

Media, minds and neuroscience: The developing brain in a media-rich environment

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Speakers

Baroness Susan Greenfield is Professor of Pharmacology at Oxford University, writer, broadcaster and member of the House of Lords. Specialising in the physiology of the brain, Susan researches the impact of 21st century technologies on the mind, how the brain generates consciousness and novel approaches to neurodegenerative diseases such as Alzheimer's and Parkinson's. She has been awarded 30 Honorary Degrees from British and foreign universities. In addition, she has published a neuroscientific theory of consciousness, 'The Private Life of the Brain' (2003) and developed a keen interest in the impact of modern technologies on how young people think and feel. This was discussed in her book, 'ID: The Quest for Identity in the 21st Century' (2008).



Topic: ***New media and young brains***

Humans occupy more ecological niches than any other species on the planet because of the superlative ability of our brains, compared with those of any other animal, to adapt to the environment. The digital technologies are leading to a way of life that is unprecedented and as such, are inevitably going to create a new type of environment, - particularly for the younger generation. Therefore, the brain could be changing in parallel, in correspondingly new ways. So we need to try and foresee what these changes, be they positive or negative, may be: only then can we minimise the threats and harness the opportunities for life in the 21st Century.

Dr Kate Highfield is an academic at Macquarie University in the Institute of Early Childhood. Having taught for many years, Kate now works with student teachers, children and parents. The focus of her current research and teaching is on the use of technologies for learning and play, with a specific focus on how interactive media can be used as a tool to enhance learning. Broadly, Kate researches the impact of technology as a tool in learning and play, with young children, undergraduate students, parents and educators. Under this broad umbrella Kate has worked with teachers in rural and remote settings, parents and children. Kate's current research explores young children's learning and play with technology, with a focus on touch technologies, including mobile devices, Tablets, iPads and smartphones. This work examines digital play, in both home and educational settings, and focuses on the impact of interactive multi-media on learning and play.



Topic: ***Upwardly mobile – young children's use of mobile technologies as a tool for learning.***

Many young children are immersed in screens and technology, from watching television, to playing xbox or using mobile phones and iPads. Mobile technologies, such as phones, tablets and iPads, present amazing opportunities for learning as well as raising particular concerns for parents and educators. Given the exponential growth of these technologies this session focuses on how these tools can be used to extend and engage young children, while also avoiding potential concerns with language development, sleep and concentration. Key issues and current research around the plethora of "educational" Apps will be examined with a focus on how these tools can be used to promote higher order thinking.

Dr Michael Nagel is an Associate Professor in the School of Science in Education at the University of the Sunshine Coast where he teaches and researches in the areas of cognition, behaviour and learning and human development and early learning. He has written a number of books related to neurological development in children. His most prominent books to date include 'Boys-Stir-Us: Working WITH the Hidden Nature of Boys', 'In the Beginning: The Brain, Early Development and Learning', 'Nurturing A Healthy Mind: Doing What Matters Most for Your Child's Developing Brain' and 'It's a Girl Thing'.



Topic: ***What Makes Them Tick? Understanding the Developing Adolescent Brain***

Since the early 1990's we have learned a great deal about the human brain. Some of the newest insights regarding neurological development have changed our understanding of the '3 pound universe' between our ears. Importantly, neuro-scientific research has also provided valuable information related to how the brain matures and develops and the complex interplay between nature and nurture. There is also increasing evidence that technology may be having a profound impact on the developing brain. It appears that while the information age is responsible for the information super highway, it is also building new roadways within the mind. This presentation looks to uncover some of this information by focusing on contemporary research into how the brain develops during childhood and adolescence, how context and experience helps to shape the brain's neuro-architecture and the implications this has for anyone who works with young people.

Dr. Philip Tam is a Sydney-based child psychiatrist in public practice, and lecturer with Sydney University. He has a long-standing clinical, teaching and advocacy interest in the challenging field of internet and computer-related disorders, and regularly lectures on the topic to both specialist and general audiences. He also regularly comments and writes on the field across the Australasian media. He is President and co-founder of NIIRA, the Network for Internet investigation and Research Australia and a member of the DSM-5 international working group looking at Internet Gaming Disorder



Topic: ***Problematic Internet use in young people: Evolution of a 21st Century disorder***

In my presentation, I shall outline and survey the development of computing technology and the associated emergence of 'internet addiction' / Problematic Internet Use as an increasingly-recognised (and now formally-classified) potential problem in young people.

I shall give practical tips and help, aimed at a general audience, at how to look for problems in young people, and how to then address them, based on my own clinical experience.

I shall then go onto briefly survey the latest developments and findings from around the world.

Professor Graham Vimpani is Professor of Community Child and Family Health at the University of Newcastle; Clinical Chair of Kaleidoscope: Hunter Children's Health Network within the Hunter New England Local Health District and senior Paediatrician in the Child Protection Team at the John Hunter Children's Hospital in Newcastle. He is also a part-time Senior Clinical Advisor in Child Protection for the NSW Ministry of Health. Professor Vimpani was a recipient of the Centenary Medal in 2003 for services to early childhood. He was appointed a Member of the Order of Australia (AM) in 2007 for service to medicine as a paediatrician committed to improving child health and welfare through contributions to a range of government, professional and community organizations, and as an academic, researcher and clinician.



Topic: ***What does it all mean for parents and those from whom they seek advice?***

Awareness of the environmental influences on early brain development has increased across the diverse range of early childhood professionals over the past 15 years, but the extent to which this knowledge and its implications has filtered through to parents of young children is less clear.

The specific role of various forms of electronic media on diverse domains of child development – learning, behaviour, sleep patterns, eating behaviour and exercise patterns - has received growing attention in the last decade, with particular interest on the possible relationship between media violence, especially violent video games, and the development of aggressive behaviour, where views are polarised between believers and non-believers. Reviewing the evidence, the Australian Attorney General's Department concluded in 2010 that the evidence of a link between media violence and aggressive behaviour was "inconclusive and contested". In contrast, in the previous year, the American Academy of Pediatrics concluded that "exposure to violence in media, including television, movies, music, and video games, represents a significant risk to the health of children and adolescents. Extensive research evidence indicates that media violence can contribute to aggressive behaviour, desensitization to violence, nightmares, and fear of being harmed". Given this diversity of views between experts, parents will make their own judgements based on their preconceptions and observations. Notwithstanding this, it is likely that some children who face other challenges in their lives are likely to be more vulnerable than others to the effects of media violence. Should policy decisions take into account the importance of safeguarding the wellbeing of such children?

Dr Wayne Warburton is a lecturer in developmental psychology and a registered psychologist, and is Deputy Director of the [Children and Families Research Centre](#). He teaches on human development (in particular cognitive and personality development), aggressive behaviour, media psychology and psychotic illness. Wayne primarily studies aggressive behaviour. His specific focus is on the effects of violent media, the development of aggressive patterns of thought (particularly those that link the notions of aggression and control), aggressive driving, links between personality styles and aggressive behaviour, and the links between social exclusion and aggression. Wayne also examines the development of a range of maladaptive patterns of thinking, and the home environments and parenting styles that are linked with these patterns. Most of Wayne's scholarly publications relate to aggressive behaviour in one form or another (see links below), and his most recent book (with Danya Braunstein) [Growing up fast and furious: Reviewing the impacts of violent and sexualised media on children](#) has been well received by both scholars and professionals who work with children.



Topic: ***Screen in the machine: What brain imaging studies tell us about the impact of violent media***

Media violence has been studied for over 60 years, but it is only with the advent of modern brain imaging techniques that researchers have been able to get a sense of the way media violence exposure changes brain activation in the short term, and the functioning of the brain in the long term. There are now a number of well-designed studies that have converging findings. Media violence activates more of the right hemisphere of the brain, where negative emotions tend to be stored, and is linked with activation in the limbic system (where responses such as fight or flight originate) and decreases in activation of the prefrontal cortex (where people think through and plan behaviour). In the long term, heavy exposure to media violence reduces emotional responding to images of real world violence, suggesting long-term desensitisation. The brain has not evolved to separate the real from the virtual, and tends to respond to virtual stimuli as if those experiences were occurring in real life.