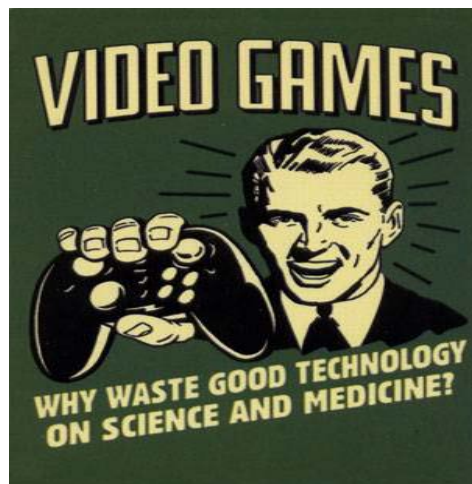


## THE POSITIVE AND NEGATIVE EFFECTS OF COMPUTERS AND VIDEO GAMES ON BEHAVIOUR

Since the 1970s, computers and video games have had a major impact on how people spend their leisure time. *Nintendo* is one of the largest manufacturers of video games, and from 1983 to 1995 sold 3 games every second worldwide. This is one game for every teenager on earth.



The public's main concern about computer and video games relates to the *violence* that some of them contain, and whether being a part of this violence influences children's aggressive behaviour. However, concerns have also been raised about the relationship between computers and video games and addiction and criminal activities.

### Some negative effects of computers and video games

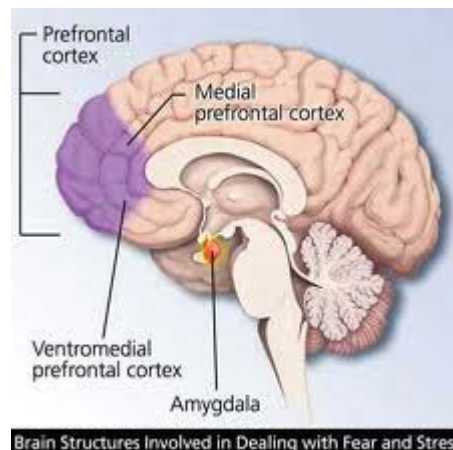
According to **Griffiths (1993)**, little is known about the *long-term* effects of playing violent computer and video games. In the public mind, such games may have a more adverse effect on children than television because of the child's *active involvement*. There is, however, a great deal of research suggesting that computer and video games can, at least in the short-term, have negative effects on those who play them. These can be divided into physical effects, behavioural effects, and psychosocial effects.

With respect to physical effects, **Funatsuka (2001)** found that gaming can provoke epileptic seizures. Prior to its release in the US, Nintendo's *Pokemon* had to be reformatted due to its association with epileptic seizures in more than 700 Japanese viewers (**AMA, 2006**).



Research conducted by **Matthews et al (2006)** has shown that video games can have a short-term effect on the functioning of different areas of the brain. In their study, 44 adolescents were randomly assigned to play either a violent video game (*Medal of Honor*) or a non-violent but equally fun and exciting video game (*Need for Speed*) for 30 minutes. Using fMRI, brain structure and function was measured immediately after the 30 minutes had elapsed.

Those who played the violent game showed increased activity in the **amygdala**. This part of the limbic system stimulates *emotions*. However, there was also decreased activity in the **pre-frontal lobe**, which regulates *inhibition, self-control* and *concentration*. These responses were *not* present in those who played the non-violent game.



This finding supports the view that such games can have negative effects. The study is methodologically sound because it used measurements which were objective, as opposed to other research which asks players to report their own (subjective) feelings. One of the implications of this research is that judgements about what is real and what is fantasy may become blurred in children who play violent games frequently.



With respect to behavioural effects, many studies point to a correlation between exposure to and/or playing violent video games and negative actions. For example, **Lin & Lepper (1987)** investigated whether the frequency with which young children played computer games was correlated with their impulsiveness and aggressiveness.

The study involved male and female youngsters in Florida who were asked about their computer game use and perceptions of their own aggressiveness and impulsiveness. These were then compared with various ratings supplied by their teachers. Impulsiveness and aggressiveness were significantly correlated with the frequency of game playing in boys, but not in girls.

More recently, **Anderson & Bushman (2001)** conducted a meta-analysis of research which measured the effects of being exposed to computer games on five variables. These were aggressive behaviour, aggressive thoughts, pro-social behaviour, aggressive mood, and physiological arousal. They found that short term exposure to video game violence was significantly associated with temporary increases in aggression in all participants. According to **Peng et al (2008)**, children who have an existing aggressive predisposition are more likely to be adversely affected.

Research also suggests that computer and video games may have significant psychosocial effects. **Grüsser et al (2007)** surveyed 7,000 gamers and found that around 12% of these could be classified as being 'addicted' using the World Health Organisation criteria.

There are many other areas that researchers have looked at. For example, there are growing concerns about *obesity levels* in young people. One contributory factor is that young people spend much of their time sitting down engaged in screen-based activity. Whilst active video games use up more energy than watching TV, energy expenditure nowhere near matches that of physical activities such as walking or playing football (Graves et al, 2000).

Parents, in particular, are concerned with internet communication in young children. Byron (2008) found that whilst internet communication can help nurture existing friendships, it can lead to *unhealthy relationships*, and therefore children's use of social networking websites should be carefully monitored by parents. Research conducted by Nie & Ebring (2000) suggests that children who spend too much time on computers may show much *poorer relationships* with 'real people' such as their family and friends.

### Some positive effects of computers and video games

Although being 'addicted' to computers and video games might appear to be a bad thing, being 'addicted' may actually have *positive* effects. For example, Shotton (1989) conducted a study in the UK, surveying 127 people (about 50% of them children) who reported being addicted to home computer games for at least five years. Shotton found that compared with a control group of 'non-addicts', those in the addicted group were highly intelligent, motivated and high-achieving people.



Is being a computer 'addict' necessarily a bad thing?

Furthermore, a five-year longitudinal study of the 'addicted' participants found that a proportionately high number had done well educationally, gone on to university and secured high-ranking jobs. So, far from having negative effects, being addicted to computer and video games could actually be harmless, if not beneficial for some people.

A lot of other research also suggests that computers and video games can have positive effects. For example, **Bowman & Rotter (1983)** suggest that games can have a benefit in that there are creative and pro-social games with educational value, and also games that help to release stress and aggression in a non-destructive way. Additionally, **Gold et al (2006)** have found that virtual reality and video games have beneficial effects as learning aids within the healthcare sector.

According to **Gee (2003)** some games can empower learners, develop problem solving, and help understanding. Games offer a chance of control and mastery, and often reward non-linear thinking and the resetting of goals as the game progresses. Many games encourage players to reflect on their choices, to review earlier decisions, and then learn from their mistakes. Thus, they encourage independent thinking, perseverance and commitment.

Other support for the positive effects of games came from **Kestenbaum & Weinstein (1985)**. They conducted a study into heavy computer game use in adolescent male participants and its relationship with personality and psychopathological factors. They found that playing computer games has a calming effect, in that they can help manage conflict and can discharge aggression by allowing the open expression of competition.

Contrary to the claim that computer games do not involve much energy expenditure, **Mellecker et al (2008)** have argued that *some* active games *do* allow children to use up at least as much energy as is used in real play activities. It has also been argued that internet communication can *nurture existing friendships* and help children who are self-conscious and shy to communicate, as well as providing a buffer against stressors in adolescence (**Valkenburg & Peter, 2009**). Note also that a large body of research exists which suggests that computer gaming can improve certain cognitive abilities such as *visuo-spatial* and *attentional skills* (**Sims & Meyer, 2002**).