

What Happens to Your Body When You Use the Internet

Analysis by [Dr. Joseph Mercola](#)

July 02, 2024

STORY AT-A-GLANCE

- › The internet has enabled connections across the globe to be easier and cheaper, but at a psychological and physical cost that may increase your stress and anxiety
- › Large software companies, such as Google and Apple, enjoy greater profits the longer you stay on your devices and so engineer programs to offer positive feedback, encouraging your engagement and even dependence
- › Research identified physical symptoms associated with separation from your digital devices that may be driven by rising levels of cortisol and anxiety; consider using EFT to reduce your anxiety levels and your dependence

Editor's Note: This article is a reprint. It was originally published June 14, 2017.

The internet has made connecting with new business partners, discovering health information and finding long lost friends, easier and cheaper. However, while digital connections have distinct advantages, digital dependence does not. You've likely seen — or have been part of — a family outing where one by one, everyone pulls out their phone to check notifications, text messages or email.

It happens in restaurants, on busy streets and commuter trains. The desire to be rewarded by your phone may have even been so great that you endangered your life by attempting to read a text or send one while driving. Toddlers get their own devices to keep them busy and 10-year-old children are carrying their own phones.¹ Where once

children talked on the phone, set up face-to-face time and engaged with real people in real situations, they now spend hours keeping a "streak" alive.

Dependence on digital communication presents several physical and emotional health challenges. Mitochondrial damage, exposure to electromagnetic radiation and failing social skills are just the tip of an iceberg that may have deeper roots than anticipated. Research has identified immediate physical symptoms that occur when your digital devices are just out of reach.

Digital Dependence Affecting More Than Teens

Cellphone ownership has reached 97% in America, up from 68% measured in 2015. Of those owners, 90% use a smartphone.² The people who own the smartphones are distributed equally across gender, age and ethnicity, with the lowest number of people owning smartphones being over the age of 65.

Dependence or **addiction to a digital device** hooked to the internet affected 6% of the world population in 2014.³ This number may not appear to be significant on the surface, but consider that 6% of the world population was over 420 million people.⁴

Comparatively speaking, according to the United Nations Office on Drugs and Crime, 3.5% to 7% of the world population between 15 and 64 years had used an illicit drug in the past year.⁵

The percentage of those addicted to the internet may actually be higher as only 39% of the world in 2014 had access to the internet,⁶ driving the real percentage of those addicted to 15%. Symptoms of addiction are similar to other types of addiction, but are more socially acceptable. The authors of the study found an internet addiction (IA) is:⁷

"... [G]enerally regarded as a disorder of concern because the neural abnormalities (e.g., atrophies in dorsolateral prefrontal cortex) and cognitive dysfunctions (e.g., impaired working memory) associated with IA mimic those related to substance and behavioral addiction. Moreover, IA is often comorbid

with mental disorders, such as attention deficit hyperactivity disorder and depression."

Reach Out Recovery identifies conditions that may trigger internet addiction or compulsions, including anxiety, depression, other addictions, social isolation and stress.⁸ Internet activity may stimulate your brain's reward system, much like **drugs and alcohol**, providing a constant source of information and entertainment. While each person's internet use is different, the results may be the same. Long-term effects may include:

Irritation when someone interrupts your interaction online

Difficulty completing tasks

Increasing isolation

Experiencing euphoria while online

Inability to stop despite the consequences

Increasing stress

Physical Effects of Internet Withdrawal

The physical and mental effects of addiction, coupled with the physical effects of withdrawal, may increase your risks for long-term health conditions. In a study involving 144 people between the ages of 18 and 33, researchers discovered both heart rate and blood pressure are affected in those who report spending extended periods of time online.⁹

Past research has associated cold turkey withdrawal of the internet from heavy users will produce anxiety type symptoms, similar to those experienced by people addicted to drugs or alcohol.¹⁰ The current study also linked physiological changes, including an average of a 3% to 4% **increase in blood pressure** and heart rate of the participants.¹¹ Some participants experienced up to an 8% increase.

This was the first controlled demonstration of physiological changes triggered by internet use.¹² The increases noted during the study were not enough to be immediately life-threatening; however, these types of changes are associated with anxiety and a reduction in the function of the immune system.

The changes in anxiety levels may also be a physiological trigger for users to re-engage with their digital devices in order to reduce the physical response and anxiety level. Dr. Lisa Osborne, co-author of the study from Swansea University, commented:¹³

"A problem with experiencing physiological changes like increased heart rate is that they can be misinterpreted as something more physically threatening, especially by those with high levels of anxiety, which can lead to more anxiety, and more need to reduce it."

In other words, especially in people who may experience anxiety more frequently, the physical symptoms of internet withdrawal may increase their anxiety and lead to behaviors to reduce it – namely, going back to using the internet.

Putting Down Your Phone May Raise Your Anxiety Level

Forty percent of the participants in this study admitted they had some level of an internet-related problem and acknowledged they spent too much time online. Participants reportedly spent an average of five hours each day on the internet and 20% spent over six hours a day. By far the most common reasons for engaging online were social media and shopping.

Previous studies from this same group of researchers have demonstrated study participants would experience short-term increases in anxiety levels when their digital devices were removed.¹⁴ When those devices were removed for longer periods of time, they reported increases in loneliness and depression, with some researchers finding changes to the actual structures in the brain.

Research psychologist Larry Rosen, Ph.D., and his colleagues at California State University looked at the effect technology has had on our anxiety levels. They have

found the typical person checks their phone every 15 minutes, whether or not they heard a notification from the device. In his words you may be thinking:¹⁵

"Gee, I haven't [checked] in [on] Facebook in a while. I haven't checked on this Twitter feed for a while. I wonder if somebody commented on my Instagram post."

These thoughts generate increased secretion of cortisol, which begins to increase your anxiety levels. Eventually, you notice the rising anxiety and seek a way to reduce the experience. Checking in to your social network on your phone may be one of the ways you've found to reduce your anxiety.

The authors of the study from Swansea University speculate that internet use is driven by more than short-term excitement or the joy of using technology. Instead, it may produce negative physiological and psychological changes, such as anxiety that may drive you back to the device that is causing the problem in the first place.¹⁶

Multiple studies from around the world have demonstrated overuse of the internet and digital devices leads to physical and psychological symptoms of addiction¹⁷ and family dysfunction.¹⁸ Poor health, unhappiness and depression were found in men and women who report overuse of the internet, but depressed girls demonstrate a higher rate of internet addiction than boys.¹⁹ Overall, those with an addiction to the internet have lower impulsivity control.²⁰

Google Would Like You to Keep on Using

It should come as no surprise that companies that make money when more people spend more time and money on the internet are consciously trying to manipulate your behavior. Former Google product manager Tristan Harris revealed how digital giants are engineering smartphone apps and social media feedback to get you checking and double-checking online.²¹

However, while internet use is more socially acceptable, digital companies aren't the only businesses using neurological and psychological strategies to increase their profit

margins.²² Behavior patterns are often etched into neural pathways,²³ and when those behaviors are also linked to hormone secretion and physiological responses, they become even more powerful.

In fact, Harris describes the reward process of using a smartphone as "playing the slot machine."²⁴ And, Google has discovered a way to embed that reward system as you use the apps on your phone. This process is so important to digital corporations that Apple turned down a smartphone app for their store that would help people to reduce their use of the internet and their smartphones.

The goal of any corporation is to increase your use of their product and the potential you will spend more money with them. In the case of smartphone devices, these companies are contributing to programming your actions, and how you think and feel. This is how companies satisfy their advertisers, who are paying for the privilege of your eyes on their ads.

Have You Been 'Brain Hacked?'

Some programmers call this process "brain hacking," as they incorporate more information from neuropsychology into the development of digital interfaces that increase your interaction with the program. For instance, getting likes on Facebook and Instagram, the "streaks" on Snapchat or cute emojis on text messaging, are all designed to increase your engagement and desire to return.

The continual scroll on [Facebook](#) keeps you engaged on the page longer, with a greater chance you'll click an advertisement on the page. Keeping a "streak" alive on Snapchat keeps you coming back to the app, especially when you have multiple streaks going with multiple people.

Harris describes it as a race to the bottom of the brainstem where fear and anxiety live, two of the most powerful motivators known to advertisers. Both advertisers and computer software developers are using these techniques to write code that will engage your attention.²⁵

More Physical Effects From Your Digital Devices

Unfortunately, your engagement is not the only physiological or psychological change these techniques trigger in your brain and your body. This short video highlights several changes you may experience after hours of digital use. However, there are also permanent changes that occur to the structure of your brain after watching a flickering screen for hours.

One of the functional changes you may have noticed is a reduced ability to think deeply about one subject.²⁶ The focus of gathering information online often results in you flitting from one website to another as the topic of your research changes, as portrayed in the video above. Another way of saying this is a constant state of distraction, disruption and interruption from notifications and website engagement.

Nicholas Carr, author of the book, "The Shallows: What the Internet Is Doing to Our Brains," finds in the years after publication, with rising use of digital devices, millennials are experiencing even greater problems with forgetfulness than seniors.²⁷ This is the "dark side" of neurological plasticity that allows your brain to adapt to changes in your environment. This type of plasticity is one way your brain recovers after a stroke has permanently damaged one area.

The truth is, as your brain is plastic, most everything you do and practice will change your brain.²⁸ Using the internet may damage your ability to remember facts, but it also appears to improve your ability to research information. However, a few positive changes may not outweigh the negative aspects of long-term internet overuse. For instance, brain scans indicate those who use the internet consistently have a reduced amount of gray matter.^{29,30}

A loss of white matter,^{31,32} reduced cortical thickness^{33,34} and impaired cognitive functioning³⁵ are other brain structure and functional changes that have been demonstrated from long-term internet use. It is impossible to ignore that these devices are changing your brain structure, and the experience is also increasing your exposure

to microwave radiation and large amounts of blue light at night, thereby impacting your body's ability to produce melatonin.

In 2011, the World Health Organization International Agency for Research on Cancer declared cellphones a Group 2b "possible human carcinogen"³⁶ related to the microwave radiation emitted from the phone. Even cellphone manufacturers place warnings on their products to keep them at least 1 inch from your body.³⁷

Yet another challenge to using digital devices is the blue light emitted from the screens, which reduce your melatonin and signal your body to wake up. You may be able to reduce this effect by wearing blue-blocking sunglasses after sundown, and turning off your digital devices at the same time.

Meditation May Reduce Your Withdrawal Symptoms

Consider setting a goal to reduce your screen time and digital communication. In the video above, Julie Schiffman demonstrates the use of [Emotional Freedom Techniques \(EFT\)](#) to reduce stress and anxiety.

These are strategies you may easily use in public or private to assist your efforts to reduce your screen time – whether on your phone, computer or on your tablet. Remember, the physiological, structural and psychological changes occur no matter what type of device you're using.

Sources and References

- ¹ [CNBC, May 20, 2016](#)
- ² [PEW Research Center, January 31, 2024](#)
- ³ [Cyberpsychology, Behavior and Social Networking, 2014; 17\(12\):755](#)
- ^{4, 7} [Business Insider, December 20, 2014](#)
- ⁵ [United Nations Office on Drugs and Crime, World Drug Report 2014](#)
- ⁶ [LA Times, May 7, 2014](#)
- ⁸ [Reach Out Recovery, Is Digital Device Addiction A Thing?](#)
- ⁹ [PLOS|One May 25, 2017 Differential physiological changes following internet exposure in higher and lower problematic internet users](#)

- ¹⁰ BBC News, June 19, 2013
- ¹¹ BBC News, June 1, 2017
- ^{12, 13, 14} Swansea University, June 12, 2017
- ^{15, 21, 24, 25} 60 Minutes, April 9, 2017
- ¹⁶ Medical Xpress, May 31, 2017
- ¹⁷ Addictive Behaviors 2014;39(3):744-7
- ¹⁸ General Hospital Psychiatry 2014; 36(2):203
- ¹⁹ International Journal of Mental Health and Addiction 2014; 12(5): 660–669
- ²⁰ BioPortfolio, December 11, 2013 (Archived)
- ²² Scientific American, April 27, 2012
- ²³ Psychology Today, Habit Formation
- ^{26, 27} Huffington Post, October 9, 2015
- ²⁸ BBC, April 24, 2012
- ²⁹ European Journal of Radiology 2011;79(1):92
- ^{30, 32} European Journal of Radiology 2013;82(8):1308
- ³¹ PLOS|One January 11, 2012
- ³³ Behavioral and Brain Functions 2013; 9(11)
- ³⁴ PLOS|One January 9, 2013
- ³⁵ Psychiatry Research, 2012; 203(2-3):153
- ³⁶ World Health Organization International Agency for Research on Cancer, May 31, 2011
- ³⁷ The Guardian, May 16, 2015