



Happy New Year greetings STH Colleagues from the Choices Program! The topic for January is **Technology Misuse, Abuse & Addiction**.

**IN THIS EMAIL**

- Pathological Internet Use & Brain Changes
- Positive Uses of Technology
- What is Technology Addiction?  
    Neurochemistry of Technology Addiction
- What is FOMO: Fear of Missing Out
- Video Game Dangers
- Technology Abuse Increases Susceptibility for Substance Abuse
- Preventing Technology Addiction

It is hard to escape screens. Most likely, you are looking at one right now! Although the long-term effects of screen time are still being studied, the effects of excessive internet and smartphone use are well-documented. "Pathological" internet use has been linked to depression in teens, and it may even shrink gray matter (see article links below).

[Pathological Internet Use May Cause Teen Depression](#)

[Gray Matters: Too Much Screen Time Damages the Brain](#)

Technology is everywhere, and it is not going away. Teenagers stare down at their iPhones, or keep their eyes glued to a tablet or laptop, instead of observing the world around them. It is not unusual to see two adolescents seated together on a bus, texting furiously on their mobiles rather than talking to one another. The fact that teens are so dependent on technology seems to make sense in our world, but it may also lead to negative consequences.

### **Can balanced technology use be a positive thing?**

Yes, of course! Technology is a tool that, when used appropriately, can have many benefits. Remember the days of toiling for hours in the university library scrolling through rolls and rolls of microfiche to find that one article you needed for your research paper? I do!

Technology can be a great resource for communication, productivity, social connectivity, education, cognitive enhancement, creativity and expression, digital literacy... to name a few. These are all very useful when used in a balanced way. Problems can arise, however, when teens misuse or abuse these tools to *replace* real-world activities and face-to-face interactions, with virtual experiences.

## What is technology addiction?

Technology addiction can be defined as frequent and obsessive technology-related behavior increasingly practiced despite negative consequences to the user of the technology. An over-dependence on tech can significantly impact students' lives. While we need technology to survive in a modern social world, a severe overreliance on technology—or an addiction to certain facets of its use—can also be socially devastating. Tech dependence can lead to teen consequences that span from mild annoyance when away from technology to feelings of isolation, extreme anxiety, and depression (click video link below).

[Video: 5 Crazy Ways Social Media is Changing Your Brain Right Now \(3:15\)](#)

## What makes technology addictive?

Technology fulfills our natural human need for stimulation, interaction, and changes in environment with great efficiency. When teenagers experience stress, be it romantic rejection or a poor grade on an exam, technology can become a quick and easy way to fill basic needs, and as such, can become addictive.

Technology impacts the pleasure systems of the brain in ways similar to substances. It provides the brain with some of the same dopamine rewards that alcohol, drugs, and other high-risk behaviors might. It can be a boredom buster, a social lubricant, and an escape from reality.

Video and computer games, smart phones and tablets, social media and the Internet provide a variety of access points that can promote dependence on technology and negative consequences. *How? Through self-administering doses of dopamine with the click of a mouse!*

In a recent article, former Facebook president Sean Parker admitted, “it’s exploiting a vulnerability in human psychology.” Parker has said that social media creates “a social-validation **feedback loop**” by giving people “a little **dopamine** hit every once in a while, because someone liked or commented on a photo or a post or whatever.” He continued, “I don’t know if I really understood the consequences of what I was saying, because of the unintended consequences of a network when it grows to a billion or 2 billion people and it literally changes your relationship with society, with each other,” Parker said. “God only knows what it’s doing to our children’s brains.” (see article link below)

[Former Facebook President Admits It's 'Exploiting a Vulnerability in Human Psychology'](#)

In another article former Facebook Vice-President of User Growth, Chamath Palihapitiya said, “The short-term, dopamine-driven feedback loops we’ve created are destroying how society works. No civil discourse, no cooperation; misinformation, mistruth. And it’s not an

American problem—this is not about Russians ads. This is a global problem.” (see article link below)

### [Former Facebook Exec: You Don't Realize It But You're Being Programmed](#)

Smartphone addiction is correlated with neurochemical imbalances in the brain, according to a new study. In this study, neuroradiologists used magnetic resonance spectroscopy, which is a specialized type of MRI that measures the brain's chemical composition, to gain unique insights into the brains of people who are believed to have developed addictive patterns in their use of digital technology. (see article link below)

### [Study: The Neurochemistry of Smartphone Addiction](#)

Interestingly, another study from July 2017 by researchers at Ben-Gurion University in Israel found that heavy smartphone users display changes in social cognition, impaired attention, and reduced right prefrontal cortex excitability. ***Researchers found that smartphone-addicted teenagers had significantly higher scores in depression, anxiety, insomnia severity, and impulsivity.*** (see article link below)

### [Answering the missed call: Initial exploration of cognitive and Electrophysiological Changes Associated with Smartphone Use and Abuse](#)

## **What is FOMO?**

The Web can be addictive as a multifunctional tool that brings us exceptionally close to an enormous amount of information at unprecedented speeds. User-friendly by design, we now have access to the Internet on our computers, through apps on our tablets, phones and watches. "FOMO," or "Fear of Missing Out," is a commonly described phenomenon for teens and young adults, in which youth increasingly feel the need to stay connected to the Internet, so they are not the last to know of a news story or social happening. Related to FOMO, some Facebook users, for instance, report that they use the Internet-based social media platform as a chosen method to alleviate their anxiety or depression.<sup>1</sup> Given so much accessibility to its use, the Internet is just as hard to stay away from at any given point in a day as it is easy and rewarding to use. *Have you ever noticed a compulsion to repeatedly check your mobile email even if there is nothing urgent pending (yes, it happens to us too!)*

## **What about playing video games?**

One hallmark of human psychology is that we want to feel competent, autonomous, and related to other people. 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.

The same goals that drive people to pursue success in the real world are often present in video games. As one amasses virtual wealth or prestige by spending time on games and advancing through levels, virtual wealth can translate into some version of actual recognition—through monetary purchasing power within an online game or a positive reputation within an online community.

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. Like the Internet itself, games make themselves increasingly accessible to teens via apps on smart phones, never leaving kids' palms or pockets.

While there is room for social connection in the gaming universe, this space also provides a potential escape from reality into a digital world where players get to assume new identities more appealing or more novel than those they hold in the real life. So what's the problem? A problem arises when ***the virtual world becomes more exciting than the real world...*** a slippery-slope indeed.

In the beta draft of its forthcoming 11th International Classification of Diseases, the World Health Organization includes "gaming disorder" in its list of mental health conditions. 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." (see article link below)

[Video Gaming Disorder is Now a Mental Health Condition](#)

## **Can technology abuse increase my son's susceptibility to substance use?**

Yes. Researchers have found evidence that people who overuse technology may develop similar brain chemistry and neural patterning to those who are addicted to substances.<sup>2</sup> A concern is that those who are addicted to technology are actually more likely to also use substances than their peers with healthier relationships to tech, providing the insight that technology addiction may be a risk factor for alcohol and other drug addiction.

One preliminary study found that a group of teens who "hyper-texted" were 40% more likely to have used cigarettes and twice as likely to have used alcohol than students who were less frequent users of technology. This same research noted that those who spent more hours per school day than peers on social networking sites were at higher risk for depression and suicide.<sup>3</sup>

It stands to reason then, that if we can prevent technology addiction, we may also be able to prevent other risky behavior and dangerous consequences to teens. Studies have shown

that brain scans of young people with internet addiction disorder (IAD) are similar to those of people with substance addictions to alcohol, cocaine, and cannabis.<sup>4</sup>

Damage to brain systems connecting emotional processing, attention, and decision-making are affected in both substance addicts and technology addicts. This discovery shows that being hooked on a tech behavior can, in some ways, be as physically damaging as an addiction to alcohol and other drug use.

## What can I do to help prevent technology addiction?

**Balance.** Preventing teen addiction to technology means finding a balance within students' lives, so that teenagers do not misuse their technology as an escape from real world challenges, emotions, socialization, or identity. Online activities should be balanced with real-world experiences and interactions.

**Provide healthy off-line highs.** 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"? Or, are they turning on the Xbox so they don't have to face a life that they are not enjoying?

**Model healthy stress management skills.** 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. Life requires energy. Often teens feel like they have too little energy to spend on too many demands. If they are not guided by adults to discover healthy ways to replenish their stores of energy, they may default by overusing easy fixes for entertainment or stress relief that promote technology addiction.

**Nurture pro-social identity development in the real world.** 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. It is easier to create an Internet façade, but far more rewarding for teens to cultivate true purposes and genuine identities within their families, schools, and communities.

**No devices in the bedroom.** 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. This rule is essential if only to give teens a chance to get some uninterrupted sleep. Chronic sleep deprivation can create symptoms that mimic ADD or ADHD. Lock up that phone and computer at night! (see article link below)

[How Insomnia Looks a Lot Like ADHD](#)

Some students have reported to me that they do not sleep well because their phones vibrate (real or imagined) frequently during the night, which wakes them up. (see video link below)

[Video: What is Phantom Vibration Syndrome \(1:32\)?](#)

***Manage gaming time.*** Gaming is a privilege, not an entitlement. Consider implementing a gaming structure which provides NO gaming during the school week. Your son can earn gaming privileges on the weekend, based on meeting or exceeding expectations during the week. Weekend gaming privileges can be earned in hourly increments. Perhaps start with one hour of gaming time, with additional gaming time earned.

If you would like to read more about these and other issues that contribute to a growing trend of under-motivated boys in today's society, I recommend two books by Dr. Leonard Sax:

**Boys Adrift: The Five Factors Driving the Growing Epidemic of Unmotivated Boys and Underachieving Young Men**

**The Collapse of Parenting: How We Hurt Our Kids When We Treat Them Like Grown-Ups**

Please do not hesitate to reach out if you have any questions or concerns on this topic or any others!

## References

1. Conrad, Brent. "Why Is Facebook Addictive? Twenty-One Reasons For Facebook Addiction - TechAddiction." Video Game Addiction Treatment & Computer Addiction Help - TechAddiction. N.p., n.d. Web. 8 Feb. 2017. <http://www.techaddiction.ca/why-is-facebook-addictive.html>.
2. Goldstein, Rita Z., and Nora D. Volkow. (2011). "Dysfunction of the prefrontal cortex in addiction: neuroimaging findings and clinical implications: Abstract: Nature Reviews Neuroscience." Nature Publishing Group: science journals, jobs, and information. Nature Publishing Group, a division of Macmillan Publishers Limited, n.d. Web. 8 Feb. 2017. <http://www.nature.com/nrn/journal/v12/n11/abs/nrn31119.html>.
3. NHS. "Extreme levels of texting 'unhealthy'." NHS Choices. 10 November 2010. N.p. Web. 2 8 Feb. 2017. <http://www.nhs.uk/news/2010/11November/Pages/Texting-and-teen-behaviour.aspx>.
4. Lin, Fuchun, Zhou, Yan, Du, Yasong, Qin, Lindi, Zhao, Zhimin, Xu, Jianrong and Hao Lei. (2012). "Abnormal White Matter Integrity in Adolescents with Internet Addiction Disorder: A Tract-Based Spatial Statistics Study." Plos One. Web. 8 Feb. 2017. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0030253>.