



Concordance of Child and Parent Reports of Children's Screen Media Use

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ABSTRACT

OBJECTIVE: Little is known about the concordance of parent and child reports of children's media consumption, even though parents are often asked to report for their children in clinical care settings. Our objective was to understand how parent and child reports of children's media consumption differ in an era of changing screen media consumption via personal devices.

METHODS: As part of a larger study about the reception of health-related cues from children's media, children ages 9 to 11 years (N = 114) and their parents independently completed identical questionnaires about specific media use and health behaviors. To examine concordance between child and parent reports of children's screen media use, we calculated the mean number of minutes per day and proportions reported by the child and parent and assessed concordance with *t*-tests and chi-square tests.

RESULTS: On a typical day, children reported nearly an hour each of video and app game use, computer use, and television exposure. Overall, child and parent reports were similar, usually within 10 minutes of each other; however, among 3 measures of TV use, parents consistently reported less TV exposure than children. There was significant discordance in the percentages of parents and children reporting the presence of a TV in the child's room.

CONCLUSIONS: Parent and child reports of children's media use were generally concordant; however, there were important disagreements, such as TV use in the child's room and during meals. We discuss possible causes of discrepancies and implications.

KEYWORDS: media use; parent-child concordance; screen time

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WHAT'S NEW

We examine whether there are differences in parent reporting and child reporting of children's screen media use. Our findings suggest that there is general concordance and with additional validation either parent or child could be a source of reported screen time.

SCREEN MEDIA USE, such as watching television, playing video games, and engaging with social media, has been associated with attention and behavior problems,^{1,2} cognitive delay,³ sleep problems,⁴ and obesity.^{5–7} Suggested causes for the link between time spent using screen media and children's body mass index include the replacement of physical activity with screen use and the promotion of unhealthy foods in advertisements,

which may negatively affect children's food preferences and dietary intake.^{5,7–9} A recent systematic review and meta-analysis showed that both screen media access and use in the bedroom were associated with inadequate sleep quantity and poor sleep quality.⁴ Given the physical and psychological health consequences caused by obesity¹⁰ and poor sleep^{11,12} and the ubiquity of mobile devices, increasing screen media use is a concerning trend. However, screen media use can also have significant positive effects and can be appropriately incorporated to enhance child development, in addition to serving as a necessary mode of learning and development for school-age children.

Recent US reports estimate that, on an average day, excluding school work, those under 8 years of age spend nearly 2 hours with digital screen media, children ages 8 to 12 years spend more than 4.5 hours using screen

media, and adolescents ages 13 to 18 spend more than 6.5 hours using screen media. One quarter of children ages 8 to 18 spend more than 8 hours per day on screen media.^{13,14}

Understanding media use in different age groups presents methodological challenges to media researchers. Because very young children are mostly dependent on their parents for media exposure, relying on parents' reports of use is typical and may be relatively accurate. For older children and adolescents, however, parents may not report use as accurately due to less parental supervision as well as a perceived social desirability to underestimate time. Given the increased use of screen media on unmonitored personal devices such as smartphones, it may be impossible for parents to accurately report screen use.

Although concordance between child and parent reports has been evaluated for health-related quality of life,¹⁵ little work has been done to assess differences in specific health-related behaviors.^{16,17} Others have reported a correlation between parent and child reports of the child's television use time,¹⁸ but to our knowledge no studies of concordance in reports of screen media use have been published recently. Children and their parents may have different perceptions about reporting media use in the new environment of mobile screen media use. Our objective was to measure concordance between child and parent reports of various types of screen media use.

METHODS

Our analysis is part of a larger study examining the influence of messaging in movies on children's health beliefs and behaviors. Flyers in university-affiliated clinics and university employee and school district parent e-mail listservs were used to recruit parent-child dyads (N = 114) to watch a movie and participate in a focus group. Dyads were eligible if the child was 9, 10, or 11 years old; had access to a laptop or desktop computer to complete study questionnaires; was capable of watching and discussing a movie in English and attending a focus group; and did not have food allergies or eating/feeding problems.

Prior to watching the movie and participating in the focus group, parents and children independently completed questionnaires that collected demographic information in addition to asking a series of questions related to screen media use. Questions asked about usual screen media use, in addition to established rules regarding such use, and were modified from the Annenberg Media Environment Survey¹⁹ and the 2015 Youth Risk Behavior Survey,²⁰ as well as from instruments used by Common Sense Media,^{13,14} the Early Childhood Longitudinal Study, Birth Cohort,²¹ and Duke Children's Hospital and Health Center. Parents were instructed to enter the amount of time in hours and minutes that their child spent with

various modes of screen use when answering the following questions:

- Thinking about a typical school day, about how much time does your child spend . . .
 - playing video games or app games?
 - using apps other than games?
 - using a computer?
 - watching movies?
- On a typical school day, about how much time is the TV on when your child is in the room (even if he/she is "not watching")?
- On a typical school day, about how much time does your child spend watching TV?
- On a typical school day, for about how much of that time are you watching TV with your child?

An additional 3 questions measured television usage with close-ended response categories:

- How many hours a day does a TV stay on in your household? (rarely; 1–3 hours per day; 4–6 hours per day; 7–9 hours per day; usually on when someone is home; other)
- Is the TV on during your child's eating times? (on, usually; on, sometimes; off)
- Is there a working TV or other screens on which they can watch TV shows or movies in the room where your child sleeps? (no; yes)

Children answered identical questions, edited only to correct syntax. We calculated the number of minutes per day in each category of media use (eg, video games, apps), comparing means and differences with *t*-tests. For categorical responses, we calculated differences with Pearson's chi-square tests. In secondary analyses, we also tested differences in concordance in each category by race/ethnicity. All analyses were performed in Stata 13 (StataCorp; College Station, Tex). The study was approved by the institutional review board at the University of North Carolina at Chapel Hill.

RESULTS

Children were 9 to 11 years old. More than two thirds were white (69%), and children were from households with a large income range, although most (79%) had an annual household income of \$75,000 or more. Parents were well educated (68% with graduate degrees) and mostly married (79%). During a typical school day, children reported nearly an hour of video and app game use (50 minutes), computer use (50 minutes), and being present in a room where the television was on (57 minutes). Overall, child and parent reports of media use were generally similar and within a difference of 10 minutes in each category of use (Table 1).

Of the 7 separate measures comparing child- and parent-reported screen use per school day, reported times

Table 1. Child- and Parent-Reported Agreement on Media Use Time per School Day

	Child (min), Mean (SD)	Parent (min), Mean (SD)	Difference (min), Mean (SD)	<i>P</i> Value
Video/app games	50 (55)	40 (68)	-10 (76)	.17
Apps other than games	23 (32)	15 (24)	-7.7 (34)	.02
Computer	50 (57)	42 (43)	-8.2 (54)	.11
Movies	31 (55)	19 (43)	-13 (42)	.002
TV on, child in room	57 (79)	61 (78)	4.1 (61)	.48
Active TV watching	48 (62)	40 (38)	-7.1 (50)	.14
Active TV watching with parent	25 (35)	22 (27)	-2.6 (29)	.35

were statistically different in only 2 categories: 1) use of apps and other games, and 2) watching movies. These differences, although significant, were relatively small. Parents reported nearly 8 minutes less for the time their child spent using apps and other games (child, 23 minutes; parent, 15 minutes; $P = .02$) and 13 minutes less for the time their child spent watching movies (child, 31 minutes; parent, 19 minutes; $P = .002$).

In each of 3 categories of reported TV use, parents generally reported that the television was on less as compared to their child's report. Most families reported that the television was on fewer than 3 hours per day, and children reported that the television was usually (12%) or sometimes (33%) on while eating ($P < .001$). Interestingly, although 26% of children reported having a television in their room, only 18% of parents reported that their child had a television in their room ($P < .001$) (Table 2). No significant differences in concordance between child and parents were found in each category of use when compared among race/ethnicity groups.

DISCUSSION

In our sample, reported use of screen media was well below national averages; yet, parents and children generally agreed on daily time spent using various devices. Parents reported fewer minutes per day in nearly all categories of screen use, but there was some discordance for seemingly straightforward reports: television use while eating and presence of a television in the child's room.

Table 2. Child- and Parent-Reported Agreement on TV Use per School Day

	Child (%)	Parent (%)	<i>P</i> Value
When TV is on			<.001
Rarely	24	33	
1–3 h	49	45	
4–6 h	9	12	
7–9 h	2	0	
Usually	9	6	
Other	9	4	
TV while eating			<.001
On, usually	12	11	
On, sometimes	33	25	
Off	55	64	
TV in child's room (yes)	26	18	<.001

Pearson's chi-square test.

Despite acknowledgment that screen use has benefits for education and development, parents may understand recommendations of non-educational use and may have exhibited social desirability bias. It is also likely that parents of 9- to 11-year-old children are unable to quantify all screen media used by their children. Children use screen media without being supervised—for example, in their bedrooms at night. Because parents may not have full knowledge of the kind and quantity of screen use, older children and adolescents may report their screen use and screen presence in their bedroom more accurately.

Our results suggest that the seemingly straightforward recall of screen use and family media use structure, such as whether or not there is a television in the child's room, can vary according to whether the reporter is the parent or the child. As media devices evolve, the conceptualization of "television" may differ between parents and children. Others have found a correlation between parent and child estimates, although they used different questions for parents and children, with children completing a diary log of television watched and parents estimating how much time per week the child watched television on a 6-point scale.¹⁸

A major strength of our study was the use of identical questions for both parents and children; however, we were limited by relying on perceptions rather than objective measures of media use and do not have a reference standard with which to compare parent and child reports. We were also limited in our ability to measure differences in content, particularly games and apps, and whether the content was beneficial or detrimental to child health and development. Although most categories were functionally exclusive, there may have been overlap in media use between categories. Given the breadth of screen media available for mobile use, it is essential to advance measurement using electronic monitoring techniques²² to determine unsupervised mobile device and computer/internet usage. Our design did not allow us to deeply examine the content of child screen use, especially that which may not be directly supervised by parents. Research in the rapidly evolving media domain should attempt to precisely measure concurrent use of devices (eg, multitasking, such as using a tablet or phone while watching television) and its influence on health outcomes.

Assessments of concordance between parent and child responses to health-related questionnaires show that levels of agreement vary based on the type of question asked.²³ There is substantial evidence that school-age children, including those as young as 6 years old, can reliably report about their own health.²³ Furthermore, parents tend to inaccurately report their children's behaviors associated with health risks, such as smoking, drinking, and sexual activity.²³ Although reporting time-based behaviors such as screen use may be different than other health risk behaviors, there may be value in estimating screen media use directly from children.

The majority of our study sample was non-Hispanic white, had relatively high income, and was educated. The literature suggests that there are differences in time spent using media depending on race/ethnicity, family income, and parent education.^{13,14} Our inclusion criteria for computer access may have selected for families with higher incomes and less-than-average screen time use. Non-Hispanic black and Hispanic children, children of parents who have no more than a high school education, and children from low-income families spend more time using screen media than Caucasian children, children of parents who have a college education, and children from high-income families.^{13,14} Our sub-analysis by race/ethnicity did not reveal any differences in media use reporting, but our sample size was not large enough to perform reliable secondary analyses. With regard to determining the total amount of daily media consumption, this study should be replicated in more diverse populations that use more screen time, as we acknowledge that our sample may not be representative of the US population or academic pediatric practices. Ongoing work in this area should attempt to understand how numeracy, cultural differences, and conceptualization of time affect reporting of screen media use.

CONCLUSIONS

Recent nationally representative data suggest that nearly one fifth of older adolescents report more than 5 hours per school day of media use on devices other than television (ie, smartphones, tablets, videogames, and computers), a level of use associated with increased sugar-sweetened beverages consumption, inadequate physical activity, and obesity.²⁴ Our results suggest that media researchers may be able to ask school-age early adolescents directly about their screen media usage. As mobile screen use and multitasking become routine among children of all ages, an increased focus on the nuances of beneficial and detrimental types and quantities of screen use is necessary. We hope that our research prompts deeper investigations into screen media use and its intricate relationship to child health.

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