**Title**

Family conflict and less parental monitoring were associated with greater screen time in early adolescence

**Permalink**

https://escholarship.org/uc/item/3kh6x0m1

**Journal**

Acta Paediatrica, 113(11)

**ISSN**

0803-5253

**Authors**

Al-shoaibi, Abubakr AA

Zamora, Gabriel

Chu, Jonathan

et al.

**Publication Date**

2024-11-01

**DOI**

10.1111/apa.17349

**Copyright Information**

Peer reviewed

ORIGINAL ARTICLE

ACTA PÆDIATRICA
NURTURING THE CHILD
WILEY

# Family conflict and less parental monitoring were associated with greater screen time in early adolescence

Abubakr A. A. Al-shoaibi[1] | Gabriel Zamora[1] | Jonathan Chu[1] | Khushi P. Patel[1] |
Kyle T. Ganson[2] | Alexander Testa[3] | Dylan B. Jackson[4] | Susan F. Tapert[5] |
Fiona C. Baker[6,7] | Jason M. Nagata[1] 🔟

[1]Division of Adolescent and Young Adult Medicine, Department of Pediatrics, University of California, San Francisco, San Francisco, California, USA

[2]Factor-Inwentash Faculty of Social Work, University of Toronto, Toronto, Ontario, Canada

[3]Department of Management, Policy and Community Health, University of Texas Health Science Center at Houston, Houston, Texas, USA

[4]Department of Population, Family, and Reproductive Health, Johns Hopkins Bloomberg School of Public Health, Johns Hopkins University, Baltimore, Maryland, USA

[5]Department of Psychiatry, University of California, La Jolla, California, USA

[6]Center for Health Sciences, SRI International, Menlo Park, California, USA

[7]School of Physiology, University of the Witwatersrand, Johannesburg, South Africa

Correspondence

Jason M. Nagata, Division of Adolescent and Young Adult Medicine, Department of Pediatrics, University of California, 550 16th Street, 4th Floor, Box 0503, San Francisco, CA 94143, USA.
Email: jason.nagata@ucsf.edu

Funding information

Doris Duke Charitable Foundation, Grant/Award Number: 2022056; National Institutes of Health, Grant/Award Number: K08HL159350 and R01MH135492

## Abstract

**Aim:** The current study investigated the prospective relationships between parental monitoring, family conflict, and screen time across six screen time modalities in early adolescents in the USA.

**Methods:** We utilised prospective cohort data of children (ages 10–14 years) from the Adolescent Brain Cognitive Development (ABCD) Study (years baseline to Year 2 of follow-up; 2016–2020; $N = 10\,757$). Adjusted coefficients (B) and 95% confidence intervals (CIs) were estimated using mixed-effect models with robust standard errors.

**Results:** A higher parental monitoring score was associated with less total screen time (B = −0.37, 95% CI −0.58, −0.16), with the strongest associations being with video games and YouTube videos. Conversely, a higher family conflict score was associated with more total screen time (B = 0.08, 95% CI 0.03, 0.12), with the strongest associations being with YouTube videos, video games, and watching television shows/movies in Years 1 and 2.

**Conclusion:** The current study found that greater parental monitoring was associated with less screen time, while greater family conflict was linked to more screen time. These results may inform strategies to reduce screen time in adolescence, such as improving communication between parents and their children to strengthen family relationships.

KEYWORDS

adolescent, digital technology, family conflict, parenting, social media

# 1 | INTRODUCTION

Screen time is a large part of daily life for today's adolescents. With access to computers, television, mobile phones, and social media, the rise in screen time raises concerns about its effects on adolescent health.[1] Although screen time may prepare adolescents for a technology-driven world and increases social connectedness, research has also linked excessive screen time to negative outcomes. These include sedentary behaviour, obesity, poor school performance, poor sleep, and negative mental health outcomes.[2–5] Thus, it is important to investigate the various environmental factors influencing adolescent screen time that could be targeted to prevent progression to excessive screen use.

Parents and caregivers play significant roles in how adolescents develop. Given this, an important area of interest is how parental monitoring and family conflict affect adolescent screen use. Parental monitoring describes how parents and caregivers pay attention to and track their child's location, activities, and behaviour.[6] Low parental monitoring and high family conflict have been prospectively associated with higher levels of behaviour problems in adolescents in the USA.[7] In a cross-sectional survey of Chinese adolescents, higher levels of parental monitoring were associated with more problematic screen use.[8] This relationship was mediated by the children's motivation to escape negative emotions via screen use. For example, children may turn to their digital devices to alleviate stress during difficult or distressing situations, despite the wishes and monitoring of their parents.[9] Similarly, family conflict can also create situations in which youth seek escape mechanisms through screens, which has been previously demonstrated to predict higher screen time in adolescents.[10] However, the existing research in the USA on the relationships between parental monitoring, family conflict, and adolescent screen time has yielded mixed results and is mostly limited to smaller, regional, or cross-sectional studies.[11–14] The inconsistent findings and lack of national, longitudinal data in the USA underscore the need for additional investigation of how parental behaviour influences adolescent screen time.

The present study aims to bridge these gaps in the literature by using a diverse, nationwide sample of 10- to 14-year-old adolescents participating in the Adolescent Brain Cognitive Development (ABCD) Study. While previous studies used these data for cross-sectional analyses at baseline,[14,15] our study extends prior work by examining the prospective associations between parental monitoring, family conflict, and screen time after 2 years of follow-up. The prospective design of this study offers a valuable insight about how parental monitoring and family conflict interact with adolescents' screen time over time.

We hypothesised that parental monitoring may protect against excessive screen time. We also hypothesised that family conflict may be associated with more screen time. Additionally, the current study analysed the aforementioned associations across six different forms of contemporary screen time modalities, including television, video games, texting, watching videos, video chat, and social media.

**Key Notes**

- This study explored the prospective associations between parental monitoring and family conflict with various forms of contemporary screen time in a diverse, national cohort of 10- to 14-year-old adolescents followed over 2 years.
- High parental monitoring was associated with less screen time, while high family conflict was associated with more screen time.
- Clinicians should actively promote discussions between parents and their children regarding appropriate screen time use.

# 2 | METHOD

## 2.1 | Study population

The current study utilised longitudinal data from baseline to Year 2 of the Adolescent Brain Cognitive Development (ABCD) Study (4.0 release). The ABCD study is an ongoing longitudinal study of health, brain, and cognitive development. The study baseline (2016–2018) included 11 875 children (ages 10–14 years) from 21 recruitment sites across the USA. Details about the ABCD study participants, recruitment, protocol, and measures have been described elsewhere.[16] We excluded participants with missing data for total screen time and confounders ($n = 1118$), leaving 10 757 children for the current analysis. Institutional review board approval was received from the University of California, San Diego, and the respective IRBs of each study site. Written assent was obtained from participants, and written informed consent was obtained from their caregivers.

## 2.2 | Variables

Parental monitoring was based on validated measures evaluating child perceptions of parental monitoring.[17–19] At baseline, youth-reported responses used a Likert scale ranging from never (one) to almost always (five). The scale was calculated as the average of the five questions with a range from 1 to 5 with higher scores indicating overall high parental monitoring behaviours.[19,20]

Measures of family conflict were determined from the baseline youth-reported conflict subset of the Family Environment Scale, which was calculated as the average of nine questions evaluating conflict between family members, including the parents and children.[18,19,21] The scale ranged from 0 to 9 in which a higher score indicates greater family conflicts.[7] The family conflict score has good test–retest reliability (ICC = 0.49) and acceptable internal consistency ($\alpha = 0.68$).[19,20]

Recreational screen time was obtained from the ABCD Youth Screen Time Survey where data were collected annually and

harmonised across years. Participants answered questions about daily time spent on six different screen modalities including viewing or streaming TV shows or movies, watching or streaming videos on platforms like YouTube, playing video games, texting, video chatting on services such as Skype or FaceTime, and using social media like Facebook and Instagram. School activities were excluded. Based on a previously validated measure, screen time was calculated separately for weekdays and weekend days.[22-24] A weighted average was calculated to obtain the participants' average daily screen time.[25] The weighted average was calculated using the following formula: [(weekday average × 5) + (weekend average × 2)]/7.[25] After calculating screen time total for each type of media utilised by participants, we reported the weighted average as a continuous variable. An analysis of the concordance between self-reported screen time and screen time measured objectively using a passive-sensing smartphone app shows a moderate correlation ($r = 0.49$).[26]

Potential sociodemographic confounders at baseline for the association between parental monitoring score and family conflict score with screen time were included. The confounder of age was measured in years. Sex was categorised as female or male. Race or ethnicity included White, Latino or Hispanic, Black, Asian, Native American, and other. Household income in USA dollars was categorised into six categories: less than $25 000, $25 000 through $49 999, $50 000 through $74 999, $75 000 through $99 999, $100 000 through $199 999, and $200 000 and greater. Highest parental education was categorised into high school or less versus college or more. Study site was also included as a confounder.

## 2.3 | Statistical analysis

We used baseline parental monitoring and family conflict scores as primary predictors. Repeated measures of total screen time and screen time separated across the six modalities from Year 1 and Year 2 were used as the outcome. The distributions of parental monitoring and family conflict scores were skewed, and the use of log-transforming was not applicable as many subjects have family conflict scores of zero. Thus, we used mixed-effects models with robust standard errors to assess the association of baseline parental monitoring and family conflict scores with daily screen time measures in Years 1 and 2. We also tested the interaction between parental monitoring and family conflict in the mixed-effect models, but the interaction was not significant. The statistical models incorporated both parental monitoring and family conflict scores within the same model, considering the possibility of a causal connection between these two variables. Model one was unadjusted. In model two, we used screen time from Year 1 to Year 2 as the outcome and adjusted for the following baseline confounders: age, sex, race or ethnicity, household income, highest parental education, study site, and screen time measures at baseline. Additionally, we conducted stratified analyses by biological sex, race, and household income.

We tested intercorrelations between screen time modalities using the Pearson correlation coefficient test. A $p$-value < 0.05 was considered to indicate statistical significance. The data analyses were performed in 2022 using Stata 15 (StataCorp, Texas, USA).

## 3 | RESULTS

Characteristics of the 10 757 (51.1% male) participants included in the current study are presented in Table 1. Around half of the

TABLE 1 Sociodemographic, screen time, and behavioural characteristics of 10 757 Adolescent Brain Cognitive Development (ABCD) Study participants.

| | Mean (SD) / % |
|---|---|
| Sociodemographic characteristics (baseline) | |
| Age (years), mean (SD) (baseline) | 9.9 (0.6) |
| Sex (%) | |
| Female | 48.9% |
| Male | 51.1% |
| Race/ethnicity (%) | |
| White | 52.4% |
| Latino/Hispanic | 20.1% |
| Black | 17.3% |
| Asian | 5.5% |
| Native American | 3.2% |
| Other | 1.5% |
| Household income (%) | |
| Less than $25 000 | 18.7% |
| $25 000 through $49 999 | 20.4% |
| $50 000 through $74 999 | 17.5% |
| $75 000 through $99 999 | 13.4% |
| $100 000 through $199 999 | 22.6% |
| $200 000 and greater | 7.4% |
| Parents with college education or more (%) | 79.7% |
| Recreational screen time variables (baseline) | |
| Total screen time, hours per day, mean (SD) | 3.9 (3.2) |
| Television shows/movies, hours per day, mean (SD) | 1.3 (1.1) |
| Videos (YouTube), hours per day, mean (SD) | 1.1 (1.2) |
| Video games, hours per day, mean (SD) | 1.1 (1.1) |
| Texting, hours per day, mean (SD) | 0.4 (0.9) |
| Video chat, hours per day, mean (SD) | 0.2 (0.6) |
| Social media, hours per day, mean (SD) | 0.1 (0.4) |
| Family variables (baseline) | |
| Parent monitoring scale | 4.4 (0.5) |
| Family conflict scale | 2.1 (1.9) |

*Note*: Propensity weights were applied to yield representative estimates based on the American Community Survey from the US Census.
Abbreviation: SD, standard deviation.

**TABLE 2** Associations of baseline parental monitoring and family conflict with screen time at Year 1 and Year 2 follow-up in the Adolescent Brain Cognitive Development (ABCD) Study.

| Baseline Predictors | Total screen time B (95% CI) | Television shows/movies B (95% CI) | Videos (YouTube) B (95% CI) | Video games B (95% CI) | Texting B (95% CI) | Video chat B (95% CI) | Social media B (95% CI) |
|---|---|---|---|---|---|---|---|
| **Parental monitoring** | | | | | | | |
| Model 1 | **−1.14 (−1.37, −0.90)** | −0.15 (−0.20, 0.09) | **−0.38 (−0.43, −0.32)** | **−0.65 (−0.73, −0.56)** | 0.005 (−0.05, 0.06) | 0.02 (−0.02, 0.06) | 0.001 (−0.04, 0.05) |
| Model 2 | **−0.37 (−0.58, −0.16)** | −0.03 (−0.08, 0.03) | **−0.16 (−0.21, −0.10)** | **−0.27 (−0.35, −0.19)** | 0.03 (−0.02, 0.09) | 0.04 (−0.002, 0.08) | 0.007 (−0.04, 0.05) |
| **Family conflict** | | | | | | | |
| Model 1 | **0.35 (0.29, 0.40)** | **0.06 (0.05, 0.07)** | **0.10 (0.08, 0.12)** | **0.12 (0.10, 0.14)** | **0.02 (0.009, 0.03)** | **0.02 (0.007, 0.02)** | **0.03 (0.02, 0.04)** |
| Model 2 | **0.08 (0.03, 0.12)** | **0.02 (0.003, 0.03)** | **0.03 (0.01, 0.04)** | **0.02 (0.0004, 0.04)** | −0.0005 (−0.01, 0.01) | −0.0002 (−0.009, 0.009) | 0.008 (−0.003, 0.02) |

*Note:* Bold indicates $p < 0.05$. Screen time based on average of screen time measures until the respective wave of the outcome measure. Parental monitoring and family conflict measures are reported from baseline. Model 1: unadjusted. Model 2: Adjusted for baseline screen time measures, age, sex, race/ethnicity, household income, highest parental education, study site.

participants were female and 47.6% were from other race or ethnicity groups. At baseline, the average total screen time was $3.9 \pm 3.2$ h per day, with the most time spent watching television shows or movies ($1.3 \pm 1.1$ h), watching or streaming videos ($1.1 \pm 1.2$ h), and playing video games ($1.1 \pm 1.1$ h). The average parental monitoring score was $4.4 \pm 0.5$, and the average family conflict score was $2.1 \pm 1.9$.

The results of the Pearson correlation coefficient test, shown in Table S1, indicate significant intercorrelations among screen time modalities. Notably, there were strong correlations between social media and texting ($r = 0.62$, $p < 0.001$), and moderate correlations between video games and videos ($r = 0.48$, $p < 0.001$), and social media and video chat ($r = 0.47$, $p < 0.001$).

Table 2 shows the unadjusted and adjusted models for the associations between baseline parental monitoring and family conflict scores with total screen time and its subtypes at Year 1 and Year 2. In model two, higher parental monitoring score was associated with less total screen time (B = −0.37, 95% CI −0.58, −0.16), specifically playing video games (B = −0.27, 95% CI −0.35, −0.19) and watching or streaming videos (B = −0.16, 95% CI −0.21, −0.10). Higher family conflict score was associated with higher total screen time (B = 0.08, 95% CI 0.03, 0.12), watching videos (YouTube) (B = 0.03, 95% CI 0.01, 0.04), video games (B = 0.02, 95% CI 0.0004, 0.04), and watching television shows or movies (B = 0.02, 95% CI 0.003, 0.03).

The findings of the regression models align with the results of the correlation analysis (Table S1), reaffirming that screen activities are intercorrelated. Streaming videos and video games, which showed moderate correlation, were inversely associated with parental monitoring, and positively associated with family conflict. On the other hand, there were moderate to high correlations found among texting, video chat, and social media. Parental monitoring was not significantly associated with any of these screen modalities.

Models stratified by sex are shown in Table S2. Our stratified analyses showed that parental monitoring was associated with lower total screen time in both males and females, particularly with streaming videos and video games. Family conflict was associated with higher total screen time and social media time in females but not males.

Models stratified by race or ethnicity are shown in Table S3. The results suggested that parental monitoring was associated with lower total screen time, video games, and streaming videos in White adolescents. Additionally, higher family conflict was associated with more television, videos, and video games among White and Latino or Hispanic adolescents but not in other racial or ethnic groups. However, there is a possibility that smaller sample sizes in other racial or ethnic groups limit the detection of statistically significant effects. The overall pattern indicates that parental monitoring may have a generalisable effect on reducing adolescent screen time, regardless of race or ethnicity.

Models stratified by household income are shown in Table S4. Parental monitoring generally was associated with less screen time, including streaming videos and playing video games, across various income groups. Conversely, family conflict was associated with

higher screen time across multiple screen activities, especially in households with a household income of $25000–$50000.

In sensitivity analyses, we additionally controlled for parental warmth (Table S5) and used a binary parental monitoring or family conflict variable (Table S6). Sensitivity analysis findings are consistent with the primary analysis.

# 4 | DISCUSSION

In a demographically diverse nationwide sample of 10757 participants ages 10–14 years old in the USA, we found that greater parental monitoring was associated with less screen time, with the strongest associations being with playing video games and watching YouTube videos. In addition, greater family conflict was associated with more screen time, with the strongest associations being with watching YouTube videos, playing video games, and watching television shows or movies. Furthermore, we found strong correlations between texting and social media, video games and videos (YouTube), and social media and video chatting.

The current study bridges the gaps in the current literature by examining the prospective relationships between parental monitoring and family conflict with different forms of contemporary screen time. It uses a large, national cohort of 10- to 14-year-old adolescents followed over 2 years. The theoretical basis for the association between more parental monitoring and less total screen time includes more consistent setting of screen time limits or rules. Our findings are consistent with some previous studies that found similar results in 9- to 15-year-old children.[11,12] However, our findings contrast other studies that found higher levels of parental monitoring to predict more problematic screen use in Chinese adolescents (mean age=16.1 years).[8] The present study advances the work of the aforementioned studies by differentiating between different forms of contemporary screen time in early adolescents and using prospective data.

The present study's findings were consistent with past studies,[27] in that greater family conflict was associated with more total screen time. It advances prior work to show associations with prospective longitudinal data. As family conflict leads to increased emotional distress in adolescents,[28] this relationship could reflect escape motivation, with them turning to screens as an escape[29] from the conflict and associated emotional distress.

This study found that adolescent screen time behaviours are not isolated but interconnected across various digital engagements. Therefore, parental monitoring targeting one activity such as video games might indirectly reduce streaming videos. On the other hand, family conflict could lead adolescents to use multiple screen-based activities as coping mechanisms, which in turn can lead them to engage in additional screen activities. These findings can help parents monitor their children's digital habits comprehensively.

Our stratified analyses showed that both males and females may benefit from parental monitoring in reducing screen time, particularly

with streaming videos and playing video games. Parental monitoring was associated with less time playing video games and streaming videos in White adolescents. However, the effects for other screen modalities varied by race. Furthermore, parental monitoring was associated with less screen time, including streaming video and playing video games, across various income groups. These findings indicate that interventions targeting screen time should consider gender, race, and household income differences.

## 4.1 | Strengths and limitations

The present study has several limitations. All measures were self-reported, which make them subject to recall or social desirability bias.[22–24] A bidirectional relationship between screen time and parental monitoring and family conflict, including the potential for reverse causation, cannot be identified given that prolonged screen usage might escalate parental oversight or serve as a trigger for family conflict. The generalisability of our findings may be affected due to selection bias. While the current study adjusted for several potential confounders, there is the possibility of residual confounders. Strengths of the present study include the prospective study design with three repeated measures of screen time as well as analysis of modern screen time modalities across a large, diverse, national sample of early adolescents. Future research could examine mediating factors such as escape motivation in the associations between parental monitoring, family conflict, and screen time.

# 5 | CONCLUSION

Given the potential links between excessive screen time and negative outcomes in adolescence, the current study offers several implications in the context of adolescent development and health. For example, because family conflict was associated with higher screen time, strategies to reduce screen time in adolescence may target improved communication between parents and their children to strengthen familial relationships. The American Academy of Pediatrics currently advocates for the creation of Family Media Use Plans to establish screen time boundaries that respect each individual family's values and lifestyles.[30] Our findings reinforce this recommendation and clinicians should actively encourage parents to lead open discussions with their children about appropriate screen time use.

## AUTHOR CONTRIBUTIONS
**Abubakr A. A. Al-shoaibi:** Writing – review and editing; writing – original draft; formal analysis. **Gabriel Zamora:** Writing – review and editing; writing – original draft. **Jonathan Chu:** Writing – review and editing. **Khushi P. Patel:** Writing – review and editing. **Kyle T. Ganson:** Writing – review and editing. **Alexander Testa:** Writing – review and editing. **Dylan B. Jackson:** Writing – review and editing.

## CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

## ORCID

*Jason M. Nagata* https://orcid.org/0000-0002-6541-0604

## REFERENCES

1. Nagata JM, Cortez CA, Cattle CJ, et al. Screen time use among US adolescents during the COVID-19 pandemic: findings from the adolescent brain cognitive development (ABCD) study. JAMA Pediatr. 2022;176(1):94-6. doi:10.1001/jamapediatrics.2021.4334
2. Robinson TN, Banda JA, Hale L, et al. Screen media exposure and obesity in children and adolescents. Pediatrics. 2017;140(Supplement_2):S97-S101. doi:10.1542/peds.2016-1758K
3. Nagata JM, Iyer P, Chu J, et al. Contemporary screen time modalities among children 9–10 years old and binge-eating disorder at one-year follow-up: a prospective cohort study. Int J Eat Disord. 2021;54(5):887-92. doi:10.1002/eat.23489
4. Paulich KN, Ross JM, Lessem JM, Hewitt JK. Screen time and early adolescent mental health, academic, and social outcomes in 9- and 10- year old children: utilizing the adolescent brain cognitive development [SM] (ABCD) study. PLoS One. 2021;16(9):e0256591. doi:10.1371/journal.pone.0256591
5. Wentworth DK, Middleton JH. Technology use and academic performance. Comput Educ. 2014;78:306-11. doi:10.1016/j.compedu.2014.06.012
6. Dishion TJ, McMahon RJ. Parental monitoring and the prevention of child and adolescent problem behavior: a conceptual and empirical formulation. Clin Child Fam Psychol Rev. 1998;1(1):61-75. doi:10.1023/A:1021800432380
7. Gong W, Rolls ET, Du J, Feng J, Cheng W. Brain structure is linked to the association between family environment and behavioral problems in children in the ABCD study. Nat Commun. 2021;12(1):3769. doi:10.1038/s41467-021-23994-0
8. Fu X, Liu J, Liu RD, et al. Parental monitoring and adolescent problematic mobile phone use: the mediating role of escape motivation and the moderating role of shyness. Int J Environ Res Public Health. 2020;17(5):1487. doi:10.3390/ijerph17051487
9. Kim JH. Smartphone-mediated communication vs. face-to-face interaction: two routes to social support and problematic use of smartphone. Comput Hum Behav. 2017;67:282-91. doi:10.1016/j.chb.2016.11.004
10. Halpin S, Mitchell AE, Baker S, Morawska A. Parenting and child behaviour barriers to managing screen time with young children. J Child Fam Stud. 2021;30(3):824-38. doi:10.1007/s10826-020-01881-4
11. Carlson SA, Fulton JE, Lee SM, Foley JT, Heitzler C, Huhman M. Influence of limit-setting and participation in physical activity on youth screen time. Pediatrics. 2010;126(1):e89-e96. doi:10.1542/peds.2009-3374
12. Leonard H, Khurana A. Parenting behaviors and family conflict as predictors of adolescent sleep and bedtime media use. J Youth Adolesc. 2022;51(8):1611-21. doi:10.1007/s10964-022-01614-4
13. Gentile DA, Reimer RA, Nathanson AI, Walsh DA, Eisenmann JC. Protective effects of parental monitoring of children's media use a prospective study. JAMA Pediatr. 2014;168(5):479-84. doi:10.1001/jamapediatrics.2014.146
14. Guerrero MD, Barnes JD, Tremblay MS, Pulkki-Råback L. Typologies of family functioning and 24-h movement behaviors. Int J Environ Res Public Health. 2021;18(2):699. doi:10.3390/ijerph18020699
15. Pulkki-Råback L, Barnes JD, Elovainio M, et al. Parental psychological problems were associated with higher screen time and the use of mature-rated media in children. Acta Paediatr. 2022;111(4):825-33. doi:10.1111/apa.16253
16. Barch DM, Albaugh MD, Avenevoli S, et al. Demographic, physical and mental health assessments in the adolescent brain and cognitive development study: rationale and description. Dev Cogn Neurosci. 2018;32:55-66. doi:10.1016/j.dcn.2017.10.010
17. Karoly HC, Callahan T, Schmiege SJ, Feldstein Ewing SW. Evaluating the Hispanic paradox in the context of adolescent risky sexual behavior: the role of parent monitoring. J Pediatr Psychol. 2016;41(4):429-40. doi:10.1093/jpepsy/jsv039
18. Zucker RA, Gonzalez R, Ewing SWF, et al. Assessment of culture and environment in the adolescent brain and cognitive development study: rationale, description of measures, and early data. Dev Cogn Neurosci. 2018;32:107-20. doi:10.1016/j.dcn.2018.03.004
19. Gonzalez R, Thompson EL, Sanchez M, et al. An update on the assessment of culture and environment in the ABCD study®: emerging literature and protocol updates over three measurement waves. Dev Cogn Neurosci. 2021;52:101021. doi:10.1016/j.dcn.2021.101021
20. Taber KS. The use of Cronbach's alpha when developing and reporting research instruments in science education. Res Sci Educ. 2018;48(6):1273-96. doi:10.1007/s11165-016-9602-2
21. Moos RH, Moos BS. A typology of family social environments. Fam Process. 1976;15(4):357-71. doi:10.1111/j.1545-5300.1976.00357.x
22. Bagot KS, Matthews SA, Mason M, et al. Current, future and potential use of mobile and wearable technologies and social media data in the ABCD study to increase understanding of contributors to child health. Dev Cogn Neurosci. 2018;32:121-9. doi:10.1016/j.dcn.2018.03.008
23. Gray JC, Schvey NA, Tanofsky-Kraff M. Demographic, psychological, behavioral, and cognitive correlates of BMI in youth: findings from the adolescent brain cognitive development (ABCD) study. Psychol Med. 2020;50(9):1539-47. doi:10.1017/S0033291719001545
24. Paulus MP, Squeglia LM, Bagot K, et al. Screen media activity and brain structure in youth: evidence for diverse structural correlation networks from the ABCD study. NeuroImage. 2019;185:140-53. doi:10.1016/j.neuroimage.2018.10.040

25. Guerrero MD, Barnes JD, Chaput JP, Tremblay MS. Screen time and problem behaviors in children: exploring the mediating role of sleep duration. Int J Behav Nutr Phys Act. 2019;16(1):105. doi:10.1186/s12966-019-0862-x

26. Wade NE, Ortigara JM, Sullivan RM, et al. Passive sensing of Preteens' smartphone use: an adolescent brain cognitive development (ABCD) cohort substudy. JMIR Ment Health. 2021;8(10):e29426. doi:10.2196/29426

27. Kw K, Yk K, Jh K. Associations between parental factors and Children's screen time during the COVID-19 pandemic in South Korea. Child Psychiatry Hum Dev. 2022;27:1749-58. doi:10.1007/s10578-022-01366-z

28. Brock RL, Kochanska G. Interparental conflict, children's security with parents, and long-term risk of internalizing problems: a longitudinal study from ages 2 to 10. Dev Psychopathol. 2016;28(1):45-54. doi:10.1017/S0954579415000279

29. Nagata JM, Chu J, Ganson KT, et al. Contemporary screen time modalities and disruptive behavior disorders in children: a prospective cohort study. J Child Psychol Psychiatry. 2023;64(1):125-35. doi:10.1111/jcpp.13673

30. COUNCIL ON COMMUNICATIONS AND MEDIA, Hill D, Ameenuddin N, et al. Media use in school-aged children and adolescents. Pediatrics. 2016;138(5):e20162592. doi:10.1542/peds.2016-2592

## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.