Adolescents: Screen Addiction

BY: SAMANTHA DUTRA, MED, LMHC, NCC, MACCS, BOARD MEMBER AND GRANTS MANAGER AT MAMHCA

MASSACHUSETTS MENTAL HEALTH COUNSELORS ASSOCIATION

APRIL, 2019

OBJECTIVES

1. Understand the Diagnosis of Electronic Screen Syndrome in Children and Teens

2. Increase knowledge regarding prevalence, demographics and statistics related to screen addiction in Teens.

3. Analyze both positive and negative effects of screen usage

4. Review warning signs of screen addiction and associated screening tools

5. Learn best practices for treatment and methods of help for families dealing with screen addiction in children/ teens

OUTLINE

A. What is Technology Addiction (assessment/ diagnosis, demographics, prevalence, risk factors/factors that influence, etc)

B. What are the Positive and Negative Effects of Technology Usage? (warning signs of abuse, physical/ emotional hard, academic harm, social advantage, vocational success, societal use)

C. What are Treatments/ Methods for Monitoring Use of Technology

A. What is Technology Addiction

Clinical Diagnosis:

the World Health Organization this year decided to include gaming disorder in the 11th revision of the International Classification of Diseases. The organization is encouraging "increased attention of health professionals to the risks of development of this disorder" as gaming addiction may now be classified as a disorder.

Technology addiction can be defined as frequent and obsessive technology-related behavior increasingly practiced despite negative consequences to the use of the technology.

The WHO defines the disorder as a "persistent or recurrent" behavior pattern of "sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning."

A. What is Technology Addiction

'Screen time' refers to time spent with any screen, including smart phones, tablets, television, video games, computers or wearable technology, as well as other mobile devices. 'Digital media' refers to content transmitted over the Internet or computer networks on all and any devices.

Signs of Electronic Screen Addiction in Children

A. Changes in mood such as anxiety or anger due to hyperarousal

B. These symptoms may or may not occur in the presence of other psychological disorders

C. Often described by others as "stressed" "wired" "revved"

D. Symptoms markedly improve when removing the screens strictly for fasting

E. Symptoms often arise again with re-introduction of screens

F. Difficulty pulling away from screens, more tendency to be drawn into screens

A. What is Technology Addiction

Technology addiction is a special class of behavioral addiction, involving an excessive human-machine, or human-device interaction and mainly including the phenomena of internet addiction, smart-phone dependence, and video game addiction

Young people are the most common group of people affected by technology addiction (Echeburúa E, de Corral , 2010).

Types:

Mobile Phone

Facebook/ Instagram

Video Games

Internet

Videos'/ TV

Tablets/ Lap Tops/ IPAD's

(Agarwal & Kumar-Kar, 2015).

A. What is Technology Addiction

How Much Use is Normal/ Not Normal? = Excessive versus Non-Excessive

An excessive use related to any of the primary uses of technology. The excessive use especially is noticed when interfering with primary areas of functioning as in vocation, education, social/familial and emotional need areas.

Primary Uses:

watching movies/ TV

listening music

playing video games/ online games

Shopping

browsing educational materials etc., other than communication

A. What is Technology Addiction

Another Definition:

Shaw & Black (2008) to define "Internet addiction" as – "an excessive or poorly controlled pre-occupations, urges or behaviors related to use of internet and computers, that is significantly impairing and distressing" also valid for any other technologies like – mobile or pager etc

Defined Simply As:

a habitual and compulsive way of indulgence with technology deviating from meeting the life's different issues or areas of functioning (Technology addiction in teens, 2015; Young & de Abreu , 2010).

Technology addiction is labeled, when the use is beyond the control and causing harm or impairment (Echeburúa E, de Corral, 2010).

A. What is Technology Addiction

Demographics:

technology addiction (internet, gaming and mobile addiction) was moderate and females were at lower risk to develop technology addictions like – internet addiction (Ruiz-Olivares, Lucena, Pino & Herruzo, 2010).

In a US Poll: it was found that 13 to 17 years old age group (73%) were commonly affected by internet addiction (2015).

in a recent study found that males had more addictive behavior towards internet, whereas females had addiction tendencies for mobile phones (Fargues, Chamarro Lusar, Graner Jordania, Carbonell & Sánchez , 2009)

A. What is Technology Addiction

Prevalence:

More than 60% of Americans reported being addicted to internet (US Poll, 2010; Hirschhorn, 2015).

In the USA, rates of mobile media use among 2- to 4-year-olds increased from 39% to 80% between 2011 and 2013 (Lauricella, Wartella, Rideout, 2015;Vandewater, Rideout, Wartella, Huang , Lee, Shim, 2007; Roy & Paradis, 2017).

Mobile phones are more fashionable, resourceful, handy and easily accessible, its use varies among different socio-economic groups of populations, which might be responsible for wide range of prevalence of mobile phone addiction (0% to 38%) (Pedrero Pérez, Rodríguez Monje, Ruiz Sánchez De León , 2012).

A. What is Technology Addiction

Risk Factors:

1. Some important risk factors are psychological vulnerability (temperamental issues like extraversion and low self-esteem)

2. presence of stressors

3. poor family and social support.

(Agarwal, Sujit Kumar Kar 2015).

✓Adolescents with poor coping skills, often find it difficult to deal with day to day minor issues and engage with mobile or internet to distract themselves from the stressful situations

✓Frequent use of this maladaptive avoidance behavior is a potential risk factor

✓Prolonged isolation, before, during and after screen time.

✓(Shaw & Black , 2008; Technology addiction in teens, 2015).

B. What are the Positive and Negative Effects of Technology Usage?

Warning Signs of screen addiction:

✓ abnormally excessive use of technology (internet or mobile)

✓ preoccupied with their gadgets and can't stay without them

✓ unable to separate from these gadgets and feel worried, irritable and desperate, when they forget to take them along

(Addicted to technology, 2015; Echeburúa E, de Corral, 2010).

✓ Regularly checking the mobile or internet for email

✓ SMS, sending SMS unnecessarily

✓ playing games

✓ chatting through some important activity like meeting, teaching or social conversation

(Addicted to technology, 2015).

B. What are the Positive and Negative Effects of Technology Usage?

Negatives:

It has been found that technology addiction has a negative influence on many aspects of life such as adolescents' health and well-being, and their academic development.

Overview:

1. Diminished Academic Development
2. Depression/ Unhappiness
3. Gateway to Addiction
4. Impaired Interpersonal Relationships & Temper
5. Diminished Cognitive State/ Biological Effects
6. Contributing to ADHD
7. Sleep Deprivation
8. Obesity

B. What are the Positive and Negative Effects of Technology Usage?

1. Diminished Academic Development

Beland Richard Murphy (2015).The comprehensive study covered 130,000 pupils at 91 schools, and the researchers found that following a ban on phone use, the schools' test scores improved by 6.4 percent. The impact on underachieving students – mostly poor and special education – was even more significant: their average test scores rose by 14 percent.

Developmental experts report that students who use less than 2 hours of screens a day are more likely to complete all homework (Lohmann, 2018).

B. What are the Positive and Negative Effects of Technology Usage?

2. Depression/ Unhappiness

Researchers found that teens who spent a lot of time in front of screen devices -- playing computer games, using more social media, texting and video chatting -- were less happy than those who invested time in non-screen activities like sports, reading newspapers and magazines, and face-to-face social interaction.

(Twenge, Martin, & Campbell, 2018).

Specifically, young people's life satisfaction, self-esteem and happiness plummeted after 2012. That's the year that the percentage of Americans who owned a smartphone rose above 50 percent.

According a study by Mai-Ly Steers at the University of Houston (2015), amount of Facebook usage is directly linked to severity of depressive symptoms in teens.

B. What are the Positive and Negative Effects of Technology Usage?

3. Gateway to Addiction

the stimulating and dopamine routed effects of today's personal technologies, which can lead to addiction in anyone (Kadaras, 2016)

recent brain imaging studies conclusively show that excessive screen exposure can neurologically damage a young person's developing brain in the same way that drug addiction can.

❑Multiple studies have shown atrophy (shrinkage or loss of tissue volume) in gray matter areas (where "processing" occurs) in internet/gaming addiction

❑Research on video games have shown dopamine (implicated in reward processing and addiction) is released during gaming (Kuhn 2011) and that craving for gaming produces brain changes that are similar to drug cravings (Ko 2009, Han 2011). These cravings can be intense and long lasting.

B. What are the Positive and Negative Effects of Technology Usage?

4. Impaired Interpersonal Relationships & temper

a severe overreliance on technology—or an addiction to certain facets of its use—can also be socially devastating (Lester, 2018).

TEMPER

❑ reports from the Surgeon General's office, the National Institute of Mental Health point overwhelmingly to a causal connection between media violence and aggressive behavior in some children

❑ Published in 2010 in the APA Journal Psychological Bulletin, the study concluded that violent games are not just a correlation but a causal risk factor for increased aggressive thoughts and behavior.

B. What are the Positive and Negative Effects of Technology Usage?

5. Diminished Cognitive State/ Biological Effects:

Multiple studies have shown atrophy (shrinkage or loss of tissue volume) in gray matter areas (where "processing" occurs) in internet/gaming addiction (Zhou 2011, Yuan 2011; & Weng 2013,)

Gray Matter: Areas affected included the important frontal lobe, which governs executive functions, such as planning, planning, prioritizing, organizing, and impulse control.

❖Research has also demonstrated loss of integrity to the brain's white matter

WHITE MATTER:

❖loss of communication within the brain, including connections to and from various lobes of the same hemisphere, links between the right and left hemispheres, and paths between higher (cognitive) and lower (emotional and survival) brain centers. White matter also connects networks from the brain to the body and vice versa. Interrupted connections may slow down signals, "short-circuit" them, or cause them to be erratic

(Lin 2012, Yuan 2011, Hong 2013 and Weng 2013).

B. What are the Positive and Negative Effects of Technology Usage?

5. Diminished Cognitive State/ Biological Effects:

Imaging studies have found less efficient information processing and reduced impulse inhibition (Dong & Devito 2013), increased sensitivity to rewards and insensitivity to loss

Reduced gray and white matter is commonly associated with various psychiatric disorders such as ADHD, autism, addiction, and schizophrenia (Lin 2012, Yuan 2011, Hong 2013 and Weng 2013).

B. What are the Positive and Negative Effects of Technology Usage?

6. Contributing to ADHD

At Iowa State University in 2010, researchers assessed 1,323 children in third, fourth and fifth grades over 13 months, using reports from the parents and children about their video game and television habits, as well as teacher reports of attention problems

Based on the study's findings, Swing and Gentile conclude that TV and video game viewing may be one major contributing environmental factor for attention deficit hyperactivity disorder (ADHD) in children.

Author and adolescent psychiatrist Dr. Vicoria Dunckley (2015) has developed the term "Electronic Screen Syndrome" (ESS). ESS explains the shift in a child's nervous system leading to dysregulation and disorganization of the overall biological system related to screen time.

She attributes the "environmental toxin" of hyper-rousing glowing screens as a possible cause for the 40-fold incraese in pediatric bipolar disorder from 1994 to 2003, and the 800 percent increase in ADHD between 1980 and 2007.

Handout 1

B. What are the Positive and Negative Effects of Technology Usage?

7. Sleep Deprivation

The amount of time spent viewing screens before bedtime is associated with an increase in sleep problems, including diminished quality sleep (Lerner, & Barr, 2014; Cheung, Bedford, Saez De Urabain, Karmiloff-Smith, & Smith, 2017).

evidence suggests that volume of screen time—rather than content alone—is detrimental to sleep patterns (Tomopoulos, Dreyer, Berkule, Fierman, Brockmeyer, & Mendelsohn, 2010; Ribner, Fitzpatrick & Blair, 2017; Garrison & Christakis,2012; Nathanson, & Fries, 2014)

The National Sleep Foundation recommends that teens get eight to 10 hours of sleep each night, but in most cases, they are only averaging six to seven hours per night during the typical school week

electronic devices may be contributing to youth sleep deprivation by emitting a blue light that throws off their body's biological clock.

The presence of any electronic device in a bedroom is associated with fewer minutes of sleep per night, due in part to melatonin suppression (Cheung, Bedford, Saez De Urabain, Karmiloff-Smith & Smith, 2017; American Academy of Pediatrics, Council on Communications and Media, 2016).

B. What are the Positive and Negative Effects of Technology Usage?

8. Obesity

One 2012 Canadian study found that children who watched just 1 hour of TV/day were 50% more likely to be overweight than those who watched less (Shenouda & Timmons, 2012).

TV viewing in the early years can become routine, placing children who are heavy viewers at higher risk for being sedentary or overweight (Courage & Setliff, 2010).

From a physical perspective, many studies have shown a relationship between the amount of time kids spend online, or on-screen and obesity (Lohmann, 2018).

several studies have suggested that risks for overweight established by early screen use can persist into later life (Kostyrka-Allchorne, Cooper, & Simpson, 2017; Hoyos Cillero, & Jago, 2010; Hamilton, Spinks, White, Kavanagh, & Walsh, 2016; Duch, Fisher, Ensari, Harrington, 2013; Lerner, & Barr, 2014; Downing, Hnatiuk, & Hesketh, 2015; Hinkley, Salmon, Okely, & Trost, 2010).

B. What are the Positive and Negative Effects of Technology Usage?

Positive Benefit:

The advance of technology has deeply impacted and changed people in modern society, becoming an irreplaceable part of our lives. The massive use of modern technology has brought us many benefits and convenience

Overview:

1. Communicating & Social/ Emotional
2. Educational
3. Positive Self Esteem & Attitude

B. What are the Positive and Negative Effects of Technology Usage?

1. Communicating & Social/ Emotional

I. we need technology to survive in a modern social world (Lester, 2018).

II. Language Development when no other options are available

III. Social interaction

IV. Networking

Gamers find themselves linked to others who share their hobby through YouTube channels or blogs dedicated to discussion of their game of choice with other enthusiasts

Appropriately used, screen time can calm a child who is overexcited or distressed (e.g., during a medical procedure) (Roy, & Paradis, 2015; McQueen, Cress, & Tothy, 2012).

B. What are the Positive and Negative Effects of Technology Usage?

2. Educational:

❑children are increasingly using technologies in task related to studies.

❑Focus is more on use of technologies to provide knowledge and it is possible in near future that education will become paperless

(Agarwal & Kumar-Kar, 2015).

Quality content can enhance social and language skills for all children aged 2 years and older, particularly for children living in poverty or who are otherwise disadvantaged (American Academy of Pediatrics, Council on Communications and Media, 2016; Linebarger & Vaala, 2010).

B. What are the Positive and Negative Effects of Technology Usage?

3. Positive Self Esteem & Attitude

Challenging video games allow players to feel that they are good at something. Games offer a great variety of choice to players, promoting a sense of autonomy for teens who might feel otherwise out of control.

(Lester, 2018).

Well-designed, age-appropriate educational programs and screen activities can be powerfully pro-social, helping children to learn antiviolence attitudes, empathy, tolerance and respect (Thakkar, Garrison, & Christakis, 2006; Kirkorian, Wartella, & Anderson, 2010).

C. What are Treatments/ Methods for Monitoring Use of Technology

Assessments:

the Problematic Internet Use Questionnaire (PIUQ) developed by Demetrovics, Szeredi, and Pozsa (2008).

The Compulsive Internet Use Scale (CIUS) developed by Meerkerk, Van Den Eijnden, Vermulst, Garretsen (2009).Handouts 2 & 3

1. Balance

2. Providing Equally Exciting Real Time Activities

3. Healthy Modeling

4. Limit Environments Where Devices

C. What are Treatments/ Methods for Monitoring Use of Technology

1. Balance: Aim to spend no more than two hours a day on digital media, and try to increase the amount of time you spend seeing friends face-to-face and exercising -- two activities reliably linked to greater happiness (Jean M. Twenge, Gabrielle N. Martin, W. Keith Campbell, 2018).

Online activities should be balanced with real-world experiences and interactions.

➤ Gaming is a privilege, not an entitlement. Consider implementing a gaming structure which provides NO gaming during the school week. (Lester, 2018).

➤ get the recommended 60 minutes of exercise needed each day (Lohmann, 2018).

➤ Kids can easily get sidetracked, and what they intended to do for a few minutes can turn into an hour of screen time. It's our job to help them set priorities and stick with them.

C. What are Treatments/ Methods for Monitoring Use of Technology

2. Providing Equally Exciting Real Time Activities

How teenagers use technology really matters. Are teens playing video games among other recreational activities? Are they as excited about spending time with friends as they are about "leveling up"? (Lester, 2018).

Adults must be proactive, creative, and excited as they help kids to discover who they really are. Once teenagers find something they are good at and want to do, they will naturally gravitate toward it

C. What are Treatments/ Methods for Monitoring Use of Technology

3. Healthy Modeling

Believe it or not, our kids watch us. They model their own behaviors by watching how we behave. Balance activity and productivity with healthy stress management (Lester, 2018).

develop a family media plan for when, how and where screens may (and may not) be used

(Canadian Pediatric Society, 2017).

o If you're asking your kid to change, maybe you need to look at whether you also need to change. Healthy modeling even with work-life balance is essential in teaching healthy habits to kids (Lohmann, 2018).

o Model boundaries: setting healthy boundaries and teaching them how to use and not abuse technology.

C. What are Treatments/ Methods for Monitoring Use of Technology

4. Limit Environments Where Devices

No cell phones, no iPads, nothing with Internet access. The devices are to be used only in a public space in the home, such as the kitchen, rec room, or family room.

Absolutely no using devices out when driving.

Chronic sleep deprivation can create symptoms that mimic ADD or ADHD.

➢experts recommend shutting off the devices an hour or two before bed (Lohmann, 2018).

➢No using devices, or having them out, when eating meals.

➢No messing with devices in places where undivided attention is required, such as when watching a movie or a play.

➢No playing on devices when you're with someone else. I think most of us would agree that it's highly annoying when we are out with someone and they spend more time looking at a phone screen than us.

C. What are Treatments/ Methods for Monitoring Use of Technology

Want to learn more?

Dr. Kadaras' book, Glow Kids

The Council on Recovery at 713-914-0556

Entertainment Software Association (ESA) established the Entertainment Software Rating Board (ESRB), which provides resources and guidelines that provide information and insight about games for kids. They provide tips for parents

Families Managing Media is a non-profit organization whose mission is to educate and empower parents to confidently manage the ever-changing world of childhood screens.

RESTART- inpatient screen addiction program

https://www.netaddictionrecovery.com/

American Psychological Association has a column, titled "Children and electronic media: How much is too much?

-**The American Academy of Pediatrics** offers an online tool to help parents think about media, create goals and rules that are in line with their family's values

C. What are Treatments/ Methods for Monitoring Use of Technology

Want to learn more?

Legacy Freedom is a network of rehabilitation facilities, including a location in Ohio, which seeks to empower people to permanently overcome addiction.

You can receivee one-to-one personalized counseling with Dr. Young about your child. Parent coaching is designed to guide parents on how to manage their child's use of videogames and technology. These can be set up over Skype usually within 24 to 48 hours.

http://netaddiction.com/parents/

Book:

Net Negotiations: What every parent should know about controlling a child's use of technology.

Internet Behavior Consulting (IBC) is committed to furthering the understanding, assessment, and intervention for problematic Internet behaviors. IBC accomplishes this goal through research, training, and consultation within a variety of settings.

The goal of the National Institute on Media and the Family (Institute) is to provide resources for educators, parents, community leaders, and others concerned about the ever increasing impact of media on children, families, and communities.

REFERENCES

Addicted to technology. http://www.huffingtonpost.com/sura-flow/technologyaddiction_b_1740068.html?ir=India&adsSiteOverride=in [Last accessed on 12- 06-2015].

Agarwal MD, Sujit Kumar Kar 2015. VJ. Indian Assoc. Child Adolesc. Ment. Health 2015; 11(3):170-174

American Academy of Pediatrics, Council on Communications and Media (2016). Media and young minds. *Pediatrics*;138(5):e20162591.

Beland, L-P & Murphy, R. (2015). CEP Discussion Paper No 1350. Ill Communication: Technology, Distraction & Student Performance. Centre for Economic Performance London School of Economics and Political Science ISSN 2042-2695

Beranuy Fargues M, Chamarro Lusar A, Graner Jordania C, Carbonell Sánchez X. Validation of two brief scales for Internet addiction and mobile phone problem use. Psicothema. 2009 Aug;21(3):480-5.

Canadian Pediatrics Society. (2017). **Screen time and young children: Promoting health and development in a digital world.** *Paediatrics & Child Health*, Volume 22 (8).
https://doi.org/10.1093/pch/pxx123

REFERENCES

Cheung, C. H., Bedford, R., Saez De Urabain, I. R., Karmiloff-Smith, A., & Smith, T. J. (2017). Daily touchscreen use in infants and toddlers is associated with reduced sleep and delayed sleep onset. *Sci Rep*;7:46104.

Courage, M. L., Setliff, A. E. (2010). When babies watch television: Attention-getting, attention-holding, and the implications for learning from video material. *Dev Rev*;30 (2).

Demetrovics Z, Szeredi B, Rozsa S. The three-factor model of Internet addiction: the development of the Problematic Internet Use Questionnaire. Behavior Research Methods. 2008;40(2):563–74.

Dong, Guangheng, Yanbo Hu, and Xiao Lin. "Reward/PunishmentSensitivities Among Internet Addicts: Implications for Their Addictive Behaviors." *Progress in Neuro-Psychopharmacology & Biological Psychiatry*46 (October 2013): 139–145. doi:10.1016/j.pnpbp.2013.07.007.

REFERENCES

Downing, K. L., Hnatiuk, J., & Hesketh, K. D. (2015). Prevalence of sedentary behavior in children under 2 years: A systematic review. *Prev Med*; 78: 105–14.

Duch, H., Fisher, E. M., Ensari, I., Harrington, A. (2013). Screen time use in children under 3 years old: A systematic review of correlates. *Int J Behav Nutr Phys Act.* 10:102.

Dunckley, V. L. (2015). Reset Your Child's Brain: A Four Week Plan To End Meltdowns, Raise Grades, and Boost Social Skills by Reversing the Effects of Electronic Screen Time. NewWorldLibrary. Retrieved from: http://drdunckley.com/wp-content/uploads/2016/04/RESET-YOUR-CHILDS-BRAIN_Ch-1-Health-Summit-Gift_P.pdf

Echeburúa E, de Corral P. Addiction to new technologies and to online social networking in young people: A new challenge. Adicciones. 2010;22(2):91- 5

REFERENCES

Garrison, M. M., & Christakis, D. A. (2012). The impact of a healthy media use intervention on sleep in preschool children. *Pediatrics*;130 (3):492–9.

Hamilton, K., Spinks, T., White, K. M., Kavanagh, D. J., & Walsh, A. M. (2016). A psychosocial analysis of parents' decisions for limiting their young child's screen time: An examination of attitudes, social norms and roles, and control perceptions. *Br J Health Psychol.* 21 (2):285–301.

Han, Doug Hyun, Nicolas Bolo, Melissa A. Daniels, Lynn Arenella, In Kyoon Lyoo, and Perry F. Renshaw. "Brain Activity and Desire for Internet Video Game Play." *Comprehensive Psychiatry* 52, no. 1 (January 2011): 88–95. doi:10.1016/j.comppsych.2010.04.004.

Hinkley, T., Salmon, J., Okely, A. D., & Trost, S. G. (2010). Correlates of sedentary behaviours in preschool children: A review. *Int J Behav Nutr Phys Act.* 7-66

REFERENCES

Hirschhorn JS. "Technology Addiction" in the Electronic Age: Worldwide Progress or Servitude? http://www.globalresearch.ca/technology-addiction-in-theelectronic-age-worldwide-progress-or-servitude/5317843 [Last accessed on - 06- 06-2015].

Hong, Soon-Beom, Jae-Won Kim, Eun-Jung Choi, Ho-Hyun Kim, Jeong-Eun Suh, Chang-Dai Kim, Paul Klauser, 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.

Hong, Soon-Beom, Andrew Zalesky, Luca Cocchi, Alex Fornito, Eun-Jung Choi, Ho-Hyun Kim, Jeong-Eun Suh, Chang-Dai Kim, Jae-Won Kim, and Soon-Hyung Yi. "Decreased Functional Brain Connectivity in Adolescents with Internet Addiction." Edited by Xi-Nian Zuo. *PLoS ONE* 8, no. 2 (February 25, 2013): e57831. doi:10.1371/journal.pone.0057831.

Hoyos Cillero, I., & Jago, R. (2010). Systematic review of correlates of screen-viewing among young children. *Prev Med.* 51 (1):3–10

REFERENCES

Internet Addiction: A Handbook and Guide to Evaluation and Treatment. Young KS, de Abreu CN (editors). John Wiley & Sons. 2010

Jean M. Twenge, Gabrielle N. Martin, W. Keith Campbell. **Decreases in Psychological Well-Being Among American Adolescents After 2012 and Links to Screen Time During the Rise of Smartphone Technology.**. *Emotion*, 2018; DOI: 10.1037/emo0000403

Kadaras, N. 2016. Glow Kids: How Screen Addiction is Highjacking our Kids. St. Martins Publisher. 978-1250097996

Kirkorian, H. L., Wartella, E. A., & Anderson, D. R. (2010). Media and young children's learning. *Future Child.* 18(1):39–61

REFERENCES

Ko, Chih-Hung, Gin-Chung Liu, Sigmund Hsiao, Ju-Yu Yen, Ming-Jen Yang, Wei-Chen Lin, Cheng-Fang Yen, and Cheng-Sheng Chen. "Brain Activities Associated with Gaming Urge of Online Gaming Addiction." *Journal of Psychiatric Research* 43, no. 7 (April 2009): 739–747. doi:10.1016/j.jpsychires.2008.09.012.

Kostyrka-Allchorne, K., Cooper, N. R., & Simpson, A. (2017). The relationship between television exposure and children's cognition and behaviour: A systematic review. *Develop Rev.* 44: 19–58.

Kühn, S, A Romanowski, C Schilling, R Lorenz, C Mörsen, N Seiferth, T Banaschewski, et al. "The Neural Basis of Video Gaming." *Translational Psychiatry* 1 (2011): e53. doi:10.1038/tp.2011.53.

REFERENCES

Lauricella, A. R., Wartella, E. A., Rideout, V. J. (2015).Young children's screen time: The complex role of parent and child factors. *J Appl Develop Psychol*; 36 (11)

Lerner, C., & Barr, R. (2014). Screen Sense: Setting the Record Straight; Research-Based Guidelines for Screen Use for Children Under 3 Years Old. Zero to Three. Retrieved from <www.zerotothree.org/resources/series/screen-sense-setting-the-record-straight> (Accessed April 11, 2017).

Lester, H. (2018). Technology Use, Misuse, Abuse and Addiction in Tennagers. Retrieved from https://www.councilonrecovery.org/technology-misuse-abuse-addiction-among-teenagers/

Lin, Fuchun, Yan Zhou, Yasong Du, Lindi Qin, Zhimin Zhao, Jianrong Xu, and Hao Lei. "Abnormal White Matter Integrity in Adolescents with Internet Addiction Disorder: A Tract-Based Spatial Statistics Study." *PloS One* 7, no. 1 (2012): e30253. doi:10.1371/journal.pone.0030253.

Linebarger, D. L., & Vaala, S. E. (2010). Screen media and language development in infants and toddlers: An ecological perspective. *Dev Rev.* 2010;30(2):176–202

Lohmann, S. (2018). Managing your teen's screen time. Retrieved from: https://health.usnews.com/wellness/for-parents/articles/2018-04-30/managing-your-teens-screen-time

REFERENCES

Meerkerk G, Van Den Eijnden R, Vermulst A, Garretsen H. The Compulsive Internet Use Scale (CIUS): some psychometric properties. CyberPsychology & Behavior. 2009 Feb;12(1):1–6.

McQueen, A., Cress, C., & Tothy, A. (2012). Using a tablet computer during pediatric procedures: a case series and review of the "apps". *Pediatr Emerg Care.* 28(7):712–4.

Nathanson, A. I., & Fries, P. T. (2014).Television exposure, sleep time, and neuropsychological function among preschoolers. *Media Psychol*;17(3):237–61.

Pedrero Pérez EJ, Rodríguez Monje MT, Ruiz Sánchez De León JM. Mobile phone abuse or addiction. A review of the literature. Adicciones. 2012;24(2):139-52. 7.

Public Opinion Suggests Internet Addiction Is a Problem. http://www.sodahead.com/living/public-opinion-suggests-internet-addiction-is-aproblem/question-2464081/ [Last accessed on - 06-06-2015].

REFERENCES

Ribner, A., Fitzpatrick, C., & Blair, C. (2017). Family socioeconomic status moderates associations between television viewing and school readiness skills. *J Dev Behav Pediatr.* 38(3)

Roy, R., Paradis, G. (2015). Smartphone Use in the Daily Interactions Between Parents and Young Children. Philadelphia: Society for Research in Child Development (poster) Retrieved from www.csustan.edu/sites/default/files/groups/Child%20Development/srcd_poster_2015_-smartphones.pdf>

Ruiz-Olivares R, Lucena V, Pino MJ, Herruzo J. Analysis of behavior related to use of the Internet, mobile telephones, compulsive shopping and gambling among university students. Adicciones. 2010;22(4):301-9

REFERENCES

Shaw M, Black DW. Internet addiction: definition, assessment, epidemiology and clinical management. CNS Drugs. 2008; 22 (5):353-65

Shenouda, N., Timmons, B.W. (2012). Preschool Focus: Physical Activity and Screen Time. Hamilton, Ont: Child Health and Exercise Medicine Program. McMaster University (5). Retrieved from fhs.mcmaster.ca/chemp/documents/PreschoolerFocusIssue5ScreenTime-updatedSECURED.pdf

Steers, M-L. (2015). UH study links Facebook to depressive symptoms. University of Houston. Retrieved from http://www.uh.edu/news-events/stories/2015/April/040415FaceookStudy

Swing, E. & Gentile, D. (2010). **ISU study finds TV viewing, video game play contribute to kids' attention problems.** Iowa State University. Retrieved from https://www.news.iastate.edu/news/2010/jul/TVVGattention

Technology addiction in teens. http://everydaylife.globalpost.com/technologyaddiction-teens-11134.html [Last accessed on 12-06-2015]. 4

REFERENCES

Thakkar, R. R., Garrison, M. M., & Christakis, D. A. (2006). A systematic review for the effects of television viewing by infants and preschoolers. *Pediatrics.* 118(5):2025–31.

Tomopoulos, S., Dreyer, B. P., Berkule, S., Fierman, A. H., Brockmeyer, C., & Mendelsohn, A. L. (2010). Infant media exposure and toddler development. *Arch Pediatr Adolesc Med.* 164(12):1105-11.

Vandewater, E. A., Rideout, V. J., Wartella, E. A., Huang, X., Lee, J. H., Shim, M. S. (2007). Digital childhood: Electronic media and technology use among infants, toddlers, and preschoolers. *Pediatrics.* 119 (5)

REFERENCES

Weng, Chuan-Bo, Ruo-Bing Qian, Xian-Ming Fu, Bin Lin, Xiao-Peng Han, Chao-Shi Niu, and Ye-Han Wang. "Gray Matter and White Matter Abnormalities in Online Game Addiction." *European Journal of Radiology* 82, no. 8 (August 2013): 1308–1312. doi:10.1016/j.ejrad.2013.01.031.

Yuan, Kai, Wei Qin, Guihong Wang, Fang Zeng, Liyan Zhao, Xuejuan Yang, Peng Liu, et al. "Microstructure Abnormalities in Adolescents with Internet Addiction Disorder." Edited by Shaolin Yang. *PLoS ONE* 6, no. 6 (June 3, 2011): e20708. doi:10.1371/journal.pone.0020708.

Zhou, Yan, Fu-Chun Lin, Ya-Song Du, Ling-di Qin, Zhi-Min Zhao, Jian-Rong Xu, and Hao Lei. "Gray Matter Abnormalities in Internet Addiction: A Voxel-Based Morphometry Study." *European Journal of Radiology* 79, no. 1 (July 2011): 92–95. doi:10.1016/j.ejrad.2009.10.025.