

Adolescent Mental Health and Digital Technology

Candice L. Odgers

NAS COMMITTEE ON THE IMPACT OF SOCIAL MEDIA ON THE
HEALTH EFFECTS OF ADOLESCENTS AND CHILDREN; JAN 2023

University of California, Irvine

5 Key Findings

1

Associations between digital technologies (including social media) are smaller than most assume, with few opportunities to separate cause from effect

2

Longitudinal and within-person designs suggest social media may be on the wrong side of most equations.

3

Fears that social media is addictive and harmful to adolescent mental health and wellbeing are high, including among adolescents themselves.

4

There may be a “new digital divide” emerging in online spaces between adolescents at greatest risk for mental health problems and their peers.

5

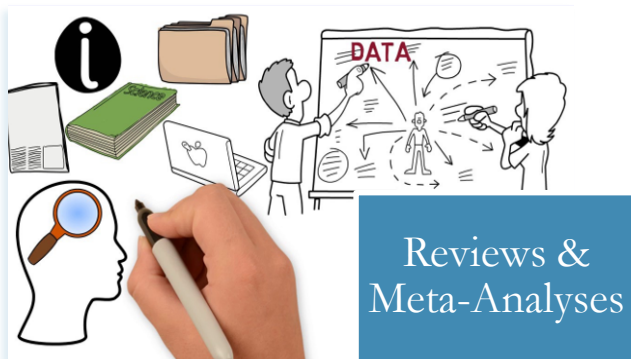
Adolescents are going online to seek information and support for mental health problems, but few reliable or youth-centered solutions exist

A person wearing a white lab coat is shown from the chest up, looking down at a smartphone held in their hands. The background is dark and out of focus, suggesting a clinical or laboratory setting. The overall tone is professional and focused.

1

Associations between digital technologies are smaller than most assume, with few opportunities to separate cause from effect.

What does the evidence say?



BIG DATA



Odgers & Jensen (2020). Annual Research Review. Adolescent mental health in the digital age. *JCPP*

Recent Reviews & Meta-Analyses

Author	Review Details	Overall Findings
Valkenberg et al. 2022	Analyzes 25 reviews from 2019 -2021	Use of social networking sites is weakly associated with both lower and higher levels of wellbeing across studies.
Hancock et al. 2022	Analyzes 226 studies between 2006-2018	Social media use was not associated with overall wellbeing, with an effect size equal to approximately zero. Small positive associations between SMU and social wellbeing, depression and anxiety. Among 24 longitudinal studies no evidence SMU predicts worse wellbeing.
Orben. 2020	Reviews 80 systematic reviews and meta-analyses	Small negative correlation between digital technology use and adolescent wellbeing, but it is not clear whether this represents a clear causal relationship or an association driven by third factors.
Odgers & Jensen. 2020	Review of meta-analytic, large-scale and longitudinal studies	Mix of small positive, negative and mostly null associations, with almost all evidence coming from cross-sectional observational studies with no way to support strong causal inference.
Ivie et al.. 2020	Analyzes 12 studies between 2011 and 2018	Small but significant positive correlation ($r=.11$, $p<.01$) between adolescent social media use and depressive symptoms, with high heterogeneity
Keles et al.. 2019	Review of 13 studies between 2011 and 2018 of adolescents	Overall association between social media use and mental health problems, but evidence is correlative, not causative.

- Mix of small negative, positive and mostly null findings
- Virtually all studies are correlational – no way to distinguish cause from effect
- Over-reliance self-report and single informant studies & on measuring time spent online
- New longitudinal studies suggests early depression predicts later social media use, but not vice versa
- One-size fits all approach to modeling and explanations

Large Surveys and Open Science

Monitoring the Future Study (MTF), SCA Results

(Orben & Przybylski, 2019)

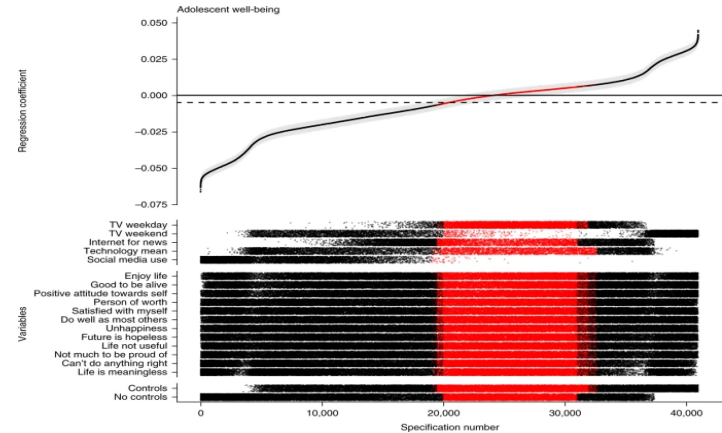
the median standardized regression from the
SCA: $\beta = -0.005$ (partial $\eta^2 < 0.001$,
median $n = 78,267$, median standard error = 0.003)

Our Recent Analysis of MTF

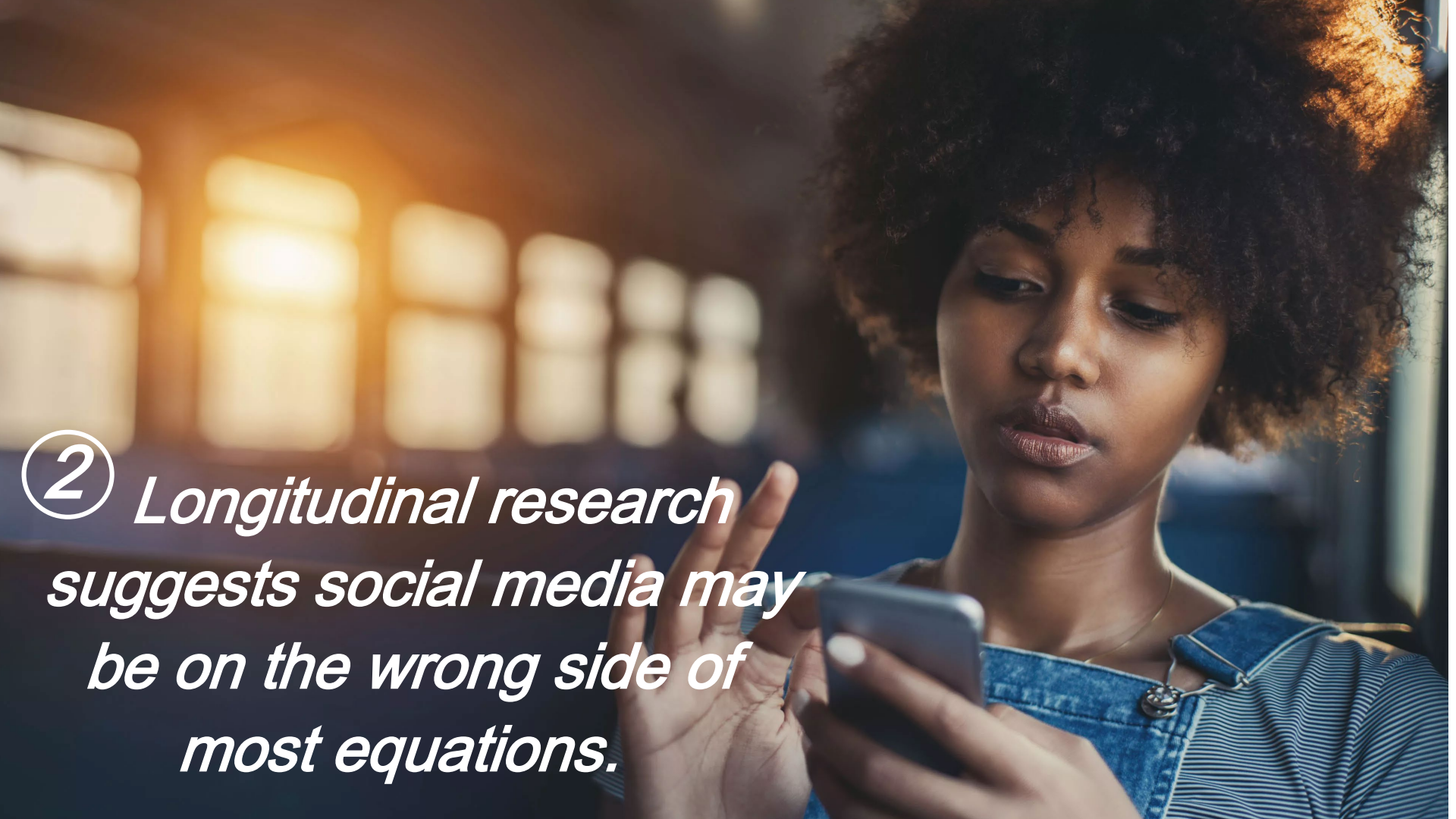
Social Media Use and Depressive Symptoms Among United States Adolescents
(Kreski, Platt, Rutherford, Olsson, Odgers, Schulenberg & Keys, 2021)

Association did not differ by propensity for
depression; only present for low-risk girls
($\beta = .018$, [CI]: .004, .031)

From **2009-2017**, correlation between social media
and depressive symptoms reduced to *ns*



“...contrary to the popular
narrative, daily social media use
is not a strong or consistent risk
factor for depressive
symptoms.”



② *Longitudinal research suggests social media may be on the wrong side of most equations.*

Depressive symptoms predict later social media use (girls only), but not vice versa

Table 2. Autoregressive Cross-Lagged Model Results for Adolescents

Structural path	Time 1→2		
	Females		
	<i>B</i>	β	95% CI
Soc.Media1→Dep.2	−0.022	−0.043	[−0.159, 0.073]
Dep.1→Soc.Media.2	0.287	0.131*	[0.026, 0.236]
Soc.Media1→Soc.Media.2	0.658	0.612***	[0.513, 0.711]
Dep.1→Dep.2	0.573	0.546***	[0.454, 0.638]

N = 1,726

6 yrs of annual assessments

Young adult & adolescents

Clinical Psychological Science
1–9
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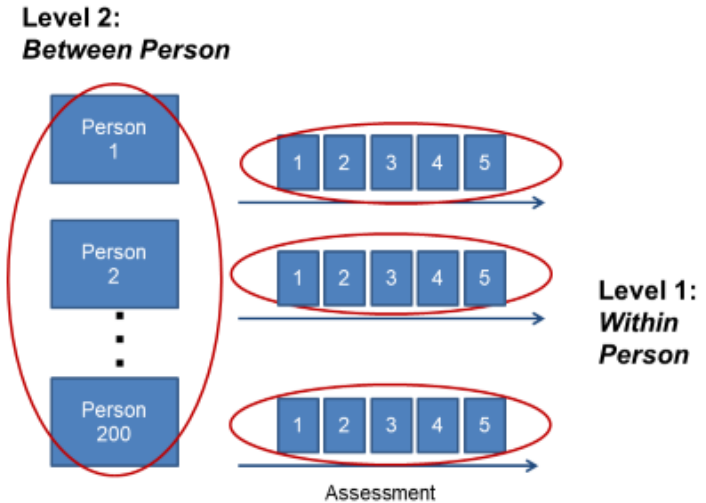


**Taylor Heffer¹, Marie Good², Owen Daly¹, Elliott MacDonell¹,
and Teena Willoughby¹**

Nomothetic vs. Idiographic

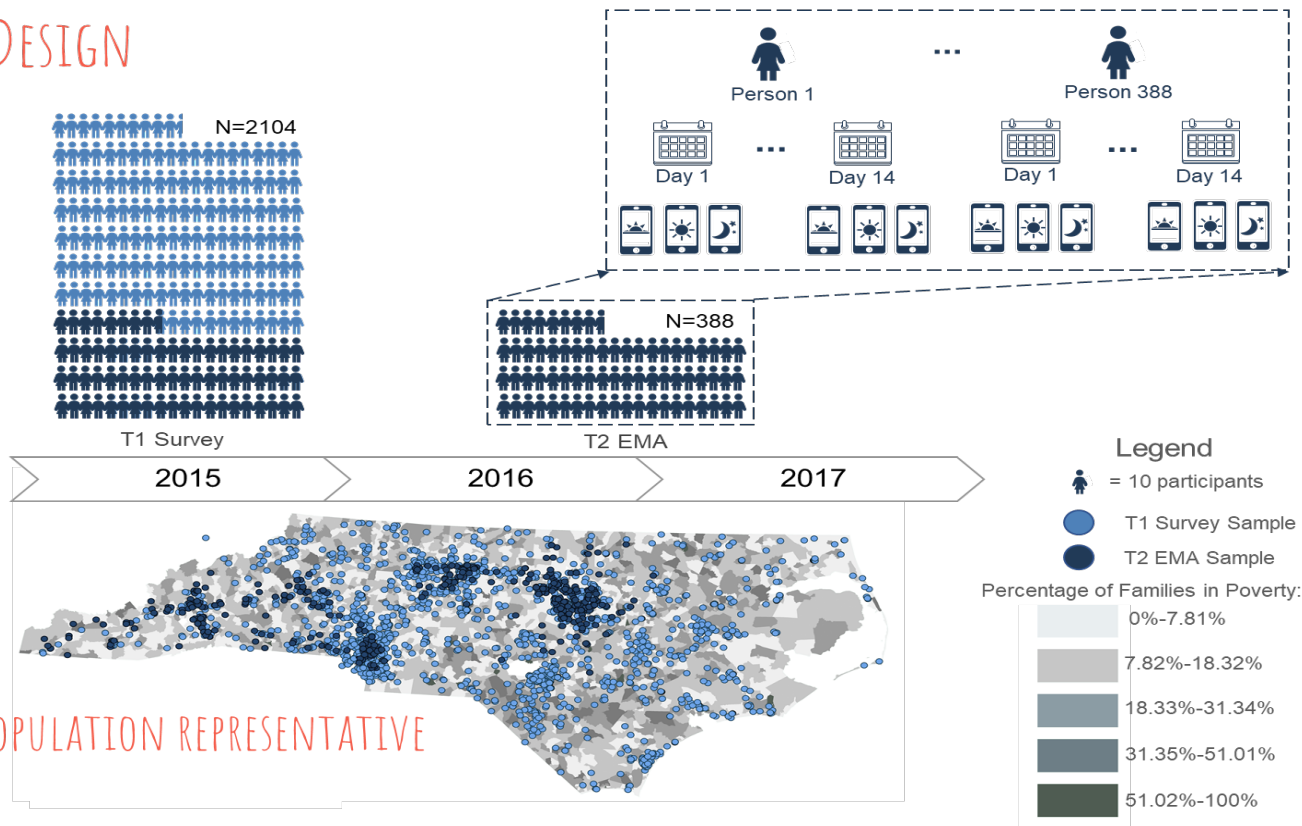


Using MLM
we can ask
both “*who*”
and “*when*”
questions



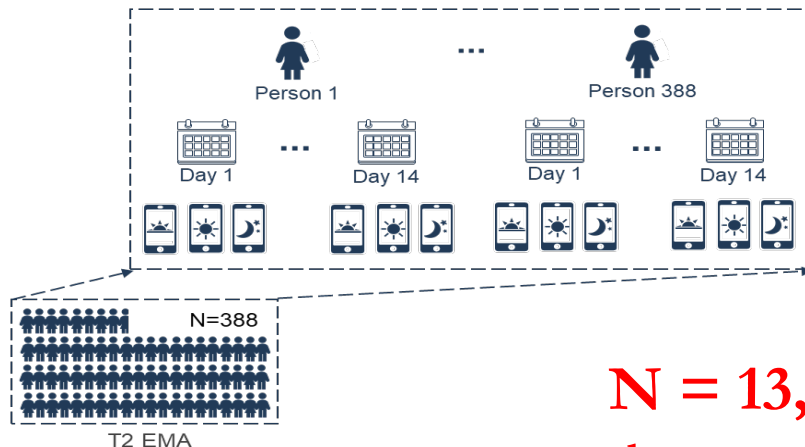
Daily Data via Mobile Devices

STUDY DESIGN



Daily Data via Mobile Devices

STUDY DESIGN



N = 13,017
observations
(5,270 days)

No daily linkages between digital
tech usage and daily mental health

Jensen, Odgers et al
(2019) *Clinical Psych Science*

Only link: adolescents more connected via texts reported better wellbeing; similar daily findings



Right now, I feel...

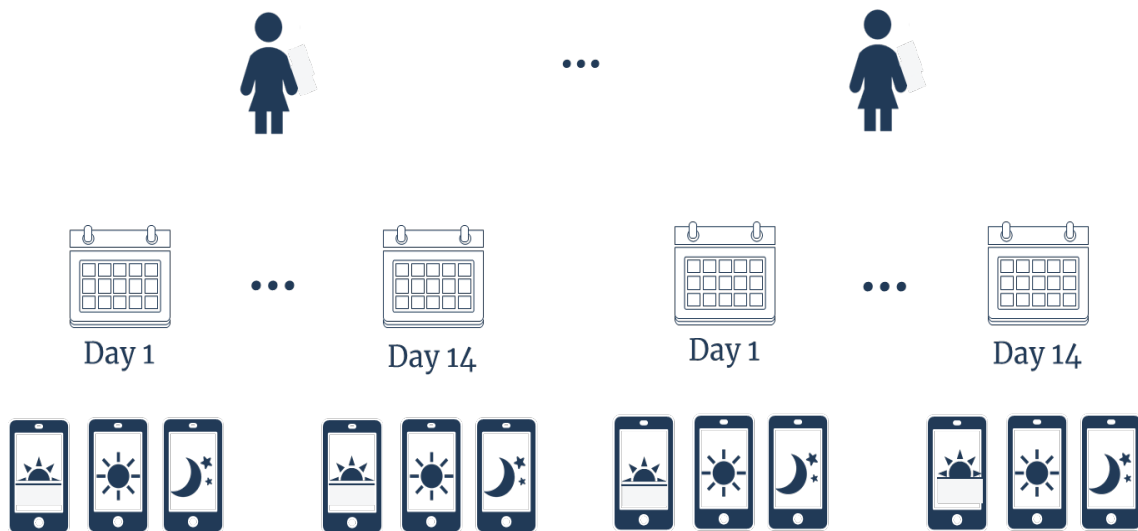
Sad

Tired

Lonely

The screenshot shows a mobile app interface for reporting feelings. It features three horizontal sliders for 'Sad', 'Tired', and 'Lonely'. Each slider has a red bar on the left and a dark blue bar on the right, with a red dot indicating the current level of the feeling. The 'Sad' slider is positioned at approximately 25%, the 'Tired' slider at approximately 75%, and the 'Lonely' slider at approximately 25%.

Only link: adolescents more connected via texts reported better wellbeing; similar daily findings



Exploratory Analyses

no moderation that survived FDR correction across 96 tests.

No support for stronger daily coupling between SM and symptoms among adolescents at higher risk for mental health problems

Only link: adolescents more connected via texts reported better wellbeing; similar daily findings



Michaelene
Jensen, UNCG



Madeline
George, RTI

A young woman with dark hair is lying in bed, propped up on her left arm. She is looking down at a smartphone held in her right hand. The room is dimly lit, with the primary light source being the screen of the phone, which casts a soft glow on her face and the bed. She is wearing a dark-colored long-sleeved shirt. The bed has a light-colored sheet with a red and white striped pattern visible near her head.

3

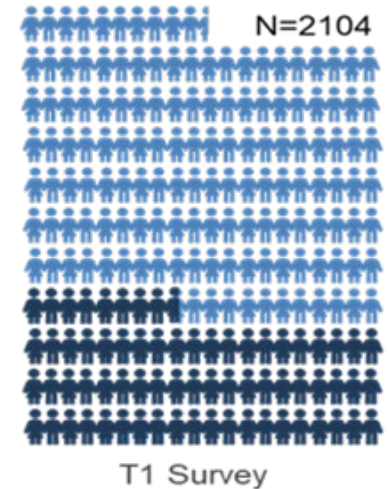
*Fears that social media is
addictive are high, including
among adolescents
themselves.*



Young Adolescents' Digital Technology Use, Perceived Impairments, and Well-Being in a Representative Sample

Madeleine J. George, PhD¹, Michaeline R. Jensen, PhD², Michael A. Russell, PhD³, Anna Gassman-Pines, PhD⁴, William E. Copeland, PhD⁵, Rick H. Hoyle, PhD⁶, and Candice L. Odgers, PhD^{5,7}

- Virtually all teens endorse impairment or addiction related to their digital tech use
- But few reliable linkages between SM use with standardized test scores, child or parent-reported symptoms were found
- Caution for future research: addictive vs. neutral framing modifies findings (Hancock et al., 2022) and threats due to non-blinding in experimental approaches

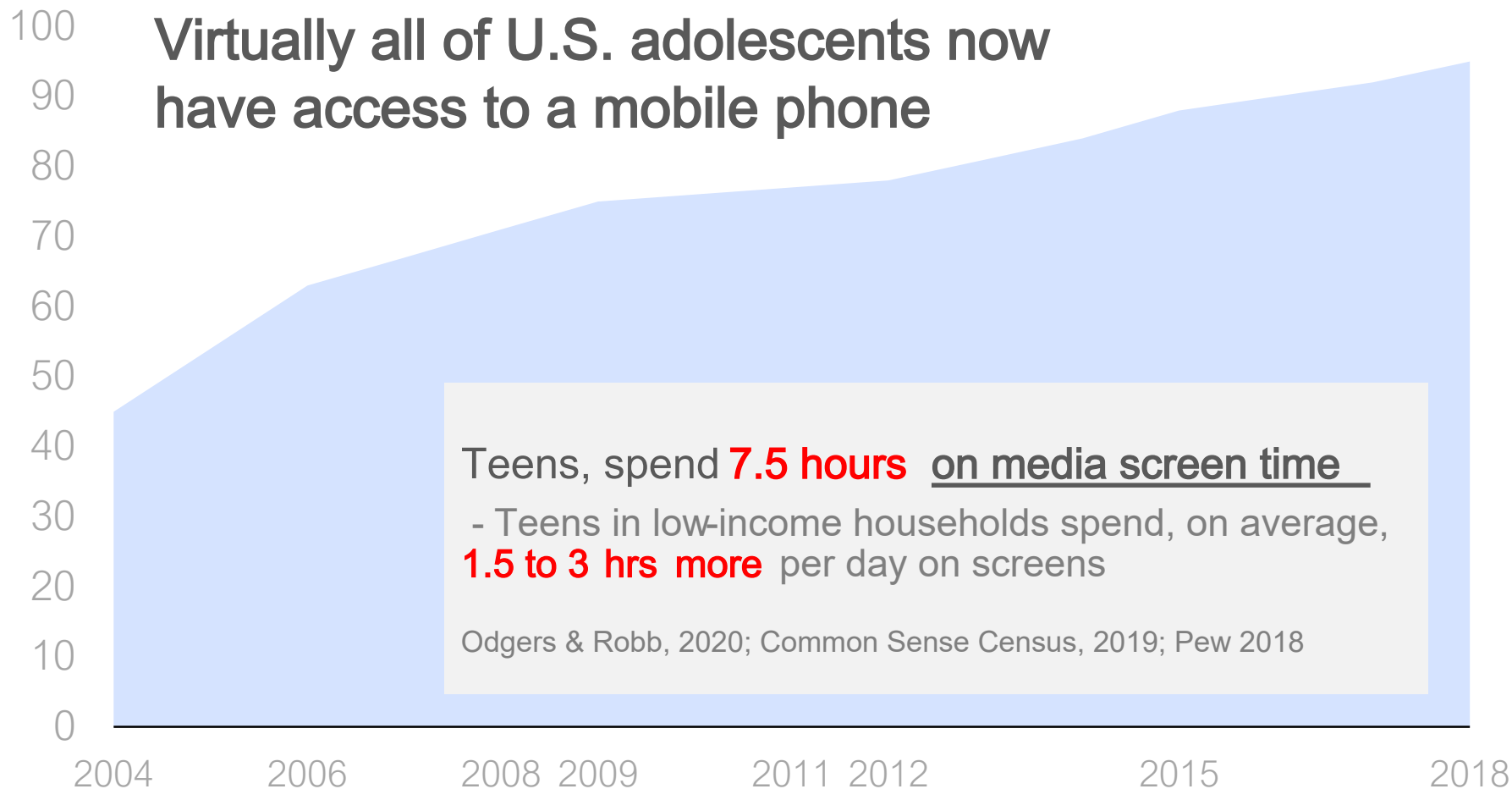




4

*New Digital
Divide*

Virtually all of U.S. adolescents now have access to a mobile phone





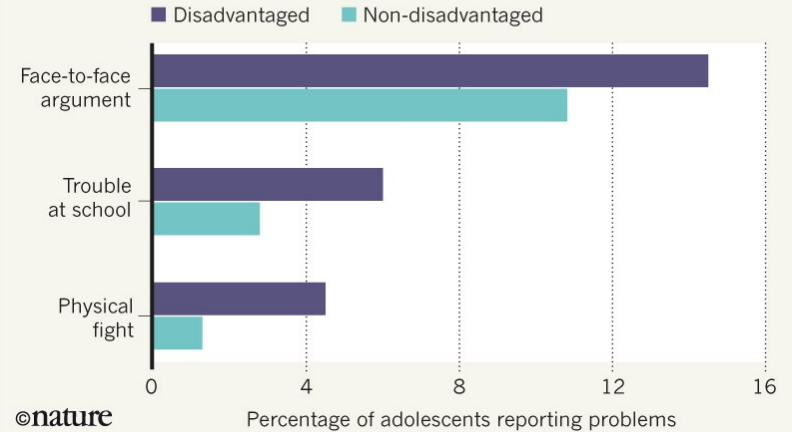
In Europe, smartphone ownership among young people aged 9 to 16 is 46%, according to a 2014 survey of 7 countries.

Smartphones are bad for some teens, not all

Young people who are already struggling offline might experience greater negative effects of life online, writes **Candice Odgers**.

SOCIAL-MEDIA SPILLOVER

In an unpublished survey of 2,100 US teens, those from low-income families are more likely than their affluent peers to report offline problems stemming from use of social media.



“Opportunity gaps” and segregation in online spaces

A person is holding a smartphone, looking at a social media feed. The background is dark and out of focus.

5

Adolescents are going online to seek information and support for mental health problems, but few reliable or youth-centered solutions exist

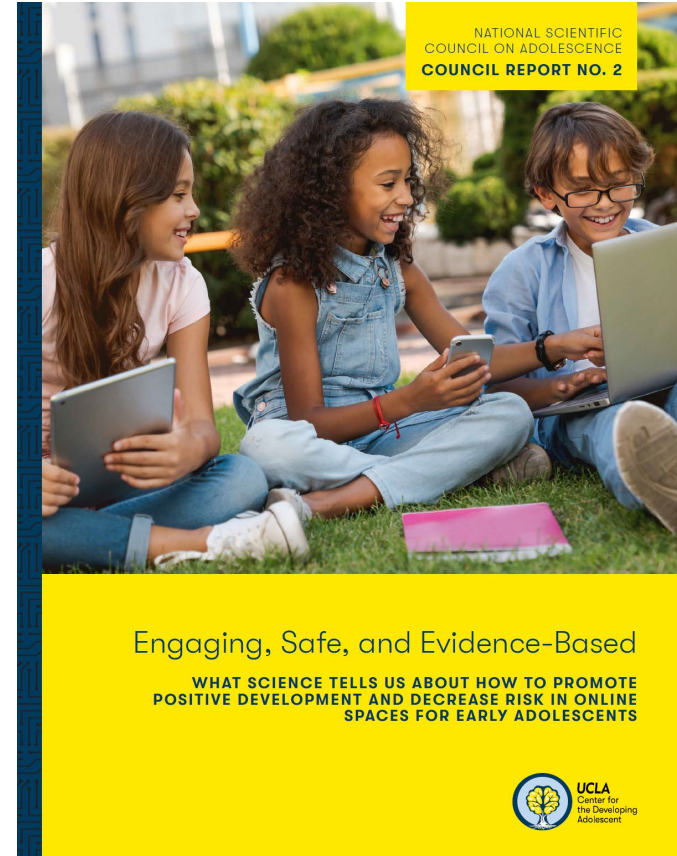
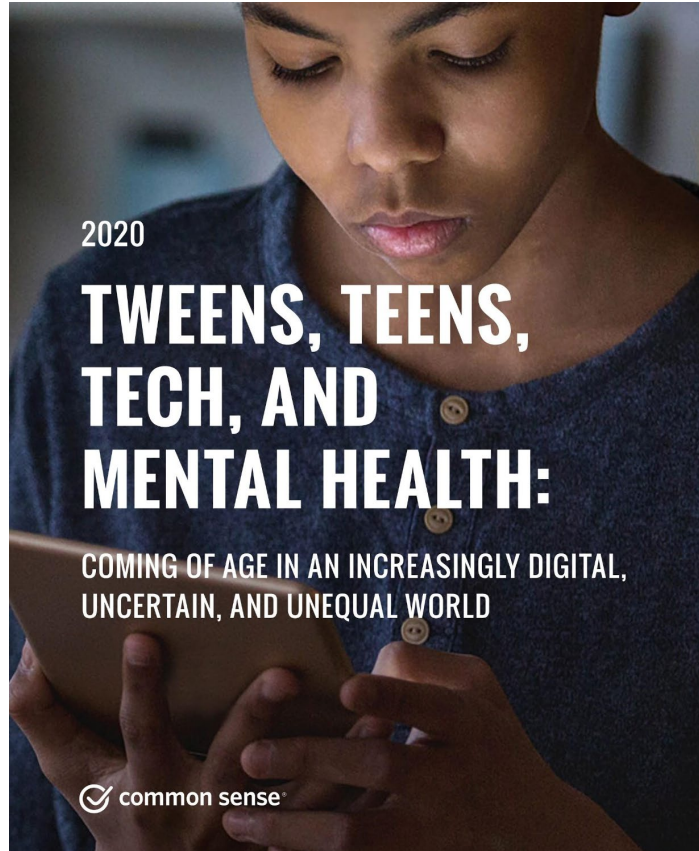
Adolescents are seeking help and support online



- ✓ 87% of adolescents have gone online to seek out information about mental health (Rideout & Fox, 2018)
 - 42% for anxiety & 30% for depression
 - Depressed adolescents more likely to seek support
 - Most report SM as providing social support
- ✓ Some evidence of effectiveness for digital mental health interventions (Hollis et al, 2017), *but adolescents often left out of the design and delivery of these solutions*
- ✓ **Research-to-practice gap**; close to 50% of teens report desire to use an app, but only 6% have used (Grist, 2018)



Additional Resources



Where do we go from here?

The usual set of recommendations for future research hold, including:

- Research designs that can support causal inference
- Moving beyond screen time and time on social media to capture use
- Less reliance on only self-reported digital tech use and mental health
- Movement away from a one-size fits all theories, models and data

A more radical departure:

- Stop investing resources, time, and energy asking the same question(s) that cannot be answered with the data in hand
- Need for within platform A/B testing and innovative approaches to within-person assessments and micro-interventions
- Greater investment and experimentation with digital mental health and social support for young people in the spaces where they are spending their time.

Contact & Team



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