

Alan Hu Foundation Mental Health Lecture Series

Technology, Social Media, and Adolescent Mental Health

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CHIH-CHING HU: Hello everyone. Welcome to Alan Hu Foundation Mental Health Lecture Series. I'm Chih-Ching Hu, Co-Founder of Alan Hu Foundation and host for your webinar. Today, Dr. Mitch Prinstein and Dr. Eva Telzer will present "Technology, Social Media, and Adolescent Mental Health."

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First of all, I want to thank Mental Health Association for Chinese Communities, for providing simultaneous Chinese interpretation, and thank you Ida Shaw for Chinese interpretation.

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Alan Hu Foundation's mission is to promote mental health, raise awareness and remove stigma surrounding psychiatric disorders, and support fundamental research for cures. Please consider making a gift to Alan Hu Foundation by using the donation link in the chat box. Thank you for supporting our programs to promote Mental Health.

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Today, it is a great honor and privilege to introduce Dr. Mitch Prinstein and Dr. Eva Telzer. Dr. Prinstein and Dr. Telzer are Co-Directors of Winston National Center on Technology Use, Brain and Psychological Development. Dr. Prinstein serves as the John Van Seters Distinguished Professor of Psychology at University of North Carolina at Chapel Hill and is Chief Science Officer of American Psychological Association. He's a board-certified clinical psychologist who has studied child and adolescent mental health for over 25 years and has published hundreds of scientific manuscripts, chapters, and textbooks, three books, and a workbook for adolescents.

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Dr. Telzer is an Associate Professor of Psychology and Neuroscience at University of North Carolina at Chapel Hill and an Associate Editor at Child Development and the Social Cognitive Affective Neuroscience. Her research examines how social and cultural processes shape adolescent brain development with a focus on prosocial and risk-taking behaviors, family and peer relationships, and the role of social media in youth lives. She has authored numerous publications, received many awards for her work, and consulted government agencies and the non-profit associations.

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In today's presentation, Dr. Prinstein and Dr. Telzer will deconstruct the psychological science on youth's technology and social media use to understand the questions scientists are asking, what they have found, what it means for youth today, and what you can do to help. Following the presentation it will be a Q&A session. Please submit your questions using the Zoom Q&A function. The presentation is for educational purposes only and is not intended for medical diagnosis. If you have any persistent symptoms, please seek professional help.

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With that, I'm going to turn to Dr. Prinstein and Dr. Telzer. Welcome, Dr. Prinstein and Dr. Telzer.

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DR. MITCH PRINSTEIN: Thank you so much for having us. It's so nice to be here and have the opportunity to meet with this group to talk about some of our research. Let me allow Dr. Telzer to say hello as well.

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DR. EVA TELZER: Yes, hello and thank you for having us. We're very excited to talk with you all today.

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CHIH-CHING HU: Thank you for being here today.

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DR. MITCH PRINSTEIN: Thank you. We have about 45 minutes of comments to summarize some of the research that we've been doing in this area, and then we're very excited about any questions that folks might have if that's okay. I'm gonna go ahead and share a screen to get us started, and we wanted to start by telling you a little bit about the framework that we use when thinking about the question of social media and adolescent health because, of course, social media has substantially changed the way in which kids are developing their social competence and how that affects so many different areas of psychological development. So, we thought it would be fitting to start by talking just a little bit about what we know about the importance of our social interactions in human brain and psychological development.

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As many people likely know, we were not the only species on the planet 60,000 years ago that could have evolved to be the humans that we are today. In fact, in many ways, people would have bet that we would not have survived. We were smaller, we were a little bit more fragile compared to some of the other species that were out there, but we did survive, and anthropologists believe that this is because of one genetic mutation that changed both an area in our brains and the shape of our voice box that allowed us to begin the rudiments of language. With language, we became a social species, and that's important because, as a herd, as a species that relied on one another, we really had an advantage for survival. We were able to hunt together and warn one another, coordinate our activities.

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Interestingly, what happened is that we became so dependent on one another as a herd that we started to develop responses within the brain and within our bodies that were extraordinarily sensitive to our standing and our social experiences. A day 60,000 years later, studies that have used brain imaging techniques have demonstrated that even in a moment in which individuals, represented here as study participants, believe that they're interacting with other study participants in a game of catching a ball, and suddenly the other two participants they believe are throwing the ball only to each other and not to the participant, simulating a moment of social exclusion.

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Research demonstrates a remarkable effect in the brain. The areas that seem to be particularly activated in this moment of social exclusion overlap considerably with the areas that we see in response to physical pain. Not the sensory experience of actually feeling a burning or tingling that would make us say "ouch," but the area of the brain that tells us that we really need to engage in immediate and important action to reverse whatever is happening to us. A warning signal, as it were, indicating that this has a grave threat to our survival.

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Well, that social sensitivity that we now carry all these years later has very important implications for how we think about social media, particularly among adolescents. So, as you know, of course, our brains, as well as

our bodies, change dramatically at the transition to adolescence as we enter puberty, but it's a couple of years before you see physical changes in the body associated with puberty that the brain has already gotten to work in maturing. And the maturation occurs one region at a time, traditionally from the interior or subcortical regions to that outside part that's really unique to humans, and more from the back towards the front.

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Well, the reason why that's important is because one of the very first areas to develop within the brain at this adolescent transition period is a part that's filled with dopamine and oxytocin receptors, essentially making us crave social interactions and positive feedback from our age mates, from adolescents in particular. And that could be incredibly powerful because it motivates us to engage in even more behaviors to seek that kind of social feedback and reinforcement.

Incidentally, the area of the brain that develops close to the very end of our adolescent maturation is the prefrontal cortex, which is kind of like the brain's brakes. It's where we have our self-control and inhibition centers, and that doesn't fully develop until the age of 25.

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So, as many parents may know, if you have or had a 10, 11, or 12-year-old, there's a certain period of time when kids start rolling their eyes to their parents, talking about nothing but their peers, and they seem to be motivated to do anything they can for peer feedback because they don't yet have the self-control to inhibit themselves.

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This is not just among humans. In many mammals, including in mice during their brief period of pubertal development, adolescent mice prefer to spend more time with other adolescent mice rather than adult mice. So, we see that same parallel, this very biologically determined pattern.

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So, this is the way that our brains and our society have co-evolved for probably 60,000 to 100,000 years, and the way in which we develop is very sensitive to the environment that people live in. But in this incredibly short period of time, in contrast, in only just under 20 years, we've seen this dramatic change in the social context in which kids develop. Their social experiences and their development is now happening in a world that is almost completely mediated by technology and by devices, most often using social media platforms.

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We've had technological advances before, the TV, and the radio, and email, and instant messaging. Why is it that social media, in particular, might have this potentially profound effect on adolescent development? Well, there's some theory to suggest that social media has changed our social interactions in a variety of ways, all at once and very dramatically.

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Just as an example, we now have social interactions that are not synchronized in time, so I can write something to you now, you might not read it for two days. What we say to each other is permanent, it's publicly available forever, it often doesn't have non-verbal cues, but perhaps most important, we now have the opportunity to vote on each other's comments and posts in a way that provides some remarkably powerful feedback. And perhaps especially, these social interactions are now being, in part, guided by artificial intelligence and machine learning that teaches us, that instructs us on who we should pick as our friends, in what order we should see their posts, and simply by the number of likes we see on those posts, that actually influences our behavior and whether we're likely to read or like those ourselves. It's the first time in 60,000 years that we've had a machine kind of regulate our social interactions as much as social media does.

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So, many many years ago, it might have looked like this when adolescents or young people are interacting with each other. A few decades later, it might have looked something like this. And as many of you are aware, it now looks a lot more like this, even when kids are spending time together. They tend to be really focused on their devices and remarkably tied to the feedback and the pull of those devices to continue being engaged with social media platforms, rather than the humans around them.

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So, we're here today to tell you about some of the science, some of it that we've done, some that our colleagues have done, to talk a little bit about the links between social media and mental health. But we want to acknowledge that some of what you've heard in the news or what's out there has maybe been a little bit delayed or a little bit mixed, and that's for a good reason.

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One is that when people study social media and they also look at kids' feelings or behaviors at the same point in time, it's really hard to determine whether social media might have been a predictor of those kids' feelings and outcomes, or vice versa, or perhaps maybe even there's no causal relationship at all. Remember that a correlation of two things that are happening at the same time does not indicate a cause-and-effect relationship. Also, keep in mind that tech changes very, very rapidly, but research takes a really long time to do. So, if we want to understand how social media might affect kids over, let's say, a five-year period, it's going to take at least five years to do that study, and that means that tech has changed very dramatically in the interim. So, some of the scientific findings are only just emerging now for studies that began a long time ago.

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In truth, there's a quite complex relationship between social media and adolescent development. We know that how kids feel is likely to affect what they choose to engage with online and how they behave. We also know that tech might provide help and soothing or therapeutic effects to kids. We know that tech can also help kids develop skills they may not have within their offline environments. And yet, at the same time, we have to pay attention to what kids are not doing, given all the time that they're spending on social media instead. So, as you can see, it's a very complex relationship, and it's not nearly as simple as maybe you have heard in the media so far.

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The bottom line is that, as you'll see in the rest of our presentation, it's really a combination of two factors: what it is—sorry—who kids were before they even got on social media, their own social, psychological, biological characteristics, and what specific kinds of online content or functions or behavior they engage in. So, a resilient adolescent who goes online mostly to read the news and chat with their friends might be fine, whereas an adolescent with maybe a risk factor or two who interacts with the most addictive or harmful stimuli online might be not doing as well in the long term.

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We would suggest that the question that's really important to ask and the kind of way that scientists study this is under which conditions and for which children may there be specific social media features or specific content that could be either helpful or harmful to youth development. So, in other words, this isn't a one-size-fits-all kind of model. Social media is gonna have different effects on different kids because they all use it in different ways.

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So, we're very briefly going to give you a high-level overview of about nine different areas of how scientists are addressing this question. We'll go through it very quickly, but just to give you a little bit of a sneak preview, we're

going to talk about some of the benefits of social media use because there are several, and we're going to talk about the kinds of social media usage that might be particularly important to focus on. Who's most susceptible to the negative effects? How tech and social media content might change behavior? Who might be most influenced by what they see online? How does social media might cause stress? What social media is taking away from kids' daily routines? What might be considered problematic social media use? And how social media is related to brain development.

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So let's dive right in. We know that, in particular, for adolescents and young people who are from underrepresented communities, where they might be one of the only members within their offline environments or their schools who share an identity, or maybe the only folks within their own families who have a particular identity, we know that social media can provide a really important sense of connection and social support to really help kids to feel like they can connect with others who share similar identities and have similar questions or experiences. In particular, kids get really important social support on social media for even minor things they might post. They could get dozens of responses in just a matter of minutes, and we know that those kinds of relationships can really buffer the effects of stress on negative outcomes. So, for instance, kids' friends that they have online, that they never have met and never likely will meet offline, can provide support that buffers the effect of stress on even severe clinical outcomes, like the likelihood of a suicide attempt.

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We know that during COVID, social media did provide important companionship for kids, and that was important. There's research indicating that kids are more likely to have greater diversity in their friends online than they have in their friends offline, and of course, that's a good thing. For what it's worth, adolescents say that this is something very fun for them. We don't want adolescents to do everything that they say is very fun for them, but it is important to recognize that to the extent they can use these platforms in a safe way, it's something that brings them some joy and happiness. And we also have seen that adolescents engage in more civic activism or engagement online. Many of the most wonderful youth movements that we've seen have been because of the affordances that the online community provides.

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We want to talk a little bit about some of the kinds of behaviors that might also lead to some negative outcomes. For instance, kids could choose to go online and direct message with one another, meet people who have similar interests, and engage in conversations that help to cultivate a deep relationship. But unfortunately, a lot of kids instead report that they go online mostly to compare themselves to others or to try and get as many likes as possible.

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Research says that this is a particular way of using social media that might be particularly detrimental. The more that kids are reporting that they use social media specifically to compare themselves to others and get lots of likes or feedback, the more likely they are to report later depressive symptoms, anxiety symptoms, and weight-related behaviors. And some of those are specific to females, but there are many males that are also showing these effects, including also effects on males' weight-related behaviors too.

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There's also some research demonstrating that a remarkably high percentage of kids have been exposed at least once if not several times within a given month to online discrimination, cyberbullying, or what we would generally call cyberhate. These are experiences where kids are not only seeing discrimination that's directed towards them, but it might be discrimination directed towards an entire group of people based on their identity or towards someone that they know. Interestingly, research says that even if the discrimination is not towards them, just witnessing online discrimination is enough to have a psychological effect on kids. And one reason why

people think it's because online discrimination is usually much harsher than offline discrimination because it is anonymous and you can see lots of people like those negative posts. So, research shows that even among kids who experience offline discrimination, online discrimination experiences still predict anxiety and depression as well.

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Not many parents realize that at least 50 percent of youth, by the time they graduate high school, report that they are being exposed to sites that are usually directed—they're directed to from social media algorithms that actually teach individuals how to engage in clinically disordered behavior. For instance, these are data from a while ago before YouTube changed their rules, but this is something that still is happening quite a lot on TikTok and other social media platforms as well, where kids are finding sites or videos that are teaching them how to engage in non-suicidal self-injury. That's when you cut—when you engage in your own body tissue damage without suicide intent. Cutting is the most common version of this. In this particular study that was done on YouTube videos, they found that over half of these videos about cutting had no warning to indicate that these might be triggering for those who are at risk of cutting themselves. Almost a quarter of them were actually designed to encourage kids to cut themselves and also to show how to hide that behavior from their parents. And you can see that just under a third actually seemed to be a video that either provided a mixed message or a message that was promoting cutting as a healthy thing to do when, of course, we know that it's not.

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This mirrors what's been seen for years on sites that talk about anorexia-like behaviors or what have been called Pro-Anna sites. And as you can see, there are many of these sites out there. They often provide very disturbing images of what are meant to be inspirational photos of a body shape that visitors are encouraged to achieve, even though they're very, very unhealthy. And also a variety of rules or even the encouragement of sharing art or creative expression that encourages kids to engage in eating disorder behavior.

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Another area where there's been research is the extent to which our exposure to posts and the likes we see attached to those posts can actually change adolescents' own behavior. One of the reasons why this happens is because of a problem that's very natural for humans, which is making errors in how much we estimate how others believe or feel about things. It's kind of an overgeneralization problem. You probably have experienced it yourself if you've ever looked at the comment section of an article and you notice that maybe 20 people have made comments that you disagree with. You have the option of saying, "Well, there must be 20 people out there that disagree with me," or you might be quick to conclude, "Wow, I think there's a huge portion of the country that probably feels that way." That's an overgeneralization error in many cases, but kids might be especially prone to that problem.

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Research, for instance, this one study has demonstrated that among young adolescents, around age 13 years old, if they saw posts that were related to using alcohol and they saw a lot of likes on those posts, they then became very likely to assume that the vast majority of their peers approved of irresponsible drinking, including five or more drinks on a single occasion. And once adolescents believe that most of their peers thought that was okay to do, this actually then predicted their own onset of heavy episodic drinking within the ninth grade—a nice study really showing how our exposure to posts with likes attached to it works into the psychology of our estimation of others and affects our own behavior.

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It's also interesting that we're hearing from adolescents in our research that digital media seems to be causing a tremendous amount of stress. Again, this makes some sense because if you remember what it was like before social media, once you left school, if you didn't want to have any peer interactions, if you wanted to focus on

your homework, or you didn't want to talk with any of your friends, you just didn't answer your phone, and people would get a busy signal or an answering machine message, and you can focus on whatever you wanted to. But that's not the case anymore. Adolescents tell us that they're experiencing four different areas of stress all collectively called digital stress together.

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They're connected to too many platforms and too many devices that are constantly sending them notifications of things that they have to respond to. They're scared that they might miss out on some important social experiences that are happening, and when they arrive at school the next day, they might be out of the loop and suffer social consequences. They feel like they have to be available to like their friends' posts all the time, because if they don't like their friends' posts immediately, their friends often get mad at them for not giving them praise for their selfies or whatever they put online. And when they themselves decide to post something online, they might spend at least 15 minutes, if not much longer, waiting to see whether what they put will get likes and approval, or if it might not and they have to take it down or amend it right away because of social consequences. These are all stressors that we just didn't have 20 years ago.

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In our research with adolescents aged 14 to 15, we found that almost half of adolescents are reporting a significant level of digital stress that's interfering with their daily roles and routines. And the more digital stress they have, the more depression they recorded a year later. So with that, let me turn it over to Dr. Telzer.

[00:26:01]

DR. EVA TELZER: Great, thank you, Dr. Prinstein. So in the next set of slides, we're going to talk a little bit about what teens are not doing and then go into some links with brain development. So, adolescents are, according to the American Academy of Sleep Sciences, recommended to get at least eight hours of sleep a night. So, there are substantial declines in the percent of adolescents who are getting this recommended number of hours of sleep. So only nine—among ninth graders—only 40% of them are getting the recommended sleep, and by 12th grade, this declines to only 20%. So we're looking at a developmental period when adolescents are already at risk for sleep deprivation. We also know that sleep disparities are related to brain health, so adolescents who have more substantial variability in their sleep habits are showing less white matter development in their brain. White matter is very important for the integrity of the brain and allows for cognitive functions to develop.

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Now, among analytic research that has looked at lots and lots of studies, across all of these studies, in over 90 percent of them, research has found that more screen time is associated with poor sleep health among children and adolescents. So during a developmental period when their sleep is already at risk, adolescents who are using more screen time at night are having detriments to their sleep. And we know that detriments in sleep are related to poor brain health. And so technology use, particularly in the nighttime, is potentially coming at a cost to adolescence development in terms of how their brains may be developing during this really critical period.

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Great, so social media has been described as potentially addictive, problematic in many ways. And what we have done is we have sought to understand the rates at which social media addiction or problematic social media use may be present in adolescents' lives. So these are some questions that we ask adolescents that are based on DSM criteria for substance use, where we change out the word "substance use" with "social media." And what we ask is questions like this—and perhaps many of you have experienced these types of things but our adolescents certainly have, so for example—: Do you ever feel like you spend more time on social media than you intended? Have you ever tried to spend time away from social media but couldn't? Do you expend extra effort to make sure you'll have constant access to social media at times when you might not be able to use it? There are a lot of questions that we can ask that may map onto addictive-like behaviors.

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Now we've asked these questions to students taking our classes—Dr. Prinstein and I teach a class of undergraduates—and we've also asked adolescents in high school these questions, and what we find is that the majority of adolescents report “yes” to a lot of these questions. For example, nearly all adolescents report spending more time on social media than they intended, half of adolescents report that being away from social media results in experiencing difficulties in engaging with daily activities, and a quarter of adolescents perceive that they are either moderately or severely addicted to social media. So these stats just show some kind of descriptive information suggesting that adolescents, perhaps a majority of them, may be engaging in some problematic social media behaviors that may map onto addictive-like behaviors later on.

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Now, we've sought to understand links between the developing brain during adolescence, social media addiction, and potential links to depression. We know, as Dr. Prinstein mentioned in the introduction of this talk, that the developing brain is undergoing pretty big changes during this time, and those changes in the brain may make some adolescents vulnerable to addiction-like social media behaviors and downstream effects on their depressive symptoms.

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So, these are just a snapshot of some results. I don't want it to get too complicated, but I do want to draw your attention to the lines in this graph. These are showing developmental changes in the brain related to adolescent social media addictive-like behaviors. So, the red line here represents adolescents who go on to develop social media-like addiction behaviors. And what we're showing here is that they're showing declines in areas of the brain that are sensitive to social rewards. This is a very similar process that we see in substance use addiction, where things that were once rewarding, like social rewards in the case of social media, it might be drug use in the case of substance use, those rewards become potentially less and less rewarding over time, which may result in craving and wanting more and more of that cue. In this case, social media.

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What we also find is that this change in the brain is related to social media symptoms, and those social media symptoms—social media addictive symptoms—are related to depressive symptoms later in adolescence, but only for girls. So, this suggests that adolescent girls may be especially vulnerable to developing depression in the face of these changes in the brain related to social media addiction.

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So, getting more into how the brain is changing during this really important developmental period, we know that the brain is undergoing lots of reorganization: it becomes especially sensitive to the environment, adolescents crave social interactions with their peers, they become very sensitive to social rewards, and social media platforms are the perfect platform to interact with the brain in this way. Social media provides likes and comments, and it provides potential social rejection from peers. It also provides this reinforcing schedule of feedback from peers that can potentially become more and more rewarding and, as we just talked about, potentially addictive.

So, what we wanted to know was are there aspects of social media that might be related to their brain development?

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Well, what we did first is we wanted to understand the frequency with which adolescents are engaging in these types of social media and online behaviors. And, a lot of prior research has collected social media behavior and technology or time spent on technology with these self-report measures, asking adolescents to think back across time, potentially big chunks of time, asking them to guess how much time they spend on

average interacting online. These self-reports tend to be relatively inaccurate. It's pretty hard to think back and accurately describe how much time you spend online. So, what we did is we collected objective measures collected through adolescents' smartphones. For example, on an Apple device, there is an option in the settings where you can collect the data that indicates how often you check your phone, how often you get notifications, and the total time spent on different apps. And this is really great because it's not retrospective. What we can also do is get this every single day, so it's not just one data point, but we can collect this from adolescents every day for two weeks. And what we end up with across hundreds of adolescent participants is thousands of data points.

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And what this here is showing you is all of the data that we have collected. Every single one of these rows represents a day. Every single dot represents one teen. And what this is showing is the average number of times adolescents are picking up their phone. The y-axis here ranges from zero all the way upwards at 500, and the average is 100. This is saying that on average, adolescents are picking up their phone and checking their social media platforms, their notifications, a hundred times a day. But there's a lot of variability. As you can see, some adolescents, some of those little dots, are upwards of four or five hundred times a day. That means some adolescents are picking up and checking their phone close to 500 times a day. That's a lot. If you look at the bottom figure, this again is one column for every day of the week that we studied them, each dot is one person, and the y-axis here is the number of minutes per day that they are using their smartphone. What we find is that, on average, adolescents are on their phones 8.3 hours a day. That's an entire workday that they are spending on their phones. And again, if you zoom in and look at the y-axis, that ranges from zero to over a thousand minutes a day, which means that some adolescents are spending upwards of 16 to 20 hours a day on their phones. So, this is just representing really the ubiquitous nature of technology and how adolescents are using their phones really constantly throughout the day.

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Now, what we find when we look at these data, as well as link them to adolescents' feelings in the moment when they're going on their phones, is that in the immediate hour after teens are using social media, they have this greater sense of craving excitement. So, they report increased sensation seeking, and they actually crave more social interactions. So, by going online and checking their social media, it's actually boosting this sense and this need to seek out rewards and interact with their peers more. So, social media may be sort of boosting this need for social connection and the need to get more rewards.

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So, in order to understand how that may map onto adolescents' brain development, we conducted what is the first longitudinal study examining how social media relates to brain development across time. So, when adolescents were in the sixth grade, we collected data on the frequency with which they checked their social media platforms. We then scanned their brains in seventh grade, eighth grade, and ninth grade, and what this allows us to do is look at how the brain is changing, how it's developing across this really critical developmental period. And what we find is that adolescents show increases in sensitivity in certain areas of the brain.

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So, this blue line here that is showing an upward trajectory, this is showing brain development across time in adolescents who are habitual social media checkers. So, in the sixth grade, these are adolescents who are constantly checking their social media platforms. And these adolescents are showing changes in development in areas of the brain called the amygdala, insula, and striatum. These are areas of the brain that are involved in seeking out rewards and feeling a sense of need to connect with others. So, they're developing this hypersensitivity over development that may cause them to seek out more social rewards in their environment. These are the first data to really suggest that the ways that adolescents use social media may be fundamentally changing the way their brain is developing.

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Great, and I'll turn it back to Dr. Prinstein, who could give us some advice on what parents and others can do.

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DR. MITCH PRINSTEIN: Thanks, so we wanted to end our prepared comments by telling you a little bit about some ways that you can take this scientific information and apply it to what you're doing, as best fits your own family or your own child. And for that, we're going to draw upon a very recent summary from the American Psychological Association that summarized these kinds of research findings to produce a set of recommendations. Importantly, these recommendations are really based on what needs to happen across all stakeholders. So, these are things that need to happen either by tech companies, and by policy makers, and by parents, and by educators, as well as teens themselves. The burden cannot only be on parents, but parents do have to play some role in addressing some of these potential issues.

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The first issue, in particular, is to simply wait before using technology. We have no scientific data that suggests that, despite parents' worries, there actually are no known consequences for kids who are not on social media at the same time as the rest of their peers. So, in other words, your kid will not be ostracized or will not be missing out on something critical if they are waiting before getting on social media. In fact, some of our recent data is showing that some of the most socially competent and popular kids are the ones staying off of social media these days, so there is no pressure to have to begin your child on social media before you feel that they're ready.

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Some of this is addressed by non-profits, such as Wait Until 8th, which tries to establish some local grassroots norms where an entire classroom or an entire community can say, "Well, among us, we're all making a pact to wait until eighth grade if not much later than that."

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The other thing that we have to do is recognize that social media is not all bad. So, we can't just keep kids off of all social media forever. This is something that's here to stay. So, if our kids are going to get online, we want to help them understand how to use these platforms in a way that is most likely to help them with healthy psychological development and socialization. Teaching them that pursuing likes and followers is not going to be as helpful as asking and providing social support to find actual companionship and to share either publicly or through direct messages emotionally intimate conversations that will allow them to establish a true connection. That's one of the most important parts of social development in adolescents, and we don't want social media to rob them of that important learning opportunity.

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When picking social media platforms that your child might be using or how long they spend on each one, keep in mind that not all platforms are created equally. An open chat that allows kids to have access, or I should say, that allows anyone to have access to your kids, regardless of who they may be, what their age is, or whether their identity has been verified, is obviously going to be very concerning, but you can shut down some of those functions. You can also shut down functions that give your child access to adult content, things you would not feel comfortable, and platforms that have artificial intelligence or machine learning built into them, might also be particularly concerning. If it is not possible to shut these down, then as the customer, we can simply vote with how we choose to let our kids engage in these behaviors. If we don't let our kids do it, it might be part of the pressure that forces companies to change how they create these platforms for kids.

[00:42:53]

Research shows that it's a combination of two types of monitoring that really helps kids to have positive social

media experiences. One of those is referred to as restrictive monitoring, which is just a fancy way of saying using screen time controls to make sure your kids are spending as much or as little time as you would like them to be on their devices, on each app, and at what times of day they're doing so. But the second type of monitoring is very important, and that is to talk with kids about what they're seeing online. Many of us who did not grow up with social media have understandably kind of looked at our kids kind of confused or sometimes even with some teasing to tell our kids that we think it's a little bit weird to us that they're spending so much time on their phones, but that might accidentally communicate that we are not a safe resource for them if they have questions or concerns or distress with what happened to them online. Instead, we might want to adopt a posture where we let kids know that we have a natural curiosity and interest: What are these platforms? What do they do on them? What kinds of things do they see? Why do they think people post what they post, and what would they do if they saw a post with something that was different from your family's or community's values? Those kinds of hypothetical questions with your child will hopefully create a really good opportunity for them to come to you regularly to talk about what they're consuming online and for you to teach them how to approach that in a better way.

[00:44:25]

We do want to make sure that kids are not being exposed to content that depicts illegal or psychologically maladaptive behavior. Again, up to 50 percent of kids are being exposed to that kind of content by the time they reach 18, so we want to make sure that we're keeping kids away from that or, if they see it, we're discussing it with them, so they know what to do. We also want to make sure that—and again, this is perhaps up to the tech companies more than parents, but to the extent possible—kids are not being exposed to cyber hate, or we are discussing it and discussing appropriate responses on how to stand up for people who are being discriminated against.

[00:45:08]

We want to routinely screen kids for signs of problematic use. Simply asking your kids whether they've tried to reduce their screen time but can't, whether they've gone to extreme measures like lying just to keep access to their devices, whether their screen time is interfering with their other roles and responsibilities like homework or eye contact with their parents at the dinner table, those are signs that maybe your child is engaging in problematic social media use and you need to have a conversation or change their limits.

[00:45:41]

We don't want for social media use to interfere with sleep or with physical activity. In most school districts, the amount of time that it takes, the amount of time one has to allot for morning wakeup for school and the 8-9 hours of recommended sleep means that around nine o'clock, kids should be getting off screen time. That might be different on the weekends or in every community, but approximately nine o'clock or so is probably a good time for us as a society to say that kids really need to get off of social media. If we hear that kids seem to be spending a lot of time comparing themselves to others on social media, particularly around beauty or appearance-related content, it's important to help kids know how to use these devices and platforms in ways that foster their healthy development rather than in ways that we know are going to be related to negative outcomes.

[00:46:41]

We have a variety of ways in which teens could be taught social media literacy; that's important to really consider and think about. More information is available on that at APA's website. We're also happy to let you know that as part of our center, which is available to access all of our information at teensandtech.org, we have consulted on a curriculum that could be used, if not only in schools but also maybe some worksheets or handouts or videos that you can look at at home with your child to really help engage in that kind of conversation. Through our center, we are also able to work on creating a handbook that a generous donor was able to make freely available for everybody. So, for absolutely free, you can go to teensandtech.org/

handbook and you can learn all about the latest research on social media and adolescent mental health just by downloading that. Our center is completely funded by generous donations, and if there's any interest in providing some support for us to continue to do this kind of scientific research, you can find a link there at teensandtech.org as well.

[00:47:51]

So with that, we'll stop here, and we're excited to answer any questions people might have. Thank you so much for your attention.

[00:47:59]

CHIH-CHING HU: Thank you, Dr Prinstein and Dr Telzer, for the wonderful presentation. Now, we are open up to a Q&A session. Our first question is: "Social media has affected what is acceptable speech. What should parents do to communicate with kids, especially boys, that will restore respect in interactions?"

[00:48:28]

DR. MITCH PRINSTEIN: Yeah, I think as kids start using social media as they get older, we can really offer a lot of monitoring and oversight, and then over time, give them more autonomy and more freedom to do what they want, but it's perfectly appropriate, especially as kids are starting to use social media, to tell them that you'd like to be able to look at some of what they're posting, some of their content. Remember that kids might have far more profiles than you are aware of. Most teens tell us that their parents don't know about everything they are doing on social media. But your monitoring and seeing not just what your child is saying, but what others are saying provides a nice opportunity to ask questions like, "Why do you think kids are using this language or saying these things? Do you ever do that? What would you do? Here's what I approve of or don't approve of," and really engage in that conversation. Reminding kids that everything they put on social media is permanent and accessible years later in life is a very important reminder for teens who are quick to forget that.

[00:49:33]

CHIH-CHING HU: Okay, so next question: "Do you have research regarding Asian American or Hispanic and Latino American cultural backgrounds specific to technology and social media use?"

[00:49:55]

DR. MITCH PRINSTEIN: Yes, a lot of our research has been with diverse populations. We have more with Latinx populations than we do for Asian Americans, particularly in our area of the country, reflecting more of the distribution of folks here in Central North Carolina. But what we do find and what we do know is important is the extent to which kids are able to connect with others who share a similar racial or ethnic identity is very important, especially if kids are not able to find folks with a similar identity in their offline environments. So that's a very helpful aspect social media for folks who are from underrepresented backgrounds.

[00:50:38] CHIH-CHING HU: Okay, great. Next question: "Our son has been diagnosed with depression. He refuses to talk and see anyone. He locks himself in his room and sleeps on the floor. Screen time is his only escape and the comfort of YouTube, etc. What should we do to help him?"

[00:51:04]

DR. MITCH PRINSTEIN: Well, it's hard to know the best thing to do to help any individual person without knowing as much about them as we could possibly know on this. But I would say, in general, for those who are experiencing some symptoms or distress, it's really important to learn more about what they're doing on screen time. There are many ways in which kids can get valuable social contacts or even helpful practice in engaging with others that could be very helpful. But it's also true that kids might be able to access mental health information online that's inaccurate or not consistent with the science. So, it's particularly important in those cases to make sure that there's a lot of discussion about what kids are doing, what they're accessing, and

helping them to process what they're seeing in those social media experiences.

[00:51:58]

CHIH-CHING HU: Okay, next question. What's the particular harm of social media use for teens with ASD and/or ADHD?

[00:51:11]

DR. MITCH PRINSTEIN: Dr. Telzer, do you want to talk about it?

[00:52:15]

DR. EVA TELZER: Sure. So, particularly with teens who have ADHD and who are potentially easily distracted, it could interfere with their ability to engage in other activities more so than other teens who might not have ADHD. So for example, it might be more challenging for them to complete their homework if they are also being distracted by their smartphones or by social media. So, there needs to potentially be even more structure around these adolescents' use of tech and social media. When it comes to adolescence with ASD, I'm actually less familiar with research that's been done. I think there is some work looking more at some of the social skills that adolescents with ASD may be able to develop with the help of technology. But I'm not an expert in that area. I'm not sure if Dr. Prinstein knows if there's anything else there with ASD, but—

[00:53:17]

DR. MITCH PRINSTEIN: I've heard exactly what you've heard. I think that's consistent.

[00:53:22]

CHIH-CHING HU: Thank you. Next question, also related. I think because of the also related ASD, I'm probably gonna skip this. Next question: "Are adult brains less influenced or less changed by social media?"

[00:53:40]

DR. EVA TELZER: That's a great question. So, the work that we've done with really the first longitudinal research to look at how social media is related to brain development, we actually don't know empirically what social media does to the adult brain. But based on what we know about the developing brain, we know that there are more changes that happen during adolescence than almost any other developmental period. We know that the adolescent brain is more sensitive to its environment than the adult brain. And therefore, we think, although we do need data to show this, that adolescents are going to be more vulnerable to social media and its effects on the brain than adults would be. That's not to say that social media won't change adults' brains, but we do think it will have a larger impact on adolescents.

[00:54:31]

CHIH-CHING HU: Ok. So next question: "How do parents learn to set limits on technology use for their teens if they have not done so yet?"

[00:54:42]

DR. MITCH PRINSTEIN: As Dr. Telzer mentioned, we have been teaching some of this work to an undergraduate class of UNC Chapel Hill students between the ages of 18 and 22. And one of the things that we've done is ask them a little bit about their experiences now and when they started. We have been surprised at how many of those young adults have told us that they begged their parents to let them get on social media when they were 12, and their parents said okay. And now, looking back, they wish their parents had not listened to them, and they wish their parents had kept limits for much longer than they actually did. So, in some ways, we have to take a lesson from those young adults who are telling us that, as much as those young adolescents are going to be very upset with us, this is one of those areas where we know that kids' brains and their psychological development are more important than the temporary fun that they'll have on social media. Helping them to

get maybe a half an hour of time on a weekday and then strictly balancing that with time off screens, helping them to see how parents themselves use social media, and that's modeled for them appropriately by parents, is important as well. We hear a lot of teens saying, "Well, Mom and Dad, I see you always on your device. Why can't I be on my device?" So, it's really important that we set good examples too, as hard as that might be for us as adults.

[00:56:18]

CHIH-CHING HU: Right, right. Totally agree. So next question: "How can we reduce teenagers' dependence on video games for happiness?"

[00:56:33]

DR. EVA TELZER: Yeah, the video gaming, and particularly the social gaming where adolescents are actually interacting and playing video games either live or with either peers they know or online peers, is a really new area of research. We don't know yet what the risks or benefits are of this type of social media use. But we do know from some of the earlier gaming research on traditional gaming, not in the social domain, that it can become addictive, just like social media. So, working with adolescents and your children to limit their use, setting boundaries, having tech-free zones, tech-free time, and really limiting it at night is probably a good start for reducing gaming behaviors.

[00:57:31]

CHIH-CHING HU: Okay. Next one: "Can the mental health damage caused by social media overuse be reversed? If so, what can be done?"

[00:57:36]

DR. EVA TELZER: I don't know of specific research that has looked at really reversing the effects of social media on things like mental health. We know, in terms of the way the brain is developing, that it continues to adapt and grow and develop and change, and so what we're talking about today is not irreversible. We don't want to scare parents that their teens' brains are changed or damaged or that this is something to be afraid of. But the good news is that teens' brains are very adaptive and can change for the better. So, by helping teens and intervening early, setting restrictions, helping adolescents and communicating with them, is going to potentially have reversible effects on their brains as well as their mental health.

[00:58:43]

CHIH-CHING HU: Right. It's a related question: "How much recovery does the teen brain experience—achieve—if screen time is cut back? What is a safe maximum screen time in a day?"

[00:59:00]

DR. EVA TELZER: Yeah, I think it's a really tricky question about how much time is too much or what is the recommended amount of time on technology and social media, as Dr. Prinstein talked about earlier in the talk. It's not necessarily about the overall time but the content that they're exposed to and some of the potential resilient or risk factors that come into play. So, if you have a child who is really into school and really resilient and uses social media to interact with peers for academic purposes, the limit could be higher. But if your adolescent is potentially highly anxious and maybe being exposed to negative content on social media, then the limit might be a little bit lower. So, it's really dependent on your adolescent, and it's very challenging to create a specific time that we would recommend. There are some recommendations out there to set a limit, for example, at three hours, but it is more nuanced than that, and we need to take into consideration the content and some of the adolescent's characteristics coming into it.

[01:00:19]

CHIH-CHING HU: Okay. Does this research also apply to children under 12? Is it different?

[01:00:29]

DR. MITCH PRINSTEIN: There's not a lot of research on younger kids. Every year, we go in and start working with young kids thinking we're going to catch them before they start social media use. We learned that we're too late, and they've already started. So we don't have as much data in the field on that. What we do know is that it seems that kids are learning about social media use a lot from their parents. They notice what their parents do, and their attitudes and their understanding of social media are coming from what they see their parents do and what they think their parents believe.

[01:01:06]

CHIH-CHING HU: Okay, so how to help teens make healthy connections online?

[01:01:14]

DR. MITCH PRINSTEIN: Yeah, I think it's important to help kids to use social media to advance what might have been happening in face-to-face or voice-to-voice interactions. So, ways in which they're able to get to know each other at a level that's deeper than their profile pictures, talking with them in ways that help them forge a connection more than just liking a post. You know, something that feels like it's making up for time, for what they would have done if they were face to face is a really good way to use social media, and that's going to help them. We hear from many teens that they feel so compelled and pressured to like all their friends' posts. They sometimes don't even read them, they just go through and hit like to everything, and they're just feeling overwhelmed by it. And that's a good sign that this is not helping development in that case. And helping teens to have the language to say, "This isn't how I want to use social media," or "This doesn't feel like we're connecting. Let's get on a FaceTime call instead," or "Let's text each other even," instead can be a step better than just looking through profiles and hitting likes and trying to get followers. That's the part that seems to be pretty concerning.

[01:02:34]

CHIH-CHING HU: All right, thank you so much, Dr. Prinstein and Dr. Telzer, for sharing your knowledge with us today. I think that's the last question we have from our audience, and we're going to close this webinar. And thank you, everyone, for joining our webinar, and we hope to see you again soon in the next lecture. And please take a moment to fill out a short survey. I will leave the donation QR code for a few more minutes, and thank you for donating to support our programs. And with that, I'm going to close the webinar. Thank you. Thank you so much, Dr. Prinstein and Dr. Telzer, and we're grateful that you are here to share your knowledge with us and educate us with this latest research. Thank you so much.

[1:03:34]

DR. EVA TELZER: Thank you.

[1:03:35]

CHIH-CHING HU: Thank you, goodbye, and take care, and stay healthy.