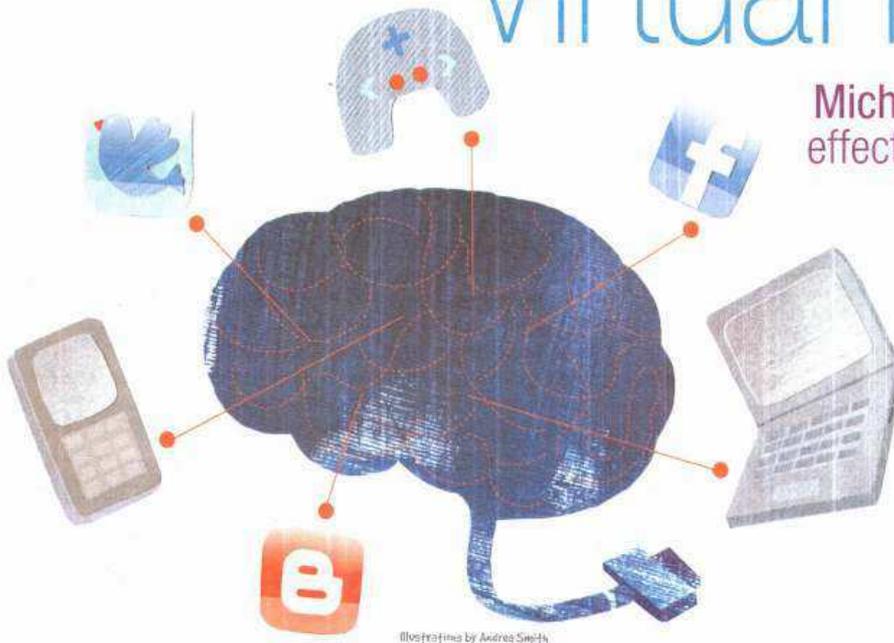




Virtual Realities

Michael Nagel writes about the effects of on-screen violence on young people's brains.



One of the questions that parents ask psychologists and educators is whether or not video games and television are 'bad' for children? In a rampantly advancing technological society, it seems that almost everyone has an opinion about the effects of television and interactive media on learning and behaviour. Moreover, given that video media and the internet are now pervasive in the lives of children and teenagers, a further serious question has arisen: can violent media have a negative effect on brain development and functioning in children?

Considering that we are moving into the holiday season, in which shopping for gifts may lead us into the 'techno' section of many department stores, it seems timely to look at what some of the latest research tells us. However, before we look at the potential impact of



television and video games on the minds of children, it is important to have a quick look at how the brain's malleable characteristics might allow for such intrusions.

Scientists have known for many centuries that the human brain changes, adapts and develops in response to environmental stimuli. In recent times, this concept of change has become known as 'neural plasticity', the capacity of the brain to change as a result of one's experience. Since the brain isn't fully mature until the third decade of life, young children and adolescents are more susceptible to environmental influences, as their brains are growing, developing and, for a period of time, restructuring. Moreover, neuroscientific research over the last decade has produced greater insights into the plastic nature of the brain. Some of the most fascinating research suggests that television and the products of a digital age have had a profound influence on the minds of our children.

Television has generated a number of debates about its potential impact on children, including upon their development, concentration and attention, as well as its effect on learning. Rapid advances in digital technology mean that television is now only one of several home-entertainment technologies accessed by children. Today, children's brains are exposed to a variety of types of technology for extensive periods each and every day. Young people are blogging, messaging, chatting, tweeting, Facebooking, googling and gaming in ways never known before and for longer periods of time. A growing

number of neuroscientists, supported by a growing number of empirical studies, believe that this constant exposure to digital stimulation for hours on end is actually altering the brains of children, and that some of this alteration is not too positive. For some researchers, it is already fairly clear that 'screenagers', or those who spend a disproportionate amount of time in front of a screen, have shorter attention spans, impaired personal communication skills and marked reductions in the capacity to think abstractly.

Neuroscientific research in many countries has identified that the passive nature of television does little to engage the brain and may in fact be hindering cognitive development. Put simply, kids who are busy watching TV are less likely to be engaging with the world around them. The sensory stimulation provided by play, social interactions and experiential learning is critical for healthy brain development and the intellectual, social and emotional capacities that result from such development.

Most video games do not fare much better in this regard, for although there have been marked improvements in the interactive nature of technology, even Wii games do not offer the same measure of stimulation gained from reality. Indeed, one of the most fascinating studies carried out regarding the brain, cognitive activity and video games was conducted by researchers in Japan. In this study, researchers looked at the brain activity in children playing video games compared to those doing

exercises adding single-digit numbers continuously for 30 minutes. The children playing video games were found to be using only parts of the brain associated with vision and movement, while the maths group had activity throughout the left and right hemispheres of the frontal lobe, which are important areas of the brain associated with learning, memory, emotion and impulse control. In other words, the relatively mundane task of adding single-digit numbers promoted greater positive neural stimulation than video games.

A more ominous finding regarding video-game usage is evident in a growing number of studies showing that exposure to violent media may cause individuals to be more aggressive. For example, a group of researchers at the Indiana University School of Medicine headed by Professor Vincent Mathews found that exposure to media violence via television and/or video games may be associated with alterations in brain function whether or not a person had prior aggressive-behaviour tendencies. In this particular study, the researchers looked at the brain activity and behaviour of 'normal' adolescents and those with aggressive tendencies, after extended exposure to violent television programs and video games. One of the findings was that the 'normal' participants displayed reduced levels of cognitive activity in the areas of the brain responsible for thinking, reasoning and emotional control, and in some instances had the same pattern of neural activity as adolescents with Disruptive Behaviour Disorder. Overall, the



data from the study led the investigators to suggest that aggression can be associated with a higher degree of violent media exposure. This is an important finding given that while many have suggested that violent media may have an impact on behaviour, there have been few empirical studies to demonstrate that this is the case.

So, parents and teachers alike should be aware that there is a growing body of research showing that exposure to media violence may cause individuals to be more aggressive. The question researchers are now looking at is to what extent might violent television or video games perpetuate aggressive behaviour in children? However, there is also some research to suggest that moderate video game and television use may have some positive effects. Interactive media has also been shown to be beneficial in some aspects of learning. In other words, we must be mindful that technology can have a positive place in the lives of our children.

Balance and scrutiny might be key strategies for parents when it comes to video games and electronic media. After all, not long after TV arrived in the home, parents were cautioned to set limits on children's television viewing for a variety of reasons. Perhaps the advent of technology and the realism and clarity found in virtual environments and Blu-ray technology requires parents to be equally vigilant. The line between virtual reality and the real world is becoming increasingly blurred, and impressionable and developing young minds will need support, guidance, limits and boundaries in relation to it.

The issue of children's access to media containing strong violence was brought to light earlier this year by a 14-year-old Sydney boy who was able to purchase MA15+ games with very little difficulty or scrutiny, although they were labelled as being violent and requiring parental consent. The classification system in Australia has been under discussion

recently, with a public consultation process having been undertaken, which included some debate related to the potential links between violent behaviour and video games. Subsequent to this, computer-game classifications, and in particular whether an R18+ rating should be introduced in Australia, are currently being reviewed by the Attorney-General's Department.

It will be interesting to see what future research tells us about the links between video consumption and behaviour. In the meantime, it seems important to reiterate that much can be done by parents to ensure that their children are not adversely affected by their viewing habits, or at the very least that any potential problems are limited. As we move into the season of gift-giving, a good start might be for parents to give careful consideration to anything purchased for children to 'visually' consume. ■

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