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TECHNOLOGY

NO ONE KNOWS EXACTLY WHAT SOCIAL MEDIA IS DOING TO TEENS


Years and years of research add up to an uncomfortable reality: The connection between social media and mental health is more complicated than it seems.

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The Problem With Comparing Social Media to Big Tobacco

Politicians, pundits, and even the surgeon general have been highlighting the risks that social media



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LATE LAST MONTH, the U.S. surgeon general issued an advisory—a format reserved for public-health issues that demand the nation’s immediate attention. “Nearly every teenager in America uses social media,” the report read, “and yet we do not have enough evidence to conclude that it is sufficiently safe for them.” In response, the Biden administration announced a new interagency task force that has been given a year to come up with a slate of policy recommendations that will help “safeguard” children online.

This may be a legislative problem for Big Tech, and it’s certainly a public-relations problem. Over the past several years, cigarettes have become the dominant metaphor in the discourse about social media: Everyone seems to think that these sites are dangerous and addictive, like cigarettes. Young people get hooked. At a congressional hearing on Facebook’s impact on teenagers in 2021, Senator Ed Markey tossed the comparison at Antigone Davis, a vice president and the global head of safety for Meta, Instagram’s parent company. “Facebook is just like Big Tobacco, pushing a

product that they know is harmful to the health of young people, pushing it to them early,” Markey, a Democrat, said. Now the metaphor is even more compelling, as it can also evoke the famous 1964 surgeon-general warning about the scientific evidence of cigarettes causing lung cancer.

But the two are obviously very different. As a previous surgeon general pointed out: Cigarettes kill people through deadly disease. Social media is being blamed for something just as alarming but far less direct: a sharp increase in teen depression and suicide attempts over the past decade and a half that has been labeled a “national state of emergency” by the American Academy of Pediatrics and other prominent medical associations. The CDC’s latest trend report shows the percentage of high-school students who “experienced persistent feelings of sadness or hopelessness” jumping from 28 percent in 2011 to 42 percent in 2021, and the numbers for girls and LGBTQ students are even worse (57 and 69 percent, respectively, in 2021). Understandably, social media has been one of the places that parents have looked for an explanation. Last year, a Pew Research Center study found that more than half of American parents are at least somewhat worried that social media could lead their teenagers to develop mental-health problems—28 percent were “extremely” or “very” worried. Teens themselves are worried, at least about one another. About a third of them told Pew that social media is mostly negative for people their age, compared with about a quarter who say the effect has been mostly positive—although only a tenth said social media is mostly bad for them personally.

Compelling evidence suggests that social-media platforms are contributing to the crisis, but it’s also true that the horror stories and the headlines have gotten out in front of the science, which is not as settled as many would think. A decade of work and hundreds of studies have produced a mixture of results, in part because they’ve used a mixture of

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methods and in part because they're trying to get at something elusive and complicated. Rather than coalescing into a unified message that social-media use is an awful, indisputably destructive force—tobacco with a “Like” button—the research instead has been building toward a more nuanced, and perhaps more intuitive, takeaway.



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Social media's effects seem to depend a lot on the person using it. It may play a different role for different demographics, and the role it plays may also change for people at different stages of life. It surely doesn't affect everyone in the same way. This makes informed intervention extremely difficult. “Probably a lot of [the problem] comes down to the science not being precise enough,” says Amy Orben, a researcher at the University of Cambridge who studies the relationship between social media and well-being and whose work has been central to the ongoing debate. The field has not yet produced “precise enough measurements and precise enough hypotheses to merit a precise answer.”

This complicates a rapid succession of actions against social-media platforms in recent months. Last month, the governor of Arkansas signed a bill making it illegal for a minor to have a social-media account without parental consent and requiring social-media companies to verify user ages with government-issued ID; a similar one was signed by the governor of Utah in March. Other age-gating measures are being considered in at least 10 more states and at the national level.

Listen: The problem with comparing social media to Big Tobacco

Then there are the lawsuits. In January, the Seattle public-school district sued Facebook, Instagram, Snap, TikTok, and YouTube for violation of a state “public-nuisance law,” arguing that the social-media companies were known to “exploit the

neurophysiology of the brain's reward system" and that their "manipulative conduct" had created a mental-health crisis in the school system. Meanwhile, several major law firms have taken on personal-injury lawsuits on behalf of parents who believe that these platforms have caused problems in their kids' lives, such as body dysmorphia, depression, anxiety, and suicide. Chris Seeger, of the New Jersey-based Seeger Weiss, told me his firm currently has more than 1,000 such cases.

These cases hinge on novel arguments that will have to carefully circumvent *a lot of* precedent of failed litigation against social-media companies. And new laws may run up against First Amendment issues and be difficult to enforce. (Critics have also pointed out that Arkansas Governor Sarah Huckabee Sanders's expression of concern about exploitation of children is a bit confusing, given that she recently signed a bill undoing a number of child-labor protections in her state, including the requirement that employers get parental permission to employ children under the age of 16.)

This is a crucial moment, Orben told me: "I think the key question is, in 20 years' time, will we look back at this conversation and be like, *We were worried about technology in excess, when we should have been worried about raising our kids?* It'll probably be somewhere halfway between the two." Legislation that removes teenagers from social media likely won't solve the mental-health crisis; teens will find ways around it, and for the ones who don't, being displaced from their online communities may lead to different problems. The science, as it stands right now, provides reason to be concerned about social media. It also suggests the need for a far more sophisticated understanding of the effects of social media on young people, and the presence of much deeper problems that we could overlook if we aren't careful.

THIS LATEST SURGE in concern about kids and the internet was exacerbated by the Facebook Papers, a collection of documents leaked by the former Facebook employee Frances Haugen and shared with journalists in fall 2021. Included were several studies conducted internally, asking groups of young Instagram users how the platform made them feel. “We make body image issues worse for one in three teen girls,” read the summary of one such study. Another: “Teens blame Instagram for increases in the rate of anxiety and depression. This reaction was unprompted and consistent across all groups.”

These were among the most widely discussed of the disclosures, and by the time the files had been covered in every major national publication, they could be referred to with the shorthand “Facebook knew.” Appearing on *The Daily Show With Trevor Noah*, Haugen agreed with the host’s suggestion that Facebook had behaved similarly to (you guessed it) tobacco and fossil-fuel companies by conducting self-damning research and opting not to share the findings. Facebook responded to the uproar by publishing annotated versions of the research, which emphasized how unscientific the studies were.

But what of the actual science? It’s been nearly six years since *The Atlantic* published the psychologist Jean Twenge’s blockbuster report “Have Smartphones Destroyed a Generation?” The generation she was talking about was born from 1995 to 2012—roughly Gen Z, though she called it “iGen.” These kids grew up with smartphones and made Instagram accounts before they started high school. “It’s not an exaggeration to describe iGen as being on the brink of the worst mental-health crisis in decades,” Twenge wrote. “Much of this deterioration can be traced to their phones.” She made this argument by citing early studies and by simply connecting the dots—kids were getting more anxious and depressed, and the trend started around the time they began using smartphones and social media and living life through screens.

Since then, scores of researchers have built a large body of work looking into the effects of screen time generally. But the results have continually been mixed: Screens are ubiquitous, and they're personal. In a 2019 study, Orben and her research partner Andrew Przybylski found that screen time could not be correlated with well-being among adolescents in any coherent way. Screen time—the bogeyman of the 2010s—was simply too broad to be examined as one single phenomenon, they argued. The study was covered widely with a snappy takeaway: “Screens Might Be as Bad for Mental Health as ... Potatoes.” Orben and Przybylski had contextualized their core finding by comparing screen time with other behaviors that could be similarly correlated with well-being, such as eating extra starch or wearing glasses. This helped the researchers make their point that the questions many had been asking about technology were not specific enough. “‘Screen time’ is a nonsense topic,” Orben told me last fall. “It brings everything together from yoga videos to watching self-harm content on Instagram.”

The study marked a shift in the research, which for the past several years has been more tightly focused on social-media use, as well as other, more specific ways people use the internet, and on the experiences of teenage girls in particular. Many of these studies found correlations between social-media use and bad outcomes such as anxiety, depression, and negative body image. But tech companies can easily defend themselves from correlative claims by arguing—reasonably—that they establish only

that two things tend to happen at the same time, and not that one of those things is causing the other. The challenge for public-health researchers, then, is to find novel ways to prove (or disprove) a direct causal relationship as well—a very difficult thing to do.

In passing its new social-media restrictions for minors, the state government of Utah cited a [2022 review paper](#) that summarized many correlative findings in the research. Utah also cited a [buzzy paper from 2022](#) written by three economists that tried to get around the correlation conundrum with a creative attempt at a quasi-experiment. They followed Facebook's staggered rollout across college campuses in the mid-aughts, matching up the timeline with increased rates of depression on the same campuses. Their "back-of-envelope calculation" was that 24 percent of the "increased prevalence of severe depression among college students over the last two decades can be explained by the introduction of Facebook."

This approach has its own problems, Laurence Steinberg, a psychology and neuroscience professor at Temple University and an expert on adolescence, told me in an email. "I would tread very cautiously here," he wrote after reading the economists' paper. "The results are subject to what is referred to as the ecological fallacy—drawing inferences about individuals from aggregate data. As the authors note, they have no idea whether the students who reported mental-health problems were those that were using Facebook."

This science is less straightforward—and slower-moving—than many realize. Researchers face a number of technical difficulties. For example, when the millions of people you want to study are teenagers, there are ethical hoops to jump through, prolonging the process and sometimes making research feel out-of-date before it's even finished. And researchers have also struggled to come up with reliable methods for measuring what they're interested in. To illustrate, Jeff Hancock, the founding director of the Stanford Social Media Lab, asked me a rhetorical question: "Did you use social media a lot or a little today, on a scale of 1 to 7?" How do you even answer that?



Illustration by Jackie Carlise

There is now a huge amount of research, but experts can look at the findings and draw disparate conclusions. In a 2022 umbrella review (a review of reviews of the research), scholars from the University of Amsterdam pointed out that different people had described similar effects from social-media use in dramatically different terms, from “weak” and “inconsistent” to “substantial” and “deleterious.” And in a 2020 review of the research, Orben found a slight negative correlation between social-media use and well-being (social-media use goes up; well-being goes down). Yet it is “still unclear what such a small effect can tell us about well-being outcomes as social media use is inherently linked in complex ways with other aspects of life,” she concluded.

Jonathan Haidt, a social psychologist at the NYU Stern School of Business and a regular contributor to *The Atlantic*, has been reading the research for years and has

become one of the best-known commentators on the subject. He maintains a massive public Google Doc in which he collects, sorts, and analyzes all of the papers pertaining to the question of whether social media contributes to the rise of depression and anxiety in teenagers. Haidt agrees with Orben and other researchers that findings on screen time tend to be mixed. “But if you make it ‘social media,’ it’s very consistent,” he told me. “The next question is, what’s the population? Are we talking about all kids, or are we talking about girls?” In his review of all available work, including the data that Orben and Przybylski analyzed in 2019, he found a positive correlation between depression and anxiety and social-media use for teenage girls (depression and anxiety go up when social-media use goes up). “No person in their right mind would let their daughter be engaged in an activity” with such a clear connection to depression and anxiety, he said.

AT THIS POINT, scientists at least agree that the relationship between depression and anxiety and social-media use is supported by enough evidence to demand attention. Orben’s latest paper argues for greater attention on young girls as well, showing a relationship between social-media use and a decline in different forms of life satisfaction. The question is: What *kind* of attention should we be paying? “If the correlations are worse for girls, then that’s really important and good to know,” Hancock told me. “We need to talk about that, but I guarantee you that social media is not bad for all teenage girls all the time.”

If we want solutions that are more delicate and precise than the legislation proposed so far, we need a lot of delicate and precise information. If social media isn’t bad for all teenage girls, we need to know which ones it *is* bad for, and what makes a specific girl susceptible to the risks. Some girls are suffering, and social media is exacerbating their pain. Some girls use the internet to find community that they don’t have offline, or to express creative impulses and questions about their identity that their families aren’t open to. We also need to know which aspects of social media are riskiest. Is it harmful because it cuts into sleep hours or IRL friend time and exposure to sunlight, or is it the envy-inducing images that invite comparison and self-doubt? Is it bullying we

should worry most about, or the more ambient dread of being liked but not liked enough?

Right now, we have handfuls of numbers and no clear way to arrange them; social media might affect different people in different ways for any number of reasons. It could matter *how* they use social media. It could even matter how they *think* they're using social media.

Angela Lee, a Ph.D. student at Stanford who works with Hancock, is one of the first researchers to break ground on the latter distinction. During her first psychology lecture as an undergraduate, Lee learned about “mindsets” in the context of education. Research had shown that the mindset you have about your own intelligence has a significant impact on the course of your intellectual life. If you believe that intelligence is something that can grow and improve, then you might take actions to grow and improve it. That “ends up being really powerful,” Lee told me. It would “affect their motivation—like, *How hard am I going to try on this assignment?*—or their behaviors—*Do I go ask for help?*” She wondered whether this would also be relevant to social media. In other words, did it matter how people answered the question when they asked themselves: *Am I in control of this technology, or is it exerting control and influence over me?* Studies showed that social-media use increased well-being for some adolescents, harmed other adolescents, and didn't affect still others at all, so Lee had a feeling that some of these differences could be explained by the teens' mindsets.

In the resulting paper, which has recently been published as a preprint and is under review at the *Journal of Personality and Social Psychology*, Lee and Hancock built on previous technology-use research showing that feeling a lack of control is “related to worse well-being, including depression, anxiety, and loneliness.” Logically, they found that a feeling of control was associated with “better well-being,” and “more social support and less psychological distress.” People who viewed social media more positively “also reported better outcomes than those who believed the effects of social media were harmful.” These effects were not limited to those who spent little time on social media, as those who felt in control of their use still “reported less distress” than those who didn’t feel in control, even when they were using social media for above-average amounts of time. (Facebook quickly conducted its own version of Hancock and Lee’s study after it was presented to the American Psychological Association in May 2019; the results were similar, though Facebook obviously had access to far better data.)

In their paper, which focused on adults rather than adolescents, Lee and Hancock noted their findings’ relevance to the current policy debate and its heavy reliance on tobacco metaphors. Feeling in control of your social-media use might be hard “if people are constantly exposed to messages about how it is addictive,” they argued. It might not be helpful to tell everyone that they’re helpless in the face of alluring images and sticky incentives, the same way that they could become helplessly beholden to nicotine. We might try to critique powerful and popular technologies without accidentally making the case that human beings have no ability to resist them. Bringing the concept of agency into the debate is compelling in part because it appeals to common sense. We know we’re not actually constantly coerced by the algorithms, the notifications, and the feed—we have to be more complicated than that.

But, of course, the agency insight is still up for debate. For one thing, the participants in Hancock and Lee’s study were not teenagers—they were mostly in their 20s and 30s. When I asked Frances Haugen about it, she said it would be “unreasonable to say that a 14-year-old is the one who should be responsible for modulating their social-media usage.” And I noticed a page of notes tacked onto the version of the paper that Lee had emailed to me. A fellow grad student had written, “Should we be telling people that they should think that they have control over platforms with algorithms that even the companies themselves don’t understand?”

WANTING TO USE social media does not mean that you’ve surrendered control of your emotions and life to a machine. In fact, for a lot of people, it could mean the opposite. “The use of digital media creates a forum that may allow for the development of rapid and nuanced communication skills,” Mitchell Prinstein, a psychologist, wrote in *The Journal of Child Psychology and Psychiatry* just as the pandemic began. He also noted the internet’s possibilities for identity exploration, creativity, connection, and acceptance. “Adolescents who feel ostracized or stigmatized within their offline social contexts, such as members of ethnic, racial, gender, and sexual minority groups, often report access to online companionship, resource sharing, and emotional validation that is much harder to access otherwise.” Other researchers have found that social media can be useful for young people who are dealing with chronic illness—sometimes even helping them stay on track with their treatment plans.

In all of this, we would do well to remember that we're not aggregate numbers—we're individuals making decisions about how to spend our time and pursue happiness. In a recently published advisory of its own, the American Psychological Association suggested that teens ought to be trained to use social media in productive ways and that parents should strive to be involved in their kids' online lives—they should notice when the apps start to interfere with school or with time spent in other ways (including sleep and physical activity). Based on the available scientific evidence, the association argued, “using social media is not inherently beneficial or harmful to young people.” The surgeon general's advisory also emphasized the incompleteness of the picture in a section of the report about “known evidence gaps” and the “urgent need” for further research.

Read: The first social-media babies are growing up—and they're horrified

Laurence Steinberg, the adolescence expert, argues that teenage depression and anxiety were already ticking up before social media became as popular as it is; the upward trend in the percentage of high-school students who “experienced persistent feelings of sadness or hopelessness” has been visible since at least 2009, after the rise of Facebook and YouTube but before the ubiquity of smartphones, which made social media accessible on the go. (According to other CDC data, suicide rates started increasing in 2003.) That doesn't mean that social media hasn't exacerbated the problem, he acknowledged. It just means that it's too easy an answer. “I think that our tendency as human beings is to search for the simplest possible explanation of things,” he said. “You know, maybe it's a combination of eight different things, each of which is contributing a little bit, but none of which is the culprit—people would rather just say ‘We found what the culprit is.’”

Under public pressure, some platforms have started to make changes. Though Instagram's critics often talk as if it has done nothing at all, remaining laser-focused in pursuit of pure profit, Instagram has experimented quite a bit. Some changes are meant to reduce bullying and doomscrolling. It's also added content warnings on posts and search results that encourage eating disorders, and reduced those posts' visibility in feeds. Before Haugen's leaks, the company tried hiding "like" counts under photos (doesn't help); since the leaks, it has implemented bedtime prompts and more robust parental controls.

I don't bring this up to defend the company (which has found itself in a political situation that all but compels some effort on its part), but to ground us in reality. We're not going back to a time before Instagram. Social media is central to the way that young people understand the world and their relationships—how to be attentive, how to be creative, how to be a friend, how to think and react and learn. This is probably true for the worse, but it's also true for the better (and the neutral!), and to untangle it completely would be impossible. So, knowing that we'll never know precisely everything, we should be careful to describe the situation as accurately as we can. "We need to find a way to make sure the online world is safe for young people," Orben told me. "And if we want to go down the route and do an experimental intervention without a really secure evidence base, I think we would need to invest a lot of money into figuring out whether it worked and then be ready to pivot if necessary. But I don't know if the policy landscape allows that at the moment."

It's not comfortable to accept that our understanding of social media is still so limited or that the best path forward is to keep plodding along toward whatever clarity there might be to find. But removing millions of teenagers from social media is a dramatic,

even draconian intervention. For many, it would feel good. It would feel like doing *something*, and doing something big. And it would be. We should bear in mind that, even as we resent the “experiment” that tech companies have performed on the young population of the country, we would be meeting their wild experiment with another wild experiment. This one would have unintended consequences too.
