

EFFECT OF VIDEO GAMES ON CHILDREN

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Designed & Developed by CA PURVI KAMDAR



Computer games, Atari, Sega, Television



Nintendo – Gameboy, DS, 3ds, Wii, Wii U

Sony – Playstation 3 with move bundle, Playstation vita, PSP



CURRENT COMPETITORS FOR "SCREEN TIME"

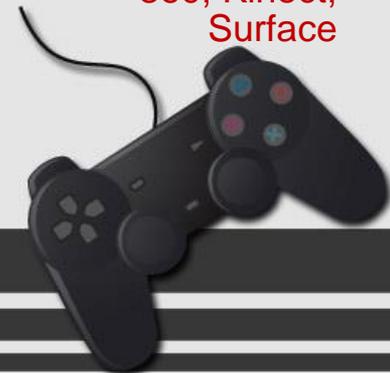


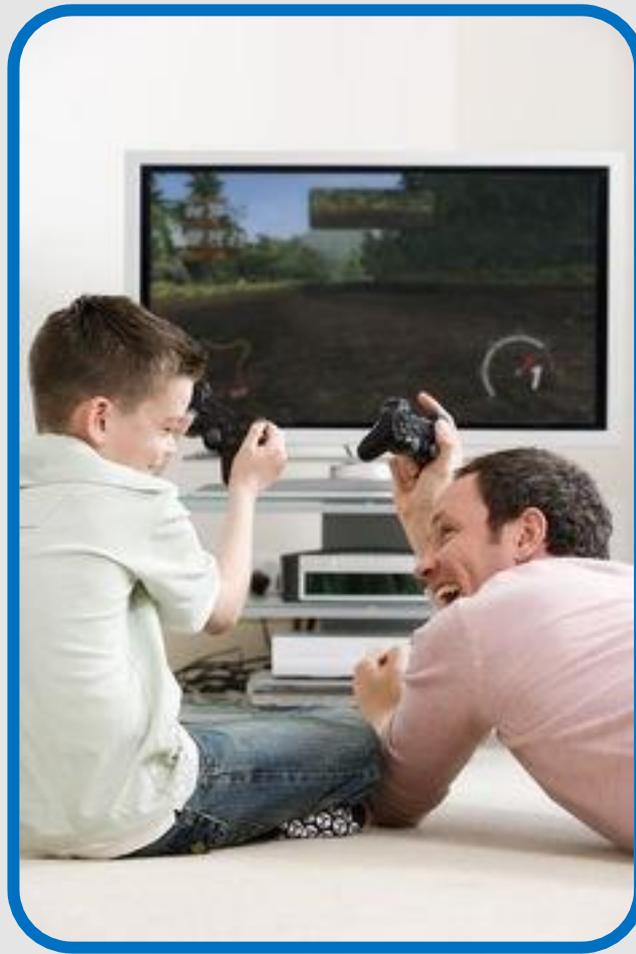
Microsoft – Xbox 360, Kinect, Surface



Google – Android platform for Mobile phones, Tablets

Apple – Ipad 4, Iphone 5, Ipod touch





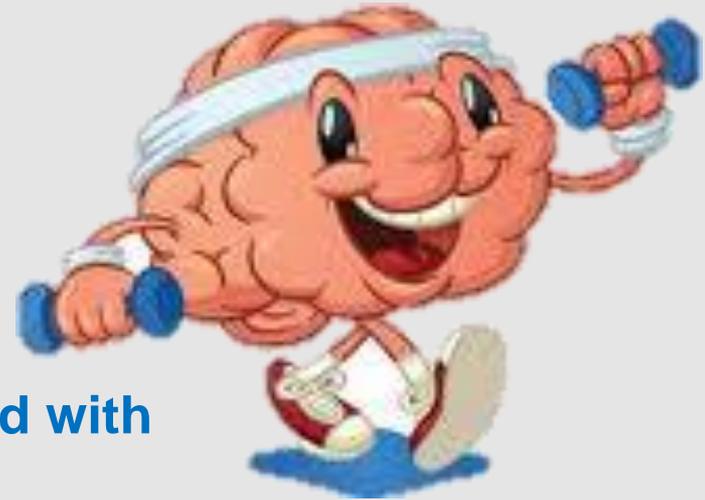
POSITIVE EFFECTS OF VIDEO GAMES



It gives the BRAIN a Real Workout – HOW ???

As it involves ~

- **Following instructions**
- **Problem solving and logic**
- **Teamwork and cooperation when played with others**
- **Simulation, real world skills.**
- **Hand-eye coordination, fine motor and spatial skills**
- **Multitasking, simultaneous tracking of many shifting variables and managing multiple objectives**



It helps in Polishing Skills in various Professions



- Experience with video games is related to better surgical skills.



- Pilots of today are more skilful as being weaned on video games.



- Resource management and logistics skills also get better.



Various Attributes of the Brain gets Better by playing proper video games for an appropriate time

- **Quick thinking, making fast analysis and decisions**
- **Strategy and anticipation**
- **Developing reading and math skills**
- **Perseverance**
- **Pattern understanding**
- **Estimating skills**



Playing Video Games can also help in ~

- Inductive reasoning and hypothesis testing
- Memory enhancement
- Improved ability to rapidly and accurately recognize visual information
- Reasoned judgments
- Taking risks
- How to respond to Challenges
- How to respond to Frustration
- How to explore and rethink goals



The Best Way to LEARN is When the Learner is having FUN at the Same Time

Kids like games because of the ~

- colours,
- the animation,
- the eye candy,
- as well as the interactivity and the challenge ,
- and the rewards of winning.



Playing Video Games is a Good Bonding Activity between Parents and Kids

Parents who take the time to play not only **become more knowledgeable about the games their kids are playing**, they also form closer connections with their kids as they meet on their children's "own turf"



Understanding How does Playing ACTION-BASED Video Games help

- Playing action-based video and computer games make decisions 25% faster than others without sacrificing accuracy
- Expert gamers can make choices and act on them up to six times a second—four times faster than most people, and can pay attention to more than six things at once without getting confused, compared to only four by the average person.

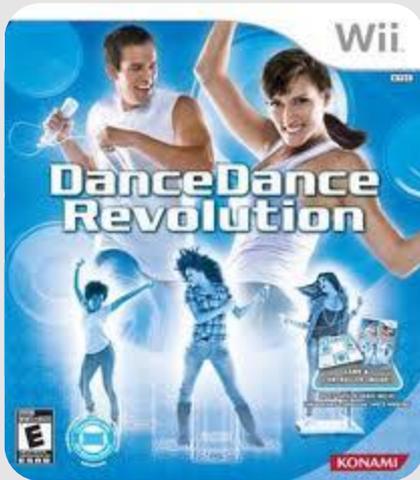


Understanding How does **Playing VIOLENT - BASED** Video Games help

- Surprisingly, the violent action games that often worry parents most had the strongest beneficial effect on the brain.
- Violent video games may act as a release of pent-up aggression and frustration. This diffuses stress. Games can provide a positive aggression outlet the same way as football and other violent sports.
- Also, violent games have the most emotional appeal for kids. But these factors are only secondary to what kids actually enjoy in these games - the opportunity to develop and master skills and have the freedom to make choices in the game universe.



Understanding How does Playing PHYSICAL ACTIVITY-BASED Video Games help



Studies in West Virginia showed that more important than Weight, the kids who played DDR showed better Arterial Function - an important factor in fending off Heart Disease and Type II Diabetes



Video games that require your kid to be active, such as Dance Dance Revolution and Nintendo Wii Boxing give a good workout.



BENEFICIAL EFFECTS of Playing Video Games

- Enhance low-level vision, visual attention, processing speed and statistical inference, contrast sensitivity.
- Scientists also found that women—who make up about 42% of computer and videogame players—were better able to mentally manipulate 3D objects, a skill at which men are generally more adept.
- Video games require repetitive behaviours, which can strengthen connections between brain cells and thus enhance motor skills.
- Stroke patients who have damage to the brain improved their motor skills after playing video games



And ofcourse Playing Video Games is Safer than Drugs, Alcohol and Street Racing in the real world





**NEGATIVE EFFECTS OF
VIDEO GAMES**



ADDICTION of Playing Video Games can lead the Child to be ~

- **Socially isolated.**
- **Vulnerable to online dangers.**
- **Confusion between Reality and Fantasy.**
- **Some video games teach kids wrong values. Violent behaviour, vengeance and aggression are rewarded. Negotiating and other nonviolent solutions are often not options. Women are often portrayed as weaker characters that are helpless or sexually provocative.**



ADVERSE EFFECTS of Playing Video Games

Physical Effects

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.

Mental Effects

Addiction to video games increases depression and anxiety levels, social phobias.

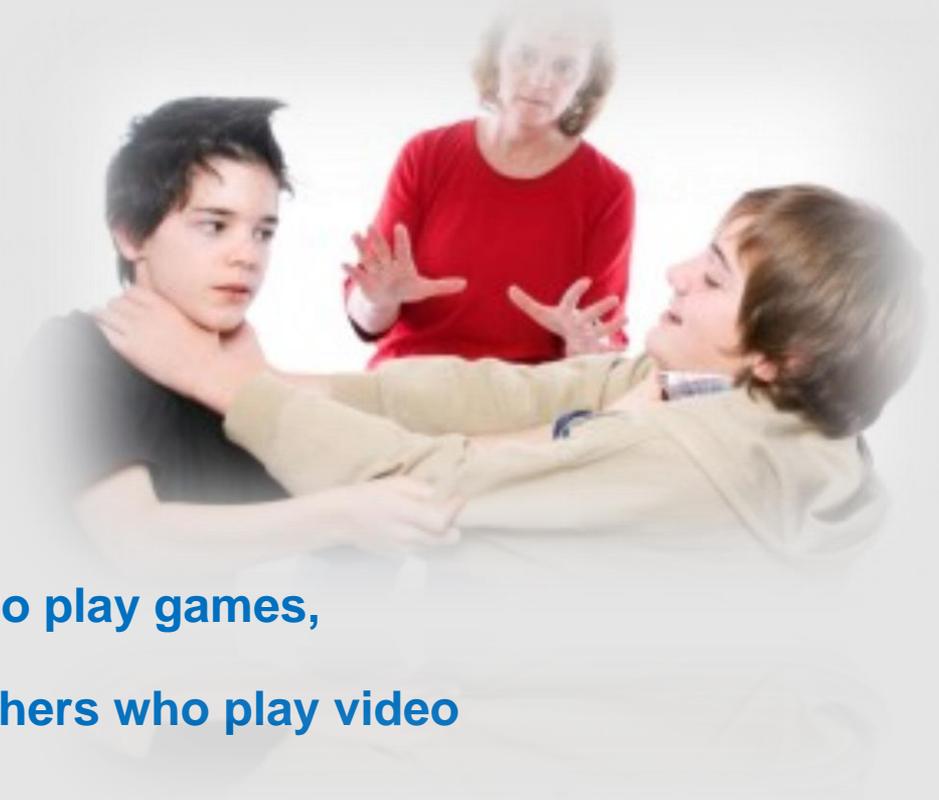
Kids spending too much time playing video games may exhibit impulsive behaviour and have attention problems.



How Can School Teachers IDENTIFY VIDEO GAME ADDICTS

Video Game Addicts ~

- argue a lot with their teachers,
- fight a lot with their friends,
- routinely skip their homework to play games,
- and score lower grades than others who play video games less often.



RECOMMENDATION for Video Games

- The American Academy of Paediatrics recommends that children not spend more than 1 to 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 7 to 14 hours per week total.
- Be sure that they read books, play sports, interact with other kids, and watch good TV.



WHAT CAN PARENTS LOOK FOR While Choosing a Video Game

- Decide what is acceptable in your home.
- Check the Ratings of the game before you buy it.
- Chronological age is not necessarily a measure of maturity.
- Pick games that require the player to come up with strategies.
- Look for games involving multiple players to encourage group play.

OK TO PLAY? CHECK THE RATINGS **ON EVERY VIDEO GAME BOX.**

To take full advantage of the ESRB Rating System, it is important for parents and other customers to check the Rating Symbol suggesting age appropriateness on the front of the game package, and the content descriptor on the back of the package. Content descriptors indicate elements in a game that may have triggered a particular rating and may be of interest or concern.

ON FRONT OF GAME PACKAGING

	Early Childhood	May be suitable for ages 3 and older. Contains no material that parents would find inappropriate.
	Everyone	May be suitable for ages 6 and older. Titles in this category may contain minimal cartoon, fantasy or mild violence and/or use of mild language.
	Teen	May be suitable for ages 13 and older. Titles in this category may contain violence, suggestive themes, crude humor, minimal blood, simulated gambling, and/or infrequent use of strong language.
	Mature	May be suitable for ages 17 and older. Titles in this category may contain intense violence, blood and gore, sexual content, and/or strong language.
	Adults Only	Should only be played by persons 18 years and older. Titles in this category may include prolonged scenes of intense violence and/or graphic sexual content and nudity.

ON BACK OF GAME PACKAGING

Content descriptors are found on the back of the box. Go to www.ESRB.org for a complete listing of content descriptors.

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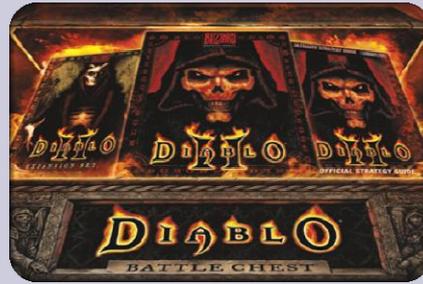


What do THERAPISTS & EXPERTS SAY TO keep in mind for PARENTS While Choosing a Video Game

➤ Girls mostly play video games which include little violence, female avatars, and something a bit more “girly” than others. The girls in the study claimed that they choose games with attributes such as, “being in control, having good music and graphics” as well as games that “should have choice and variety” and be “unpredictable”.

➤ Boys need to slay dragons and play games with action figures of cowboys and Indians," say Therapists and Experts. "They need to be in a fantasy where they are conquering heroes; suppressing this may have long-term effects that may not be good”.





**CALL OF
DUTY
Modern
Warfare**
3 – 5 days

DIABLO
3 – 40
hours

X-BOX
12 hours

**MARIO
KART**

DEHYDRATION

IS IT REALLY WORTH IT ?





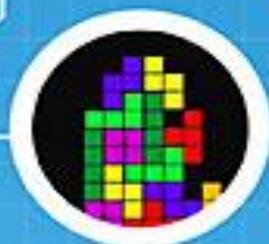
Game play involves repeated actions that strengthen the brain cell connections underlying memory and learning.



PREMOTOR & PARIETAL CORTEX
Games that require real-time action, like 'Space Invader,' activate these areas, which control sensory movement.

FRONTAL LOBE

One study claimed frequent players can get 'video game brain.' This means key parts of their frontal lobe become underused, which can alter moods.



PREFRONTAL CORTEX

Games that require logical thinking, like 'Othello' and 'Tetris', activate this area, which controls decision making.



DOPAMINE

Dopamine, which is involved in learning and feelings of reward, is released in the brain's striatum during video game play.

DORSAL ANTERIOR CINGULATE CORTEX

Immediately after firing a weapon in a video game, players show greater activity in this area, which controls cognition and planning.



ROSTRAL ANTERIOR CINGULATE CORTEX & AMYGDALA

Areas that resolve emotional conflict showed less activity while players fired a weapon and soon afterward. Studies say players may suppress their emotional



Violence and the FRONTAL LOBE

Violent video game play has a long-term effect on brain functioning," Dr. Wang said. "These effects may translate into behavioural changes over longer periods of game play."



FRONTAL LOBE

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Addictive Potential and LEFT VENTRAL STRIATUM

- More grey matter in the Left Ventral Striatum, Striatal function is "core candidate promoting addictive behaviour".



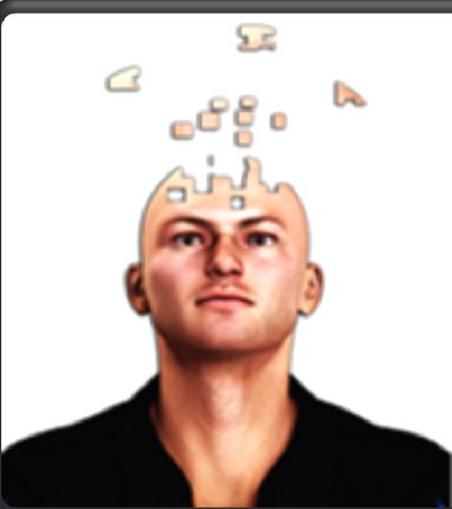
- Frequent gamers had greater brain activity when they were given feedback that they were losing. This is similar to a response seen in addicted gamblers, who have increased levels of the brain chemical DOPAMINE in the ventral striatum when they are losing money.

~
CONTD



Addictive Potential and LEFT VENTRAL STRIATUM

- “Screen technologies cause high arousal which in turn activates the brain system's underlying addiction and accused games of causing ‘DEMENTIA’ in children”
- This results in the attraction of yet more screen-based activity.



Dementia

The person forgets things and gets confused.

The person will have problems doing things like getting dressing or feeding themselves.

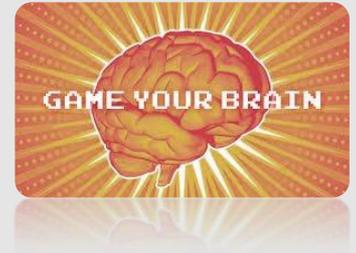
Dementia normally happens to older people

Very hard for people who care

Helps if person is in familiar place and with people they know well



GAME BRAIN - What does it mean ?



- Akio Mori – a Japanese researcher
- "Beta" wave activity in people was constantly near zero
- People got angry easily, couldn't concentrate, and had trouble associating with friends
- "Youths who are heavy gamers can end up with 'video-game brain,' in which key parts of the **FRONTAL REGION** of their brain become chronically underused, altering moods"
- An important question arises: if the brain is so impacted by video games as to create behavioural changes, must that mean that the brain perceives the games as real ?



GAME BRAIN - What does it lead to ?

- Many video games stir up tension and a feeling of fear.
- Autonomic nerves are those connected with involuntary internal organ processes, such as breathing and heart rate.
- Playing video games can significantly increase heart rate, blood pressure, and oxygen consumption
- The brain is responding to the video game as if the body is in real danger. Does repeated exposure to this "false" sense of danger have an effect on what the brain then perceives as real danger?



Too Much Screen Time ?

- ▶ Screens of one kind or another occupy 50 hours a week, "It's a full-time job plus 10 hours of overtime, and that's the average".
- ▶ Video-gaming consumed nine weekly hours for teens, and 13 hours a week spent gaming on computers and consoles.
- ▶ Too much time gaming leads to poor school performance. Gaming displaces after-school academic activities such as homework and reading and **SIGNIFICANTLY LOWER READING & WRITING SCORES.**



VIOLENT Video Games and AGRESSION

- Most researchers define violence as the ability of a player to intentionally harm others in a game.
- "One of the reasons I think we find television and video games so relaxing is they provide the attention for you. It forces you to orient to the media. You don't have to work to pay attention like you do in classroom lecture,"



Who are VULNERABLE ?

- ▶ **CERTAIN PERSONALITY TRAITS** - those who are highly neurotic, less agreeable and less conscientious - are those more likely to become hostile from gaming.
- ▶ "Seeing violence anywhere increases the risks that a child might become involved in aggression, whether as a perpetrator or a victim" .
- ▶ Players get immediate feedback and rewards for punishing competitors. And not only do games reward hostility, they train your brain to respond to real-life problems with aggression.
- ▶ 'You killed my monster, now you must die.'



Inexperienced Video Gamers show MACBETH EFFECT

- "The need to cleanse to keep moral purity intact, the *MACBETH EFFECT*, is a psychological phenomenon in which a person attempts to purify oneself in order to cope with feelings of moral distress“.
- Inexperienced players selected more hygienic products, such as shower gel, toothpaste and deodorant compared to those who played violent video games more often.
- Inexperienced players also felt higher moral distress from playing violent games.



Pro-Social Behavior due to Video Gaming

Prevalence of Pro-Social Behavior in Gaming	
<i>When you play computer or console game, how often do you see people being generous or helpful while playing?</i>	
% who say	Teens who play games (n=1,064)
Often	27%
Sometimes	51
Never	21

Source: Pew Internet & American Life Project Gaming and Civic Engagement Survey of Teens/Parents, Nov 2007-Feb 2008. Margin of error is ±3%.



NOVEL USES of Video Games

“Identifying a direct connection between the stimulation of neural circuits and game play is a key step in unlocking the potential for game-based tools to inspire positive behaviour and improve health.”



HopeLab and Stanford University researchers announced new data showing that Re-Mission™, a video game about killing cancer in the body, strongly activates brain circuits involved in positive motivation.



Unreal Tournament - focus to competitive multiplayer action



THANK YOU FOR A PATIENT HEARING FROM DR DARSHAN SHAH



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