Can You Really Be ‘Addicted’ to Social Media?

The science of addiction is not as simple as Facebook, Instagram, and TikTok’s legal opponents want you to think.

THE EFFECT DOPAMINE HAS ON THE BRAIN MIGHT DECIDE A LANDMARK SOCIAL MEDIA ADDICTION LAWSUIT. (ILLUSTRATION BY *THE FREE PRESS*)

By Sally Satel

We know her only as Kaley—and by the initials K.G.M. She began watching YouTube when she was 6 years old, started using Instagram at 11, then Snapchat at 13 and TikTok at 14. Social media “changed the course of her childhood,” said her lawyer, Joseph VanZandt. Now 20,

Kaley claims that a decade-long addiction to social media led to her anxiety, depression, suicidal thoughts, and body dysmorphia.

The allegations are at the heart of a huge trial that began three weeks ago in Los Angeles. Mark Zuckerberg, the founder and CEO of Facebook and Instagram parent Meta Platforms, began testifying on Wednesday. When the testimony is over, jurors will be asked to resolve whether Kaley's addiction was instigated by the content she viewed or by the way that content was delivered—meaning the design elements of the social media platforms, such as infinite scroll, rapid feedback with "likes," and autoplay, or queueing up videos in succession.

The trial is widely seen as a bellwether case for a torrent of litigation against TikTok, Meta's Facebook and Instagram, Snapchat, and Google's YouTube, including one case that has over 2,000 plaintiffs—among them 1,200 school districts. The plaintiffs' lawyers, including Kaley's, have compared "social media addiction" to drug and gambling addictions.

The psychiatry profession does not recognize technology addiction as a diagnosis. "Gambling disorder" is the only behavioral addiction in the latest version of the *Diagnostic and Statistical Manual of Mental Disorders*.

Yet the basic criteria used by psychiatrists to determine whether a person is addicted to alcohol or drugs could plausibly describe some teenagers who use social media. Alcohol and drug addicts consume in excess, feel a lack of control over their use, have great difficulty abstaining, and sustain negative consequences.

Parallels also manifest in how drugs and social media are delivered. As we all know, exposure to novel rewards that are presented rapidly and at short intervals enhances the addictiveness of a drug. Think of chewing coca leaves versus smoking crack.

It is no surprise that designers of social media apps would try to capitalize on unpredictable presentations of vivid stimuli—much like a slot machine—to keep kids scrolling on high alert for intermittent rewards. They are channeling the famous behaviorist B.F. Skinner, who discovered the power of what he called a variable schedule of reward. As Skinner showed with his rat experiments, sometimes you get the pellet, and sometimes you don't.

* * *

Then there is dopamine. Christened the "Kim Kardashian of neurotransmitters" by British psychologist Vaughan Bell, dopamine is a "celebrity among brain chemicals," as Bell put it, deployed in promiscuous fashion in media reports to signify that something, indeed anything, can be addictive.

Some psychiatric professionals sound much the same about dopamine and social media. Anna Lembke, a Stanford University psychiatrist and author of the book *Dopamine Nation*, called smartphones the modern-day hypodermic needle, delivering digital dopamine 24-7 for a wired generation." Jason Shimiaie, the medical director of a psychiatric group practice in New York City, uses the term "digital diabetes" to describe the harm he sees.

But dopamine's function in the brain is complicated. Contrary to popular belief, dopamine does not have a reliable role in generating the sensation of pleasure, or "liking," as brain scientists often call it.

READ
Is Social Media the New Big Tobacco?

One of dopamine's major roles is in helping us learn from cues that predict outcomes, whether good or bad. In the context of addiction, much research shows that dopamine enables both the sensation of wanting drugs or alcohol—or incentive salience, as neuroscientists call it—and the motivation to pursue them.

In fact, the neural systems of wanting and liking operate distinctly from each other. This explains why, over time, many addicts don't feel much pleasure from a drug yet still feel strongly motivated to keep pursuing it. A less dramatic comparison: Just think of the potato chips you keep eating in one sitting, long after they stopped tasting so good.

Dopamine is not even the key neurotransmitter involved in addiction to all drugs. "It's inconceivable that there can be just a single chemical that mediates all the effects of what addictive drugs have in common. That is so patently daft," David Nutt of Imperial College London told me. Nutt is an esteemed neuropsychopharmacologist who studies the effect of drugs on the mind and behavior.

As Nutt and three colleagues explained in their detailed critique a decade ago of the so-called "dopamine theory of addiction," only stimulants like cocaine and methamphetamine act intensely and directly on the dopamine system to increase dopamine levels. These levels, in turn, are associated with the user's immediate experience of a pleasurable high.

There is some evidence that alcohol may have such an effect, too, though it is less robust. There is little evidence at all that cannabis and opioids increase dopamine levels directly, other researchers found. In short, the neurobiology of addiction is staggeringly complex and, in some ways, different depending upon the particular drug of abuse.

This has implications for the trial in Los Angeles, where the defendants include Meta and Google, and for many other trials against Big Tech that are still to come. Snapchat and TikTok settled with Kaley before the start of the Los Angeles trial, and all of the social media companies adamantly denied that they knowingly harmed kids with their products.

What if it turns out that social media platforms are shown to have little direct effect on the release of dopamine but still induce young people to use them in ways that are problematic? By the dopamine-drenched logic of the plaintiffs' lawyers, the companies would be off the hook: Their products did not flood the brain with dopamine.

Even if brain imaging *did* signal increased activation of teenagers' dopamine pathways during, say, hours spent scrolling on TikTok, we would be no closer to knowing if those teens were actually addicted. That's because clinicians define addiction by an individual's behavior, not by "dopamine hits" or by the properties of a drug—or a social media platform.

One key factor separating habit from addiction or addiction risk is the degree to which social media is driven by persistent emotional need, not just cues.

And then there is the *habit* of using social media. Psychologists Ian Anderson of the California Institute of Technology and Wendy Wood of the University of Southern California helpfully distinguish between a deeply ingrained habit of checking habit (which engages the dopamine system, as most habits do) and "clinically relevant pathology" (also known as addiction).

"Use any site or app enough, and you'll form associations in memory between cues, such as site alerts and your smartphone, and responses,

such as logging on," they wrote in 2021. Fleeting feelings can also function as cues. If you are feeling lonely, just log on.

In November, Anderson and Wood wrote that the vast majority of teens do not progress to addiction. They concluded that "the perception of addiction likely arises from popular media's frequent labeling of social media as addictive," rather than habit-forming. One key factor separating habit from addiction or addiction risk is the degree to which social media is driven by persistent emotional need, not just cues.

It is impossible to predict what the jury will believe, but opponents of the social media companies might be on shaky empirical ground if they claim a strict analogy between the neuroscience of substance addiction and "tech addiction."

Still, addiction is rhetorically potent, especially when it is presented as a biologically driven phenomenon. As both reality and metaphor, addiction conjures disembodied brains hijacked by a dangerous substance foisted upon the helpless consumer by greedy third parties.

Worse, ceding too much causal power to a drug—or a social media platform—underplays the profound influence that users' psychological and social contexts have on their reasons for using social media, the different ways they engage with the apps, and how they experience those encounters. Those influential factors include self-image (11- to 13-year-old girls might be particularly apt to magnify the significance of peer feedback in hurtful ways), social isolation, personality, and life satisfaction. Hours on devices displace healthy activities and in-person socialization, and create the risk of significant sleep deprivation, which exacerbates emotional reactivity, depression, and anxiety.

READ

Social Media Shortens Your Life. Here's How to Get Time Back.

Teens who crave social acceptance, obsess over appearance, or suffer clinical or existential distress are more vulnerable to the dark side of apps. That risk is most likely amplified when social media is turbocharged to prolong engagement.

Understandably, desperate parents and teens who have been damaged by their experiences online want to hold tech companies accountable. But neither addiction nor dopamine are needed to explain the origins of the harm to teenage mental health. "Glib neurologizing," as a colleague of mine calls it, might sway juries, but its true explanatory power is weak. If we want to understand what is happening to teens because of social media, we should focus not on their brains, but on how they think and act.