The light or the content? What we know about screens and sleep disruption

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Too much screen time impairs sleep for children and adolescents, and it's largely the content on those screens that keeps them awake.

But it remains less clear whether the light from those screens also impairs sleep or whether and how screens directly disrupt adults' sleep, too.

That's the consensus from 16 leading sleep experts, including two from CU Boulder, who published an exhaustive scientific review today on screen time and sleep in *Sleep Health*.

"There's a lot of research out there, but the messaging can be all over the place, and people aren't sure how and for whom media use is actually causing sleep disruption," said the paper's co-first author Lauren Hartstein, a former postdoctoral fellow in the Sleep and Development Lab at CU Boulder.

To provide a coherent, science-based public health message, the NSF invited Hartstein and 15 other experts to review more than 2,200 scientific articles on the subject and make recommendations.

The team boiled the research down to 35 experimental studies and five systematic review articles. They met over a year to develop and vote on statements. They reached consensus on three points:

- In general, screen use impairs sleep health among children and adolescents.
- The content of screen use before sleep impairs sleep health of children and adolescents.
- Behavioral strategies and interventions may attenuate the negative effects of screen use on sleep health.

Notably, the group did not reach consensus on whether light from screens before bedtime impairs sleep for anyone.

"This is not to say that the panel concluded light from screens does not

impact sleep," said Hartstein. "But the current data are not strong enough for us to say conclusively that it has a direct effect."

Previous CU Boulder research has shown that light from screens can decrease levels of the sleep-inducing hormone melatonin in young children, who may be more vulnerable to the impacts of light because their lenses are clearer and their pupils larger than those of adults. But this previous study did not look specifically at whether light impacted sleep quality or duration.

The panel also failed to reach consensus on whether overall screen time, light or content impacts sleep in adults.

Adults may be less vulnerable to the impacts of screen content because their brains are fully matured and they are less subject to "fear of missing out (FOMO)" and other social pressures that can arise on screen-based media, said Hartstein.

Adolescence, on the other hand, is the "perfect storm" of potential sleep problems, she said.

"Their bodies are naturally shifting toward later bedtimes and they have to get up early for school, so they are often very sleep-deprived anyway and may be more susceptible to the impacts of media use," said Hartstein.

Between 2010 and 2018, the percentage of working American adults reporting they slept less than seven hours per night increased from 30.9% to 35.6%. About one-third of kids and teens sleep less than is recommended for their age group. On average, tweens, teens and adults, respectively, report using screen-based media for an average of 5.5, 8.5 and seven hours per day.

The panel agreed that targeted interventions, such as setting screen use limits for youth (especially at night), can lead to them falling asleep earlier and sleeping longer. They also point to one study showing that when participants played video games before bed, they went to bed later and didn't sleep as long or as deeply.

Having parents supervise content and model good screen use behavior for their children can help mitigate the negative effects of screen use on sleep, the panel concluded.

"Addressing screen use in youth really involves the whole family," said Hartstein. "It's important for parents to talk to children about how they use technology and how it could affect their sleep so they can build healthy habits that last a lifetime."

Monique LeBourgeois, associate professor of integrative physiology at CU Boulder, also participated in the panel. LeBourgeois died in November.

More information: Lauren E. Hartstein et al, The impact of screen use on sleep health across the lifespan: A National Sleep Foundation consensus statement, *Sleep Health* (2024). DOI: 10.1016/j.sleh.2024.05.001

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