouglas.org/> Dr. Douglas A. Gentile – Research on the Effects of Media