

How Technology is Exacerbating the Mental Health Epidemic

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In 2008, the Kaiser Family Foundation, a nonprofit organization focusing on national health issues, conducted a study in which 2,002 students- ranging from third to twelfth grade -were surveyed on their media use. After one year of observation, the results of the study were released. Across the board, the participants averaged seven and a half hours of screen time a day. To add insult to injury, a study conducted by the National Institute of Mental Health, revealed that adolescents ages fourteen to seventeen are the most at risk age group for suffering depressive episodes and having diagnosed depression. With such a strong correlation between technology use and mental health disorders, the epidemic of technology addiction is no longer something the world can afford to ignore.

Technology's presence has forced itself into nearly every aspect of daily life. School, work, and leisure are all surrounded by it. Between each aspect of life it encompasses, many spend the majority of their day peering into a non-tangible digital world rather than the real world around them. Social media platforms including Instagram, Snapchat, Facebook, and Tik-Tok, allow people to create a persona through which the world envisions them. With infinite people available at one's fingertips- friends, family, co-workers -it seems digital life is a better reflection of one's true self than anything else. These trends prove especially true when applied to today's youth. Older generations did not grow up in the same digital world that today's kids do. Children merely eight years old are spending five and a half hours on average absorbing various digital media including music, television, computer browsing, and videogames (Rideout et al. 5). Everyday, this terminal exposure to technology seems to form a stronger correlation with increasing mental health issues such as depression, anxiety, and attention-deficit disorder. While it is obvious that society's dependence on technology will only be exacerbated with the passing of time, the consequences of overindulgence in technology must be addressed.

Be that as it may, the benefits of technology are boundless. Various social platforms allow users to reconnect with far away friends and family, create new relationships, and provide users with a voice. Smartphones allow people to talk, text, watch television and movies, stream music, read, write, and more, all from a device which fits in their pocket. Strategic implementations of technological aids have elevated performance in both the workplace and schools. Limitless resources on any variety of topics are available to anyone with an internet connection. It would be fair to compare technology to a miracle-drug, the one step solution to a majority of the problems in daily life. In spite of this, just as a drug can be abused to its users' detriment, so can technology.

Excessive use of useful technological tools including social media and various internet resources, can create an oversaturation of information. Such acute exposure to this information leads to many users becoming overstimulated. Similar to a drug: social media, videogames, and other forms of multimedia, provide a hit of dopamine, stimulating users' brains in a manner comparable to the stimulation opioid addicts experience while intoxicated. Subjection to this stimulation on a daily basis can quickly create addiction, along with the detrimental slur of symptoms accompanied with it.

Today's youth are exposed to technology far earlier than other age groups, making them more prone to form these addictions early on. Comparing the statistics of social media use and prevalence of depression- the first study being conducted by The World Economic Forum and the latter by the American Journal of Preventive Medicine -one can observe that both rates display a near linear increase in recent years. Such similarity begs the question of whether this is merely a correlation, or a true causal relationship between technology use and various mental health disorders. Addiction, diminishing motivation, shortened attention spans, and

declining social skills, encompass the fiercest of technology's vices. Nevertheless, the modern world's interdependence with technology maintains itself resiliently, and combating such complex obstacles is a difficult and timely process. However, acknowledging the problem and creating awareness surrounding it, is the first step towards a solution.

Cigarettes were first introduced into the United States in the early 1800's. In 1956 a Surgeon General's scientific study found a casual relationship between excessive smoking and lung cancer. Only in 1979 was smoking banned in federal buildings (CDC). Needless to say, technology and cigarettes are two distinctly separate devices. Even so, their users share exceptionally similar behaviors. 'Addiction' has predominantly been a word reserved for those who overindulge in drugs, sex, gambling, and alcohol. However, behavioral psychologists and medical professionals have recently expanded this definition. A 2012 study conducted by the National Library of Medicine, states, "Behavioral addictions such as gambling, overeating, television compulsion, and internet addiction are similar to drug addiction." The only outstanding dissimilarity between the two, is that behavioral addictions do not foster the same physical signs and symptoms. Analogous to cigarettes, technology releases an onslaught of dopamine, the "feel good" chemical and reward system coded in the brain. Just as regular smoking will eventually create addiction and dependency, the maltreatment of technology can do the same.

Constantly subjecting oneself to digital stimulation, whether social media, videogames, or internet browsing, creates a severe overstimulation and release of dopamine. Harvard University conducted a study in 2018 which observed the relationship between dopamine and smartphones. Illustrating the manner in which smartphone addictions are formed, Trevor Haynes, a research technician in the Department of Neurobiology at Harvard, states, "Although not as

intense as a hit of cocaine, positive social stimuli will similarly result in a release of dopamine, reinforcing whatever behavior preceded it.” Haynes goes on to discuss social media companies’ uses of various algorithms in order to optimize their user-experience. After consistent use, social media websites utilize these algorithms to learn the individual preferences of their user.

Algorithms are constantly gathering information to better augment themselves; a systematic effort to engage their user for as long as possible. Eventually, the user’s preferred media- their interests, political views, friends or family they contact especially often -are all gathered by these algorithms. Now, each time they open the application, the user will be presented with an array of information holding value to them. Each use of the application releases an influx of dopamine, tempting the user to stay on the application for as long as possible. With a nearly perfect user-experience and regular rush of dopamine, the application easily wedges itself into the positive reinforcement portion of the brain's reward system, breeding addiction. Farther in the previously mentioned National Library of Medicine study, they found, “Patients suffering from behavioral addiction describe addiction-specific phenomena and diagnostic criteria such as craving, excessive behavior, psychological and physical withdrawal symptoms, loss of control, development of tolerance and inducing and perceiving expected psychotropic effects.” Clutching its users with the same iron grip as many addictive opioids, an overindulgence in technology has the potential to foster genuine psychological consequences.

Among such consequences, diminishing motivation and attention span are some of the most prevalent. Unfailing access to easy dopamine via social media and videogames has especially affected younger populations. Compounding on the time screens take from other activities (seven and a half hours of average screen time daily for ages eight to eighteen), the stimulation they provide prompt far lower levels of motivation and attention to activities such as

school, work, and time spent with friends and family. Dopamine is one of the main neurotransmitters which regulate motivation. Regular exposure to high dopamine levels through technology causes the brain to form a tolerance to this high exposure, lowering baseline dopamine concentrations. Decreased dopamine levels have been found to cause regular users of social media to suffer from a deficit of dopamine when not using their desired platforms. Doctor Anna Lembke, a professor of psychiatry at Stanford University School of Medicine, explained the effect of such overstimulation in an interview from 2021, “the dopamine deficit manifests as depression and anxiety do, mimicking the same symptoms and feelings. Over time, they may exert effects on the synaptic plasticity of the specific pathways involved.” Wikipedia defines synaptic plasticity as “the ability of synapses to strengthen or weaken over time, in response to increases or decreases in their activity.” Synapses serve as the junctions between the neurons responsible for communication within the brain. Technologically induced stimuli are capable of rewiring the brain at a cellular level. As dopamine baselines lower, synapses become less active, and reward pathways become tangled. Instead of responding to genuine stimulation, these pathways become primarily associated with artificial stimulation. Dismantling natural neural pathways, and forming unnatural chemical imbalances within the brain, can lead to one’s natural reward system becoming skewed. Tasks which do not provide an immediate release of dopamine may now become an obstacle in daily life.

Unfortunately, motivation is not the only factor at risk. Motivation’s main function is to allow one to begin a task. However, for intensive tasks such as completing a difficult school assignment, or spending time on an especially frustrating project at work, moderate to high levels of attention must be sustained for long periods of time. Lengthy tasks provide the most satisfaction upon their completion. With a prolonged absence of dopamine, many regular users of

social media and other digital applications have difficulty focusing long enough to see a task to completion. Such symptoms closely mimic those of attention-deficit/hyperactivity disorder (ADHD). A medical research paper published by the ADHD Foundation illustrates the relationship between ADHD and dopamine levels, “people with ADHD may have a higher concentration of dopamine transporters in the brain. These transporters remove dopamine from brain cells.” Removing dopamine from cells at an accelerated rate compared to a neurotypical individual, causes those with ADHD to possess chronically low baseline levels of dopamine. Claiming causation between technology and ADHD would be inappropriate due to the complex nature of ADHD as a medical disorder. However, there are clear similarities between those who suffer low levels of dopamine as a result of social media use and those with ADHD. Both demonstrate many identical symptoms, further establishing the relationship between overuse of technology and low levels of dopamine, attention, and motivation.

Examples of technology addiction and shortened attention spans are nothing short of abundant today. Simply observing those at a local park, restaurant, gym, or coffee shop, one will likely find a group of people who are sitting together, yet are engaging in digital indulgences completely absent from one another. Casual conversation is constantly being bested by social media in the battle for peoples’ attention. Always foraging for stimulation, social media users’ addictions to their smartphones, compounded with their ever diminishing attention spans, have allowed the imposition of technology in their social lives. A 2021 study conducted by the College of Coastal Georgia for an academic research journal observed 186 participants of varying age groups. Each age group was tested on their emotional intelligence (EI), social skills, and mindfulness. “Data showed that as age increased phone use decreased. EI, mindfulness, and social competence scores for younger adults were much lower than for middle aged and older

adults while younger adults had a significantly larger problematic phone use than middle aged.” Younger age groups reported significantly higher use of technology than the older groups. Coincidentally, the younger age groups also scored far lower on emotional intelligence, mindfulness, and social competence evaluations. Relationships, both platonic and romantic, tend to display a negative response as the presence of technology becomes more abundant. An in depth study by Utah University states, “Some of the common damaging effects of pornography for users can include addiction, isolation, increased aggression, distorted beliefs and perceptions about relationships and sexuality, negative feelings about themselves, and neglecting other areas of their lives.” Pornographic material is currently more available than ever before, due to its easy accessibility by anyone with an internet connection. Consequently, people are viewing pornography far younger than previous generations. In couples, routine consumption of pornographic material by either partner tends to negatively affect their relationship. Skewed perceptions of intimacy distort the expectations of those who view pornography; harming their relationships. For many, excessive viewing of pornographic material gives rise to feelings of low self-worth. Platforms such as instagram routinely expose users to models, celebrities, bodybuilders, and the ultra-rich. Comparisons between one’s own life and appearance to those of others are bound to arise, creating feelings of anxiety, depression, and significant reductions in one’s self-confidence.

Although the detriments surrounding the overindulgence in technology are abundant, when used in moderation, technology provides a plethora of advantages. The modern world is interconnected by the various digital media platforms available. Widespread and affordable internet connection, paired with free to use social platforms, allow billions to keep in touch with loved ones. For many, social media has become a convenient way to stay up to date and educated

on recent news. Convenient forms of communication allow for a swift exchange of information, improving students' grades, employees' performances, and saving lives due to the ease of reaching out to emergency services. Furthermore, social media guarantees its users a platform in which they can share their thoughts. Taso Lagos, a successful author employed by the University of Washington, wrote in *The Seattle Times*, "Because we live in a world of constant anxiety and stress about our lives, our careers, the planet and the fate of our families and friends, trusted sites like Facebook and Twitter are places we turn to relieve this tension and allow us to live and express our humanity." Social websites like Instagram, Facebook, and Twitter, offer a sense of community to their users. 'Friends' on these applications are able to stay in touch and up to date with the lives of those they care about. Because of these platforms, many are able to stay in touch with those who they would typically be unable to reach. Creative expression through platforms like YouTube, Twitch, Soundcloud, and many others, allow amateur creators to share their interests, knowledge, and thoughts. For those with social anxiety and depression, these platforms grant the opportunity to both maintain old relationships, and create new ones from the comfort and safety of their home. Undeniably, the past decade of technological advances have shuttled in an era of connectivity and convenience.

In moderation, the use of various technologies provides undisputable advantages. Yet as goes for everything: there can always be too much of a good thing. As the modern world rapidly advances, and digital media companies continue to reel in users with their addictive algorithms, everyone is susceptible to developing addictions to technology. Parents of younger generations must be especially vigilant, as the pernicious effects of technology on motivation, attention, and social skills, manifest themselves aggressively within today's children. As more research is

published daily regarding the negative effects of excessive technology use, one can only hope that people start to pay attention.

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