

# Too much time online might raise kids' odds for mental health woes: Study

March 29 2023, by Dennis Thompson

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Children's screen use could be altering their developing brains as they

enter adolescence and increasing their risk for mood disorders, a major new study finds.

Children ages 9 and 10 who spend more time on smartphones, tablets, video games and TV exhibited higher levels of depression and anxiety by the time they were 11 and 12, researchers found.

Further, the investigators linked some of these [mood disorders](#) to actual structural changes occurring in the kids' developing brains, according to the report published online recently in the *Journal of Behavioral Addictions*.

"There were specific brain mechanisms that in part contributed to this relationship, meaning from a statistical perspective there were brain-based changes occurring over the two-year period that mediated the relationship between screen media activity in the [younger children](#) and internalizing concerns relating to depression and anxiety two years later," said senior researcher [Dr. Marc Potenza](#). He is a professor of psychiatry at the Yale School of Medicine's Child Study Center, in New Haven, Conn.

The proportion of mood disorders associated with structural changes in the brain is relatively small, "on the order of 2% to 3%," Potenza noted.

But child development experts hailed the study as an important step toward fully understanding how excessive screen time affects children.

For the study, Potenza and his colleagues analyzed data on more than 5,100 children participating in the ongoing Adolescent Brain Cognitive Development (ABCD) study. The data included brain scans, psychological evaluations and behavior tracking on these kids starting from ages 9 to 10.

"This is the first time that we've had this kind of database to look at issues on this scale, so that's groundbreaking," said [Dr. Cheryl Wills](#), chief of child psychiatry with MetroHealth System in Cleveland. Wills was not involved with the study.

"Basically, this study is the first one to begin to look at or understand better the processes that may be related to the impact of screen media activity on [mental health](#)—how does screen media activity impact [brain development](#), and how does that impact mental health," she said.

"While the findings are modest, this is the first structural association with these changes," added Wills, who is also a board member of the American Psychiatric Association.

## **Too much screen time?**

When the researchers looked at the first round of data for 9- and 10-year-olds, they found a relationship between high levels of screen use and mood disorders, as well as "externalizing" behaviors like aggression and discipline, Potenza said.

They also observed brain structure patterns in those children similar to those associated with underage drinking in previous studies, he added.

They then followed the kids as they aged, to see if the [mental health problems](#) persisted and whether they correlated with any further brain changes.

As 11- and 12-year-olds, the kids continued to have depression and anxiety related to heavy screen use, and their brains had changed in ways that would explain some of those mood disorders.

However, the study did not link the same brain changes to heavy screen

use and behavior problems like aggression, bullying or defiance.

The observed brain changes involved both the cortical brain regions involved in higher-level processes like attention or emotional regulation, as well as subcortical regions related to a person's urges, Potenza said.

"Given that this brain structural variation pattern has been linked to early engagement in addictive behaviors, it suggests that perhaps there may be some elements that are shared between addictive behaviors across substance use and non-substance-use domains—in this case, screen media activity," Potenza added.

The ABCD study will continue to track the same children as they age, and future reports are expected to provide even more insight into how screens affect the developing brain, said [Mitch Prinstein](#), chief science officer for the American Psychological Association.

"I don't think most of the public realizes how important the puberty years are for brain development," Prinstein said. "We all know that infants have their brains developing in really important ways, but we might not remember that brain development around the ages of 12 to 16 is also an incredibly sensitive time."

## **Brain changes linked to addiction**

Wills agreed.

"This is the first step, and we'll see how this proceeds, whether or not it's consistent through the developmental process as children mature into adults or whether this stops at a certain age or whether it worsens at a certain age," Wills said. "It's helping us to begin to understand that this can impact mental health, this can impact brain development. And only time will tell how persistent the changes are, whether or not they change

over time and what are the outcomes."

The post-pandemic world has made it more important than ever to understand the affect that screen-based media have on children, Wills said.

"During COVID time, a lot of education switched to computers and screen media. Even though kids are mostly back in school, teachers are using screens to a greater extent than they did beforehand," Wills said. "Usually in the past you'd have your child come home and then you worry about screen media activity, but they're already coming home from school having had more exposure in school than they previously did."

Many parents are trying to limit children's screen activity by using timers to shut the devices down when the kids have had enough, Wills said. They're also setting up other activities, "and basically trying to get their children to focus on other things rather than the screens."

In the meantime, Prinstein recommends that parents set a hard-and-fast 9 p.m. deadline for screen use.

"We just need that to be a rule. We can't disrupt sleep. Sleep is incredibly important for [brain](#) development, and the number one reason why kids are not getting the sleep that's recommended is because of their screens," Prinstein said.

Parents should also take advantage of timers and controls to make sure they're limiting what kids can do on devices and for how long. "Those aren't perfect, but at least it's a start," Prinstein said.

Finally, parents need to have a frank talk with their kids about whether the [children](#) themselves feel like they're using screens too much.

"We're seeing a remarkable amount of problematic screen time use," Prinstein said. "In other words, screen [time](#) usage starts to look a little bit like an addiction."

**More information:** The European Network for Problematic Usage of the Internet has more on [the effects of excessive screen use](#).

Yihong Zhao et al, Brain structural co-development is associated with internalizing symptoms two years later in the ABCD cohort, *Journal of Behavioral Addictions* (2023). [DOI: 10.1556/2006.2023.00006](#)

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Citation: Too much time online might raise kids' odds for mental health woes: Study (2023, March 29) retrieved 20 April 2024 from <https://medicalxpress.com/news/2023-03-online-kids-odds-mental-health.html>

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