

Internet Addiction Disorder: The Debate Continues

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Worldwide, there are 3.3 billion users of the internet, representing 46.4% of the population. “Internet addiction disorder” (IAD) affects an estimated 10% and 30% of the general population and falls squarely into the category of “impulse control disorder” (Gregory, 2018). While there are several alternatives to the nomenclature, it points to the same fact: Whether spending hours gaming or posting for hours on Facebook, losing control of our technology use has become a very real problem.

The World Health Organization (WHO) recently announced that “gaming disorder” (also known as “digital-gaming” or “video-gaming”) will be included as a disorder in the International Classification of Diseases in the 11th version, scheduled for publication later this summer. This is in contrast to the *DSM-5*, which does not include many behavioral or process disorders as part of the overarching diagnostic criteria for mental health disorders. Gambling, for instance, is appended as a subset to addictions. The fact that WHO has sounded the alarm on gaming reflects a very real trend in problems with dependence on technology overall.

William F. Haning, III, MD, is on the board of directors of the American Society of Addiction Medicine and is the editor-in-chief of its publication *ASAM Weekly*. When it comes to the skepticism around IAD, Haning says, “Two central issues with which all are concerned are: Can a formal disorder, colloquially an addiction, be justified on the basis of current evidence, and, if so, what are the criteria by which such a disorder would be defined?”

Twenty years of research on the possibility of IAD has resulted in hundreds of studies that have come to the same conclusion: Digital addiction is a very real thing. “The American Society of Addiction Medicine supports a definition of addiction that encompasses behaviors independent of substance use, commonly referred to as ‘process addictions,’ ... and in this instance, preoccupation with and obsessive engagement in online video gaming,” according to Haning in response to the WHO.

From a generational perspective, it is no coincidence that the “iGen” (those born between 1995 and 2012) grew up with a smartphone in their hands. According to Jean M. Twenge, PhD, a researcher and professor of psychology at San Diego State University, in 2012, more than 50% of the United States population owned smartphones.

The Technology Thrust

In the early to mid-1990s, the internet was born. Using the most basic language and codes, it represented a leap forward into an era of *Star Trek* and *Star Wars*—one previously known to our society only through science fiction.

Ten years ago, the smartphone did not exist. Today, it is everywhere and runs everything from our schedules to home alarms, tracks our daily exercise and heart rate, and gives us instant information at our fingertips.

The Neurology of Technology

The neurological basis for substance use disorders is broadly understood. When particular chemicals, such as alcohol, marijuana, or opiates, are ingested, the brain is activated through the pleasure pathway where dopamine and other neurochemicals stimulate a positive response. Whether it is a substance or a behavior, the brain is seeking the release of dopamine as a pleasure response and if that comes in the form of a substance or an activity, the replication will still take place.

David Greenfield, PhD, MS, founder of the Center for Internet Technology Addiction in Connecticut, and an assistant clinical professor of psychiatry at the University of Connecticut School of Medicine, where he teaches sexual medicine and behavioral addiction, is a pioneer in this field. Greenfield says, “Neurobiology of addiction is easy to understand; the brain doesn’t care whether you are engaged in consuming alcohol or clicking on websites. It doesn’t have a *DSM-5* inside it. The brain is just interested in the elevation of dopamine as well as related addictive behaviors.”

Technology addiction operates at the same level of B.F. Skinner’s stimulus response experiments with pigeons: Pleasurable activities such as shopping online or playing a game are programmed to stimulate use and return to use. This is known as “variable ratio reinforcement schedule” because technology provides numerous layers of rewards to users that are unpredictable and have no particular end (Gregory).

However, Haning says, “The parallels between the behaviors of those who organize their lives around gaming and the acquisition of new games and equipment upgrades, to the exclusion of adequate sleep or rest and neglect of responsibilities, are too impressive to dismiss as simply bad judgment.”

In the case of online games such as Candy Crush or Command and Conquer, the enticement to keep playing to win at ever-increasing levels engages the user on a round-the-clock basis.

Greenfield’s research outcomes have changed significantly over the years. “We are seeing mostly video gaming dependency in younger cohorts,” he says. “Ninety-five percent of patients are male, and younger in age ranging from 12 or 13 up to mid-20s. The smartphone has become a game-changer because everyone has one.”

Children and Teenagers: What Is the Risk?

On any day, in any city, one can observe young people everywhere—buses, trains, restaurants, cars, or the street—and see the same thing: Most are looking at their phones.

The opportunity for children and teenagers to become dependent on their smartphones or tablets is almost guaranteed. Full availability along with legitimate use prompts the user to click on another application, switch screens, and go down the rabbit hole of texting, social media, or video games.

Many parents set up controls as well as limit the amount of time their children can use technology. However, even the most vigilant parent cannot realize how much screen time is actually involved. Researchers recently found that screen time was related to “lower connectivity related to language and cognitive control” vs. time spent reading books; this was found to strengthen regions of the brain involved in language and cognitive control (Horowitz-Kraus & Hutton, 2018).

Children who spent excessive time in front of screens were found to have altered brain chemistry, according to a 2017 study. Brain scans of young people in South Korea who were addicted to their phones were found to have a significant imbalance in the inhibitory neurotransmitter GABA, and glutamate-glutamine, or Glx, the neurotransmitter that excites neurons (Seo, 2017).

Countries such as China and South Korea are seeing such an increase in technology dependence in young people that public health officials are sounding the alarm. According to Greenfield, 20% of South Korean youth are addicted to technology, making for one of the highest rates in the world.

Twenge (2017) has found that from a behavioral standpoint, children who use smartphones today are more isolated, less likely to play outside, more prone to anxiety, and less happy than their cohorts of even a decade ago.

Treatment and the Future

The difference between overuse and addiction can mean the difference between significant brain and behavioral changes. The challenge for inclusion in the *DSM* for future versions is that despite the irrefutable research outcomes, the criteria for IAD continue to be debated.

Per Greenfield, “Psychiatric diagnoses are very sociopolitically embedded. There is a need for an agreed-upon definition and diagnostic set of markers. While we have good replicability, we don’t yet have the agreed-upon criteria.”

As parents, teenagers, and young children are confronted with algorithms that entice even the most disciplined, ultimately it is up to the very companies that create the technology to help everyone address the potential dangers.

Apple investors recently made it clear to the company that the time had come to build “a less addictive phone” and address the issue of technology addiction. The California State Teachers Retirement System and Jana Partners, LLC, an activist investment firm, wrote an open letter challenging Apple to “give families more options to guide how children and adolescents use” devices (Manjoo, 2018).

How Apple, Facebook, and Amazon, and others will begin to address the complexities of this issue remains to be seen. But internet, digital, and gaming dependence is something we all need to be more aware of in our clinical practices, our research endeavors, and our daily lives.

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