

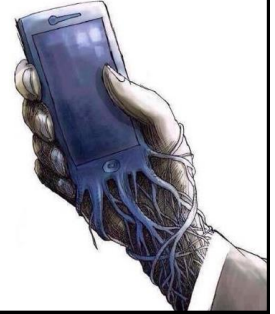
**Social Media and Mental Health...
A Toxic Combination for Young People?**

Dr Michael C Nagel PhD
Associate Professor
Human Development and Learning
University of the Sunshine Coast
mnagel@usc.edu.au



Current evidence suggests we
have reasons to be concerned...

The medium and the
messenger!



Some things we know...

- **Sitting is the new smoking!** We are becoming increasingly sedentary and screens contribute to this!
- **Physical injury due to screen use is increasing!**

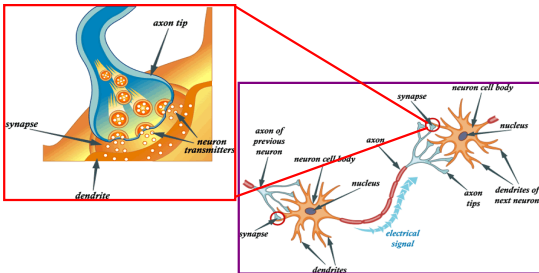


WHAT ABOUT HARM TO THE MIND?



In order to consider this we must explore
important aspects of brain development!

**Imagining the unimaginable!
The brain has branches!**



**Synaptic Density – Changes Over
Time**

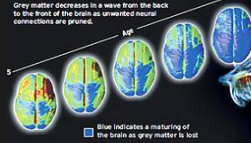


Rethinking the Brain, Families and Work Institute, Rima Shore, 1997.

The brain is not fully developed until the third decade of life and it is shaped by experiences!

FROM HERE TO MATURITY

Brain scans showing how the brain matures between the ages of five and 20.
 Grey matter decreases in a wave from the back to the front of the brain as unneeded neural connections are pruned.



The Adolescent Years

- Greater capacity to learn and create
- Increased risk of damage from drugs and alcohol
- Increased risk of developing addiction
- Increased risk of mental illness
- Increased desire for risk taking
- Parts of brain that control impulses and emotions not yet mature



Experiences and Brain Development

Stimulation is vital when the brain is growing rapidly!

- Experience-Expectant Growth (Nature)
 - Ordinary experiences “expected” by brain to grow normally
- Experience-Dependent Growth (Nurture)
 - Additional growth as a result of specific learning experiences

Experiences matter....

Eleanor A. et al (2000) Navigation-related structural change in the hippocampi of taxi drivers
www.ncbi.nlm.nih.gov/pubmed/10731385



Experiences matter....



Deprivation of experiences matter...



An important neurological concept...

Jodie Miller
 Rasmussen's Encephalitis

Neuroplasticity!



Two points of extreme vulnerability!



Just to emphasise...


- *The brain's plasticity is influenced by nature and nurture...*
- *The brain hardwires its neural architecture as a result of experiences...*
- *Experiences matter....*





The age of *convergence*...



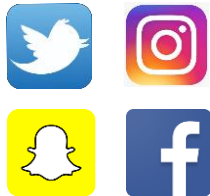
Student Well-being and Leadership Seminar....pilot study findings!

 - 11% (hourly access), 31% (daily access)
N=2088

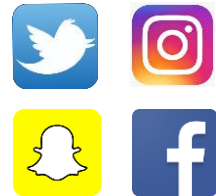
 - 20% (hourly access), 50% (daily access)
N=2125

 - 34% (hourly access), 39% (daily access)
N=2133

What drives the developers of social media?



What drives the developers of social media?



Brain hacking...

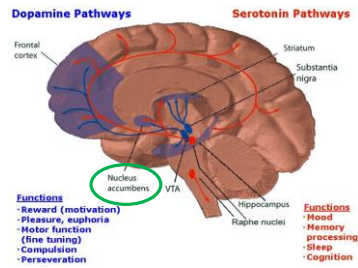
Silicon Valley has been in the business of engineering apps, smartphones, and other devices to **get you hooked**...the more you use these platforms the more money the developers make.

Some programmers call it brain hacking... programmed methods of hijacking peoples' minds to form a habit. *In response to your behaviour, design techniques are embedded inside the products to make smartphones so appealing that you will use them, and other devices, more often.*



- Former Google Product Manager - Tristan Harris

Chemistry of dependency...



Reinforcement of Dependency and Elevation of Cortisol

If you place food out at exactly 7:15 am every day, Scrat will come at exactly that time and not come at any other time



If the food is present only when the yellow light is on, Scrat will check for food only at that time



If the food is **randomly available** at no specific time and with no cues, Scrat can't predict when it will come and checks for food every few minutes – just like e-mails and SMS messaging... *this elevates cortisol and builds anxiety...not very healthy!*



1. Sleep disturbance...



Artificial Bluelight

Sources of blue light

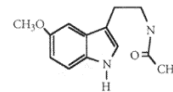


Beneficial Effects

- ✓ Helps regulate circadian rhythm, the body's natural sleep and wake cycles
- ✓ Boosts alertness
- ✓ Helps memory and various aspects of cognition
- ✓ Elevates moods

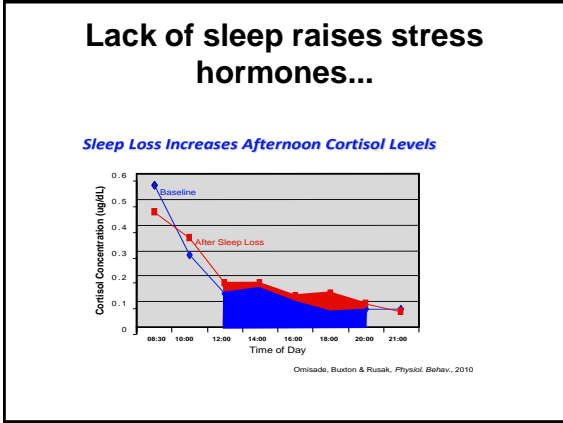
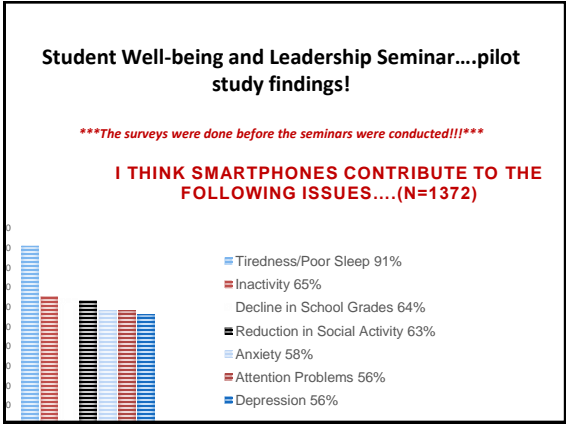
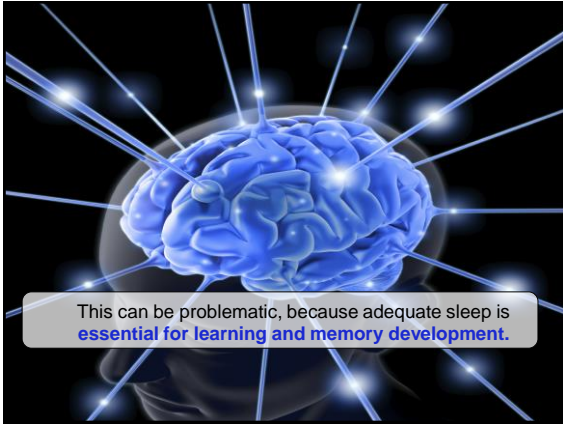
Harmful Effects

- ✗ Disruptions of circadian rhythm
- ✗ 'Digital Eyestrain Syndrome' – blurry vision, difficulty focusing, dry and irritated eyes, headaches, neck and back pain
- ✗ May cause permanent eye damage
- ✗ Some evidence to suggest there is a greater risk of depression and other health related conditions



MELATONIN





2. Increase in Anxiety and Depression

Instagram and Snapchat are used most by young people and have been ranked worst in terms of fuelling a mental health crisis...according to the Royal Society for Public Health (2017)

Both platforms rely on images as communication leading young people to *compare and despair*...

- "Instagram easily makes girls and women feel as if their bodies aren't good enough as people add filters and edit their pictures in order for them to look 'perfect'."
- "This [social media] resulted in me not eating properly and losing a lot of weight and becoming very depressed, I finally recovered which was hard for myself to be bullied online again in year 8. Overall I would say social media has caused me many issues and has caused me to be depressed many times."

3. Reduction in real life contact...

Your ability to communicate face to face can be negatively affected.

Your capacity to read facial cues and communicate with others may be diminished.

You mental health can be impacted in ways we are only beginning to understand!!

Reduction in real life contact...

Quite simply...

Being with others facilitates happiness and feelings of belonging and self worth...the evidence of this is irrefutable!

Isolation makes us ill!

Screen activities are linked to more loneliness and non-screen activities are linked to less loneliness!!

Social media use appears to exacerbate a sense of loneliness in your generation and this occurs against all demographics.

Today, teens who spend more time on screens and engaging with social media are more likely to be depressed...especially those who need to be 'liked' or 'followed' or have their lives recognised via social media...they may be more connected and yet more lonely.

We are social beings and learn and thrive with others....

Decades of research tells us that we need social connection as much as we need oxygen!

Importantly, social connection is about human contact not virtual contact!



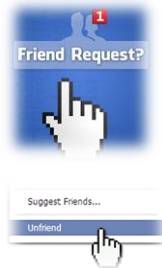
We are social beings and learn and thrive with others....

Relationships and personal contact help to release *oxytocin* and enhance the uptake of *serotonin* in the brain!



4 ways social media contributes to social isolation...

1. Social media promotes and provides distraction from real life!
2. Social media offers the illusion of companionship and/or social connection!
3. Social media can negatively affect self image so individuals avoid real contact!
4. Social media reduces the intimacy of relationships!



Here's a paradox...

Social media is not very social after all...turns out that that over time *the more connected you are the more isolated you feel...*



You also become a *commodity* to be liked, shared or unliked, and if you see others as mechanisms for enhancing your perceived significance your chances for engaging in meaningful 'real' relationships are diminished as is your sense of well-being.

Reduction in real life contact...

Quite simply...

Being with others facilitates happiness and feelings of belonging and self worth...the evidence of this is irrefutable!

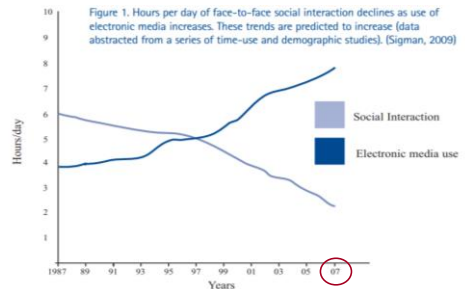
Isolation makes us ill!

Screen activities are linked to more loneliness and non-screen activities are linked to less loneliness!!

Social media use appears to exacerbate a sense of loneliness and this occurs in all demographics.

Today, *teens who spend more time on screens and engaging with social media are more likely to be depressed*...especially those who need to be 'liked' or 'followed' or have their lives recognised via social media...they may be more connected and yet more lonely.

Reduction in real life contact...



Sigman, A. (2009) Well Connected? The Biological Implications of 'Social Networking' The Biologist, 56(1): 14-20

We are social beings and learn and thrive with others...

Relationships and personal contact help to release **oxytocin** and enhance the uptake of **serotonin** in the brain!



Simply stated...

“...screen activities are linked to more loneliness and non-screen activities are linked to less loneliness...the loneliest teens are those who spend more time on social media and less time with their friends in person.”

- Twenge 2017, p.80-81.

Evidence linked to social media use...

- A 2015 University of Houston study published in the *Journal of Social and Clinical Psychology* confirmed that **Facebook usage can lead to depressive symptoms.**
- A 2014 study called "Facebook's Emotional Consequences: Why Facebook Causes a Decrease in Mood and Why People Still Use It," showed that the **longer people are actually on Facebook, the more negative their mood is afterward.**
- In a 2010 Case Western Reserve University School of Medicine study found that **"hypernetworking" teens – those who spend more than three hours per school day on social networking sites – were linked to higher rates of depression, substance abuse, poor sleep, stress, poor academics and suicide.**
- A 2014 study published in the *Journal Social Indicators Research*, by Dr. Jean M. Twenge, a San analyzed data from nearly seven million teenagers and adults from across the country and found that more people reported symptoms of depression than in the 1980s. According to that study, **teens are 74 percent more likely to have trouble sleeping and twice as likely to see a professional for mental health issues than their 1980s counterparts.**
- Two experiments as part of 2017 study found that as **even when people avoid the temptation to check their phones – the mere presence of these devices reduces available cognitive capacity...remember brain hacking!**
- A recently published review of literature and case studies (2018), highlights that **'excessive digital media use by children and adolescents appears as a major factor which may hamper the formation of sound psychophysiological resilience.'**

Neuroimaging research shows excessive screen time damages the brain....experiences matter!

1. Dong, Guangheng, Eliza E Dewald, Xianxia Du, and Zhuyao Cui. "Impaired Inhibitory Control in Internet Addiction Disorder: A Functional Magnetic Resonance Imaging Study." *Psychiatry Research* 263, no. 3-4 (September 2012): 139-150. doi:10.1016/j.psychres.2012.02.015.
2. Dong, Guangheng, Yanbo Xu, and Xian Lin. "Reward-Dependent Sensitization Among Internet Addicts: Implications for Their Addictive Behaviors." *Progress in Neuro-Psychopharmacology & Biological Psychiatry* 46 (October 2013): 139-146. doi:10.1016/j.pnpbp.2013.07.007.
3. Han, Dong Hyun, Hyeon Beak, Melissa A. Daniels, Lynn Arendt, In-Ewon Leon, and Parry F. Henneker. "Brain Activity and Desire for Internet Video Game Play." *Comprehensive Psychiatry* 52, no. 1 (January 2013): 88-95. doi:10.1016/j.comppsych.2012.04.004.
4. Hong, Soon-Beom, Joo-Won Kim, Eun-Hyung Choi, Hui-Hyeon Kim, Jung-Soo Park, Chang-Daek, Paul Klaver, et al. "Reduced Orbitofrontal Cortical Thickness in Male Adolescents with Internet Addiction." *Behavioral and Brain Functions* 9, no. 1 (2013): 11. doi:10.1186/1744-9081-9-11.
5. Hong, Soon-Beom, Andrew Zelnick, Isaac Galanti, Alex Fortnick, Eun-Jung Choi, Ho-Hyun Kim, Jung-Kun Park, Chang-Gil Kim, Joo-Won Kim, and Soon-Hyung H. "Decreased Frontal Brain Connectivity in Adolescents with Internet Addiction." *Edited by Yi-Nian Zuo. PLoS ONE* 8, no. 2 (February 25, 2013): e47831. doi:10.1371/journal.pone.0057821.
6. Hsu, Hui-Feng, Showen Ho, Zhu-Hu, Rong Fan, Wen-Sun, Taotao Sun, and Hong Zhang. "Reduced Striatal Dopamine Transporters in People with Internet Addiction Disorder." *Journal of Biomedical Science & Biotechnology* 2012 (2012): 463424. doi:10.1155/2012/463424.
7. Kim, Sang-Hye, Sang-Hyun Park, Chang-Soo Park, So-Won Kim, Sung-Won Choi, and Sang-Gun Kim. "Reduced Striatal Dopamine D2 Receptors in People with Internet Addiction Disorder." *Neuroreport* 22, no. 8 (June 11, 2011): 407-411. doi:10.1097/WNR.0b013e31823d346a.
8. Kim, Chul-Hong, Joon-Chung Lim, Seung-Hoon, Jo-Yu, Woo, Myeong-Yang, Won-Chul, Lee, Cheng-Fang, Yu, and Cheng-Shang, Chen. "Brain Activities Associated with Gaming Usage of Online Gaming Addiction." *Journal of Addictive Research* 40, no. 7 (April 2010): 739-747. doi:10.1051/jayr/2008/09/012.
9. Kühn, S, A Romanowski, C Lobling, R Lorenz, C Mörsen, N Sellert, T Banaschewski, et al. "The fMRI Basis of Video Gaming." *Translational Psychiatry* 1 (2012): e53. doi:10.1038/tp.2012.53.
10. Liu, Feifei, Yan Zhou, Yuning Du, Linli Qiu, Zhixia Zhao, Jiansong Xu, and Hui Li. "Abnormal White Matter Integrity in Adolescents with Internet Addiction Disorder: A Tract-Based Spatial Statistics Study." *PLoS ONE* 7, no. 1 (2012): e39253. doi:10.1371/journal.pone.0039253.
11. Riboudet, Victoria L., Lisa G. Feilcke, and Donald F. Roberts. "Generation M2: Media in the Lives of 8- to 18-Year Olds." *Kaiser Family Foundation Study* (2010). <http://www.kaiserfamilyfoundation.com/studies/081010.htm>.
12. Wang, Chun-Bu, Han-Rong Qian, Xian-Ming Fu, Bi Lin, Xiao-Rong Han, Chao-Su Xie, and Yu-Han Wang. "Gray Matter and White Matter Abnormalities in Online Game Addiction." *European Journal of Radiology* 62, no. 8 (August 2011): 1200-1212. doi:10.1016/j.ejrad.2011.01.021.
13. Yuan, Kai, Hong Cheng, Yao Dong, Yanyan He, Zhong-Rong, Dahan Yu, Linli Zhou, et al. "Cortical Thickness Abnormalities in Late Adolescence with Online Gaming Addiction." *Edited by Roggen Durgankul. PLoS ONE* 8, no. 1 (January 9, 2013): e53920. doi:10.1371/journal.pone.0053920.
14. Yuan, Kai, Chiemei Zuo, Ping Cheng, Junqiao Yang, Tai Song, Yashui He, Li Hong, Qing, et al. "Neurofide of Low Frequency Fluctuation Abnormalities in Adolescents with Online Gaming Addiction." *Edited by Mirik Bahmani. PLoS ONE* 8, no. 11 (November 4, 2013): e79788. doi:10.1371/journal.pone.0079788.
15. Yuan, Kai, Wei Qin, Guihong Wang, Fang Xuan Zhao, Xiangjun Yang, Peng Liu, et al. "Microstructure Abnormalities in Adolescents with Internet Addiction Disorder." *Edited by Shaoyan Yang. PLoS ONE* 8, no. 4 (June 3, 2013): e67056. doi:10.1371/journal.pone.0067056.
16. Zhou, Yan, Fu-Chun Lin, Yu-Song Du, Ling-qi Qiu, Zhi-Mei Zhao, Jian-Rong Xu, and Mao Li. "Gray Matter Abnormalities in Internet Addiction: A Voxel-Based Morphometry Study." *European Journal of Radiology* 70, no. 1 (July 2011): 90-95. doi:10.1016/j.ejrad.2009.10.020.

Deprivation of experiences matter...



Student Well-Being Seminars – March 2018

If social media was eliminated from your life, which would best describe your feelings towards this:

N=928

- A. Furious** 8%
- B. Annoyed** 44%
- C. No worries** 37%
- D. Relieved** 9%
- E. Ecstatic** 3%



Where does that leave us?

Abstinence is not the answer...there are some positives...

1. Access to other people's health experiences and expert health information
2. Emotional support
3. Self-expression
4. Some forms of social media are better than others.

Where does that leave us?

Strategies...

1. Provide new style **'flip phones'** instead of 'smartphones'
2. Keep devices for social media access **out of the bedroom.**
3. Work with schools to develop screen usage **guidelines...midnight deadlines for submitting assignments is not a healthy option!**
4. Follow set **time limits** for social media usage and/or install **screen time tracking apps** to demonstrate usage (i.e. Moment – Screen Time Tracker).
5. Engage in **digital training** such as online toolkits (i.e. Aye Mind) which offer digital resources for adults working with young people and help them understand the possible risks and potential for good that social media and the online world offers.
6. **No social media before age 12!** (Michael Carr-Gregg)



Keep calm and educate!

The television, that insidious beast, that Medusa which freezes a billion people to stone every night, staring fixedly, that Siren which called and sang and promised so much and gave, after all, so little.

- Ray Bradbury

