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ORIGINAL RESEARCH

Parental Influence on Youth Media Use

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Abstract

Children and adolescents are frequent media users and research regularly examines the consequences of such use. This research, however, often does not examine parental factors relating to youth media use. Framed by Bronfenbrenner's ecological systems theory, this study examines the role of media in the child's ecological system by describing how parent attitudes, behaviors, and own personal media use are related to child media use. This study used data from a nationally representative sample of U.S. parents of 8- to 18-year-olds ($N = 1819$). This study documented that parents' attitudes toward technology are mixed, suggesting that while parents are worried about certain aspects of technology use, they also see the positive outcomes of use for both their children and their own lives as parents. Further, the data indicated that parents of children and adolescents were heavy and regular media users themselves and that parent media use and media attitudes were strongly related to youth media use, even during adolescent years. These findings shed light on youth media use and suggest that, to fully understand media use among young people, researchers must also consider how parent factors influence the media ecology of the child's home environment.

Keywords Parents · Media use · Home ecology · Attitudes · Youth media use

Highlights

- Parent attitudes toward child technology use are relatively positive overall.
- Parent attitudes toward child technology use vary by the type of technology.
- Parents are heavy media users and parent media use is related to child media use.
- Many parents reported having rules about the content their children consume.

Historically, there has been concern about adolescent television use (see Wartella and Reeves 1985) and in particular its relationship to sexual attitudes and behaviors (e.g., Gottfried et al. 2013), body image (e.g., Field et al. 2005), violence (e.g., Huesmann et al. 2003) and other negative outcomes. Due to increased adolescent use of a range of media platforms beyond television (Common Sense Media 2015), concerns have been expanded to focus on additional areas of adolescent media use, including social media, smartphone, tablet computer, Internet, and videogame use (e.g., Gentile et al. 2004; Sasson and Mesch 2014; Woods and Scott 2016). In many of these studies, researchers have studied the media platform and the adolescent largely in isolation from other contexts. From an ecological systems theory approach (Bronfenbrenner 1979), it is important to examine how multiple factors relevant to individuals' lives interact and influence each other to better understand the effects of media on development. Parents are one factor that likely influence youth media use through their own media use behaviors, attitudes, and rules (Vaala and Bleakley 2015). Indeed, Vaala and Bleakley (2015) found that parent computer use and engagement in specific activities were related to child computer use, demonstrating the key role of parents in youth computer use specifically.

The term "media use" refers to a number of different activities that involve the use of media including television viewing, computer, Internet, or online or tablet game use, videogame playing, communication via voice or text on mobile devices, listening to music, book reading, newspaper or magazine reading, among other activities. Not only are

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the types of technologies included in the term "media use" varied but the ways in which youth engage with them differ as well. For example, media use can include instances when adolescents watch recorded educational video documentaries, check online news, chat with peers via text message apps, or browse content on social media sites. This variety in technology access and use can make measuring and interpreting media use challenging. Children and adolescents report high levels of access to media technologies (e.g., computers, televisions, mobile devices, etc.). Listening to music and watching television remain among adolescents' favorite activities (Common Sense Media 2015), but social media sites also are popular media activities for youth. Adolescents report using a variety of social media platforms each day and nearly three-quarters of adolescents report using social media multiple times per week, more than doubling from data collected in 2012 (Common Sense Media 2018).

Despite high rates of youth access to and use of technology, differences do exist as a function of demographic variables, particularly gender, age, and race/ethnicity. Both the Pew Research Center (Lenhart 2015) and Common Sense Media (2015) report that girls are more likely to use social media, while boys prefer to play video games. Further, adolescents (ages 13–17) are much more likely to own their own smartphone (67%) and less likely to own their own tablet (37%) compared to pre-adolescents (ages 8–12; 24% and 53%, respectfully; Common Sense Media 2015). Moreover, total time spent with media differs as a function of race/ethnicity. African American teens spend more than 11 h with media per day compared to Hispanic youth (9 h), and Caucasian youth (8.5 h; Common Sense Media 2015). Therefore, while there are clear differences in child and adolescent media use as a function of demographic variables, it is not clear how these differences manifest themselves in youth's home media environments or why these differences exist.

During adolescence, although peers do heavily influence adolescent attitudes and behaviors (Brown and Larson 2009), parents and the home environment still play an important role in the ways in which many children and adolescents engage with media technologies (Lauricella et al. 2015; Vaala and Bleakley 2015). We have only begun to document the role that parents' media use behavior plays on youth media use (e.g., Bleakley et al. 2013; Vaala and Bleakley 2015). The home environment is a crucial context that must be considered in light of child and adolescent development. Bronfenbrenner (1979) recognized and articulated the multiple contextual layers, or systems, of a child's world that impact development. According to Bronfenbrenner (1979), the child is heavily influenced by the systems closest to them, specifically the microsystem, which includes family members, parents, and peers. Additionally, the microsystem interacts with the child repeatedly and on a regular basis, thereby having a powerful influence on outcomes, experiences, and expectations.

Originally, Bronfenbrenner (1979) theorized that mass media influenced the child as a function of its place in the exosystem and directly through the content that was presented via mass media. According to the theory, mass media is more removed from the child but still exerts an influence, as its content permeates the inner systems (e.g. parents and peers) and trickles down to the child (e.g. Atkin et al. 1991; Bronfenbrenner 1979). However, given the now ubiquitous use and access to media technology, there is debate about whether media still belongs in the exosystem, and if not, where media belongs in the ecological system of the home. Some writers have argued that because youth are such heavy, regular users of these technologies, media should be conceptualized as being part of the microsystem, along with family and peer influence (see Bickham 2015).

Under this view, media may influence the child and adolescent directly due to its regular presence in the lives of youth (see Bickham 2015). However, multiple contexts and environments influence child development (Bronfenbrenner 1979), thus, it is important to examine the way in which parents, even of older children and adolescents, perceive and use media themselves, as they are likely influencing the home media experiences of their children by enacting and enforcing rules, or expressing or modeling their own attitudes and behaviors about media use (Vaala and Bleakley 2015). For example, if parents use media regularly and value the role of media, it is likely that children will both observe their parents engaging in increased media use and be in an environment in which media use is encouraged or supported, or at minimum less penalized. This would in theory create a very different microsystem for those children compared to individuals growing up in a household in which media is less valued or even feared by parents. Thus, it is important to consider parent media attitudes and rules as well as their own use of media in order to understand the family microsystem that may influence the adolescent.

Parent behavior and attitudes have shown to have a direct effect on children and adolescent behavior largely through observational learning of modeled behavior (Bandura 1986). With regard to drug and alcohol use, research shows that parents' attitudes and own use of alcohol are strong predictors of changes in adolescent alcohol use (Ary et al. 1993). While parent monitoring of adolescent behavior is associated with decreased drug and alcohol use, maternal alcohol use positively predicted adolescent alcohol use (Dishon and Loeber 1985). With regard to media use, parent attitudes and own media use are strong predictors of young children's media use (Lauricella et al. 2015).

Beyond modeling behavior, parental rules and behaviors around technology seem to play an important role in how

children and adolescents are impacted by media experiences. For example, parental mediation of media consists of behaviors that parents engage in to restrict, actively mediate, or co-use media with their children (Valkenburg et al. 1999). Recently, a meta-analysis of 57 studies indicated a significant relationship between parent restrictive mediation and child outcomes (Collier et al. 2016), further providing evidence that parent rules and behaviors around media technology influence how youth use technology. Thus, it can be argued that parent attitudes and parents' own use of media will relate to the media use of their children and adolescents by influencing their child's microsystem, much like it has with younger children (Lauricella et al. 2015).

Almost annually, large-scale, nationally-representative surveys examine how different demographic variables (e.g., gender, race/ethnicity) influence patterns of child and adolescent media use in the United States (e.g., Common Sense Media 2015, 2017; Lenhart et al. 2015). These surveys are valuable and should continue so that researchers can track child and adolescent media use over time. We argue, however, that these surveys of older children largely exclude parents who are still heavily involved in their children's lives through late adolescence (Vaala and Bleakley 2015). Therefore, using data collected from a large-scale, nationally-representative sample of parents of children ages 8–18, we examine the role of family demographics as well as parent attitudes and behaviors, and parents' own media use on child and adolescent media use to examine if we see similar patterns with parents of older youth as has been found with parents of younger youth (e.g., Lauricella et al. 2015). We first ask two general research questions that help provide descriptive data about parental attitudes and behaviors regarding technology use in their homes. First, we ask (RQ1): what are parents' general attitudes toward child and adolescent technology use? Second, we ask (RQ2): what rules and monitoring behaviors do parents of older children engage in with regard to their child's media and technology use?

Considering Bronfenbrenner's (1979) ecological systems theory, additional theorizing by Bickham (2015), and research with younger children (Lauicella et al. 2015) as well as adolescents (Vaala and Bleakley 2015), we expect that parents' own media use, as well as their attitudes, rules, and behaviors around monitoring their child's technology use will relate to their children's media use. Therefore, we predict (H1a) a positive relationship between parental attitudes and parent-reported child time spent with technology, as well as (H1b) a negative relationship between parent concerns about child technology use and parent-reported child time spent with technology. Additionally, we hypothesize (H2) that parents who have media rules and engage in monitoring of their child's technology use will report that their children spend less time with technology. Finally, we predict (H3) that the amount of time parents spend using technology will be positively related to reports of their children's technology use.

Method

Participants

The data collection for this project was conducted in collaboration with Common Sense Media and uses the same dataset (with different analyses) as reported in the *Common Sense Census: Plugged in Parents of Tweens and Teens* (Lauricella et al. 2016). Respondents ($N = 1819$) were recruited through GfK's KnowledgePanel© in the United States. Original KnowledgePanel members were recruited using probability-based methods such as address-based sampling and random-digit-dial telephone calls. The use of probability-based recruitment methods for the KnowledgePanel© is designed to ensure that the resulting sample represents the population of the U.S. geographically, demographically (e.g., age, gender, race/ethnicity, income), and in terms of home internet access. Study-specific post-stratification weights were applied once the data were finalized to adjust for any survey nonresponse and to ensure the proper distributions for the specific target population (in this case, parents of 8- to 18-year-olds). An a-priori power analysis for regression models with 15 predictor variables indicated that a sample size of at least 201 is needed to detect at least a small effect (0.1) with a power of 0.8 (Soper 2019), indicating that our sample is sufficient to detect effects both within and across different groups in the overall sample.

Parents in the survey ranged from 19 to 77 years old with an average age of 43 years ($SD = 8.06$). Participants self-identified as the parents or guardians of children and could include grandparents, step-parents, legal guardians, or biological parents. Fifty-six percent of the respondents were female, and 44% were male. Fifty-eight percent of the respondents were White, 11% Black, 22% Hispanic, and 10% were of other or of mixed ethnicity. Parent education ranged from no formal education to a professional or doctoral degree, with 13% having no high school degree, 27% having a high school diploma or GED, 26% having some college or an associate's degree, 21% holding a bachelor's degree, and 10% holding a master's degree or above. Household income ranged from less than $5,000 to $175,000 or more, with 26% reporting a household income less than $40,000, 23% reporting between $40,001 and $74,999, 9% reporting between $75,000 and $99,999, and 31% reporting household income above $100,000.

For the purposes of this study we focused only on "older children" (8–18 years) as Common Sense completes a

separate census on "young children" (ages 0–8). Therefore, all focal children for this project were between the ages of 8 and 18. Forty-five percent of the children were between the ages of 8 and 12 (children) and 54% were between 13 and 18 (adolescents). Fifty-two percent of the focal children were female, and 47% were male.

We obtained informed consent for all respondents. The university's Institutional Review Board approved all study materials. Respondents received a cash equivalent of $5 for their participation; some African American respondents received an additional $5 equivalent to improve response rates among this lower-incidence demographic group as per GfK's traditional incentive program. There are no potential conflicts of interest for the authors of this project.

Procedure

Upon entering the online survey, parents indicated their consent and were directed to the first page of the survey. Here, parents indicated if they were the parent of at least one child between the ages of 8 and 18. If they were not, they were directed to the end of the survey and thanked for their time. If parents reported having a child in the target range, they were next asked to report how many children they had between the ages of 8 and 18, providing the age and gender of each. If parents only had one child within the age range of interest, that child was selected as the focal child for the survey questions. If participants reported more than one child in the age range of interest, the survey program randomly selected one, based on the data provided, and this child became the focal child. Parents then entered the name or initials of their child, and were reminded to answer all survey questions with this particular child in mind. The child's name or initials were inserted into the survey questions (e.g., "Which of the following, if any, belong to [child name/initials]?) so that parents were reminded about the focal child throughout. Parents completed a battery of demographic measures before completing the survey. The survey took approximately 20–30 min to complete. In the present paper, we use data from the following measures.

Measures

Content rules

Parents were asked whether (yes or no) they had rules about the type of content (e.g., storyline, lessons, violence, strong language) that their child is allowed to see or hear when using technology (e.g., computers, video games, television). Seventy-seven percent of parents reported that they had content rules.

Enforcement of time rules

Parents were asked whether they had time rules regarding their children's technology use, and if they did, how regularly they enforced rules about the amount of time their child could spend using technology (e.g., computers, video games, television) on a 5-point Likert scale anchored by (1) *never* to (5) *always* ($M = 3.94$, $SD = 1.36$).

Checking the child's device

Parents were asked how often they checked the content on their child's devices on a 5-point Likert scale anchored by (1) *never* to (5) *always* ($M = 3.02$, $SD = 1.46$).

Technology as a supportive tool

Parents were asked to indicate, using a 4-point Likert scale, their level of agreement or disagreement with eight statements about the impact of technology on children's social skills, experiences, and development. The scale was anchored by (1) *strongly disagree* and (4) *strongly agree*. Statements included: "Technology supports my child's social skills", "Technology helps with schoolwork or education", "Technology increases child's exposure to other cultures", and "Technology allows for expression of personal opinions and beliefs", for example. For this measure, higher scores indicate more positive attitudes toward technology's role as a supportive tool on child development and learning. We used this measure to obtain general attitudes towards technology rather than focusing on specific technologies (e.g., Internet, smartphone, etc.). The responses to all eight items were averaged to create a parent attitude toward technology as a supportive tool variable ($M = 2.87$, $SD = 0.48$; $\alpha = 0.87$). The variable was mean-centered prior to analysis.

Internet use worries

To measure attitudes toward specific technologies, parents were asked to indicate how worried they were about their child's Internet use and experiences when using the Internet. They responded to nine different statements on a 5-point scale anchored by (1) *not at all worried* and (5) *extremely worried*. The nine statements were: (1) receiving/sending sexual images or videos, (2) receiving nasty or hurtful comments from others online (cyberbullying), (3) accessing online pornography, (4) over-sharing personal details of life, (5) spending too much time online, (6) losing the ability to communicate well with other people, (7) being exposed to images or videos of violence, (8) being exposed to images of drugs, alcohol, and tobacco use, (9) being exposed to consumerism (e.g., advertising, content that

emphasizes the importance of material things). The responses to all nine items averaged to create an attitude toward Internet variable ($M = 2.72$, SD = 1.15; $\alpha = 0.94$) with higher scores indicating increased worry.

Attitudes toward social media use

If parents reported that their child had social media ($n = 862$) they were asked about their attitudes toward their child's social media use. Attitudes toward social media use were measured by asking whether social media helps, hurts, or makes no difference on six items using a 5-point scale anchored by (1) *hurts a lot* to (5) *helps a lot*, with (3) indicating *makes no difference*. The six items were: (1) emotional wellbeing, (2) relationships with friends, (3) school performance, (4) physical activity, (5) ability to focus, (6) behavior ($M = 2.86$, SD = 0.58; $\alpha = 0.80$).

Media struggles

Parents were asked to indicate if they have struggles getting their child to turn off their devices. Specifically, they were asked how much they agree or disagree with the statement: "Getting my child to turn off a smartphone or tablet is a struggle." The scale was anchored by (1) *strongly disagree* and (4) *strongly agree* ($M = 2.10$, SD = 0.02).

Parent media use

Consistent with previous large-scale surveys of parents and youth, we asked about media using a measure adopted from previous surveys (see Common Sense Media 2015, 2017; Wartella et al. 2014). Parents reported the amount of time that they spent "yesterday" engaging in the following media behaviors: reading print media, reading on an e-reader, playing games on a video game console, watching shows or movies on a TV set, watching streamed shows or movies (e.g., through Netflix, Hulu, etc.), watching recorded shows or movies (e.g., OnDemand, DVR, etc.), using a computer for work purposes, using a computer for social networking sites, using a computer for browsing websites, using a computer for playing games, using a computer for watching videos, using a computer for listening to music, using a computer for anything else, using a smartphone/tablet for work purposes, using a smartphone/tablet for social networking sites, using a smartphone/tablet for browsing websites, using a smartphone/tablet for playing games, using a smartphone/tablet for watching videos, using a smartphone/tablet for listening to music, using a smartphone/tablet for anything else. Asking for media use behavior "yesterday" allowed us to capture media use across all days of the week with approximately equal numbers of respondents completing the survey on different days of the week (6% completed the survey on Thursday to 22% completed the survey on Tuesday with percentages for all other days falling within this range). We summed the amount of time for each of these individual questions to create a total parent media use variable.

Since modern technologies facilitate media multitasking —i.e., using two or more devices at the same time—there are individuals with total media-time estimates that are quite high, some even in excess of 24 h. We defined media-use outliers as individuals who reported using a *single* device yesterday for more than 24 h. By this definition, 13 parents were outliers in computer usage and 16 parents were outliers in smartphone/tablet usage. The rest of these individuals' time estimates appeared to be credible. Therefore, we replaced these individuals' time estimates for each activity on their outlier devices with the mean time spent on that activity among respondents of the same age, gender, and race. We left all other answers provided by these respondents unchanged. The final parent media use variable was mean-centered before being entered into analyses ($M = 638$ min, SD = 440).

Child media use

Parents were asked to report "to the best of their knowledge" the amount of time in which they thought their child spent doing the following "yesterday": Using a computer, using a smartphone, playing video games on a console, watching TV/VDVDS on a TV, reading print books, magazines, or newspapers, or listening to music. We summed the amount of time for each of these individual questions to create a total child media use variable. We used the same criteria for outliers described above. By this definition, two children were outliers for smartphone/tablet use. The rest of these individuals' time estimates appeared credible. Therefore, we replaced these individuals' time estimates for each activity on their outlier devices with the mean time spent on that activity among respondents of the same age, gender, and race. We left all other answers provided by these respondents unchanged. The final child media use variable was mean-centered before being entered into analyses ($M = 351$ min, SD = 228).

Demographic variables

A set of standard demographic variables were collected as part of the survey and used in the following analyses. Household income was measured as a 19-item categorical measurement ranging from less than $5,000 to $175,000 or more. Child age was measured as a continuous variable and ranged from 8 years to 18 years. Parent age was measured as a continuous variable and ranged from 19 to 77 years old. Child and parent were both coded in the same way with

male coded as 0 and female as 1. Parent race/ethnicity was self-reported by all participants. The term "Black" refers to any respondents who self-identified as Black, non-Hispanic. The term "White" refers to any respondents who self-identified as White, non-Hispanic. The term "Hispanic" refers to any respondents who self- identified as Hispanic. The term "Other" is a collapsed category that includes individuals who self-identified as another racial group or as two or more races, none of which is Hispanic. Where findings are broken out by race/ethnicity, results are only presented for White, Black, and Hispanic parents. Respondents in the "Other" category are included in results based on the total sample but not in results that are broken out by race, because the cell sizes of each individual group in the "Other" category are not large enough to examine differences among them.

Data Analysis

To describe aspects of the home media environment, we first provide descriptive statistics regarding parent attitudes, rules, and behaviors toward technology. Next, we use hierarchical linear regression analyses to examine the relationship between parent attitudes, parent rules, media monitoring behaviors, parents' own media use, and children's media use time.

For each regression, because race was dummy coded, the category "white" was excluded as the comparison group in all tables. Analyses were run with other race categories excluded to determine all race differences and results are included in the text when there were significant differences across other racial groups.

Results

Data from this nationally-representative sample demonstratde that technology access in the homes of children and adolescents was very high. Overall, more than 80% of families with children between the ages of 8 and 18 owned a TV, smartphone, tablet, and videogame system. Youth ownership of personal mobile technology devices was high as well, and increased significantly with age (see Table 1).

Table 1 Technology access and ownership in the home

		Personal device ownership		
	In the Home	Tweens (8–12)	Teens (13–18)	Among all
Smartphone	91%	28%	79%*	56%
Tablet	80%	58%	45%*	51%
Video game system	81%	39%	51%*	45%
TV	98%	35%	49%*	43%
Laptop	74%	14%	43%*	30%
Portable game player	39%	31%	28%	29%
Desktop computer	58%	8%	13%*	11%
E-reader	30%	9%	11%	10%
Cell phone without Internet	22%	5%	8%*	7%

*Indicates a statistically significant difference between child and adolescent technology ownership at the $p < 0.05$ level

Attitudes Toward Technology

Overall, most parents held positive views about the role of technology to support their children's education and career opportunities. A large majority of parents agreed that technology positively supports their child's schoolwork and education (94%). Parents also felt that technology supports their child in learning new skills (88%) and preparing them for 21st-century jobs (89%). Parents agreed that technology increases their children's exposure to other cultures (77%), allows for the expression of their children's personal opinions and beliefs (75%), supports their children's creativity (79%), and allows their children to find and interact with others who have similar interests (69%). Only 54% of parents agreed that technology supports their children's social skills. On average, parents held positive general attitudes about technology ($M = 2.87$, SD = 0.48).

Parents expressed concern over their children's Internet use, but overall the majority of parents were not "extremely" or even "moderately" worried about whether their child was spending too much time online, or what types of content their child might be exposed to (see Table 2). Importantly, we saw a difference in parental concerns about Internet use as a function of child age. Parents of children were significantly more likely to say that they were either "moderately" or "extremely worried" about their child's internet use compared to parents of adolescents (see Table 2).

Parents of children who had social media accounts ($n = 862$) largely responded that their children's use of social media "makes no difference" on a variety of outcome variables. Specifically, a majority of parents thought that social media use "makes no difference" in their children's emotional well-being, school performance, ability to focus, and behavior. The remainder of parents were relatively equally split as to whether they thought that social media "helps" or "hurts" (see Table 3).

Parenting Behaviors and Media Rules

Most parents (77%) reported that they have rules about the content that their children can consume, such as rules about the storyline lessons, violence, or strong language. Of the parents who had content rules for their children's

Table 2 With respect to Internet use, percent of parents who are "moderately" or "extremely" worried about the following:

	Among all	Age of child	
		8–12	13–18
Child spending too much time online	43%	47%*	39%
Child over-sharing personal details	38%	42%*	34%
Child being exposed to images/videoes of violence	36%	44%*	29%
Child accessing online pornography	36%	42%*	31%
Child receiving hurtful comments	34%	39%*	31%
Child receiving/sending sexual images	33%	37%*	30%
Child being exposed to drug/alcohol use	32%	38%*	27%
Child being exposed to consumerism	30%	36%*	24%
Child losing ability to communicate well	27%	31%*	24%

*Indicates a statistically significant difference between parent concerns about the Internet between children and adolescents at the $p < 0.05$ level

Table 3 Parent perceptions of the effects of social media on child outcomes, among those whose child has a social media account

Child Outcomes	Percent of Parents Who Think Their Child's Use of Social Media:		
	"Helps"	"Hurts"	"Makes no difference"
Emotional well-being	18%	20%	62%
Relationships with friends	44%	15%	41%
School performance	23%	22%	55%
Physical activity	7%	50%	43%
Ability to focus	9%	35%	56%
Behavior	10%	24%	66%

technology use ($n = 1402$), only one-third of those parents differed their rules based on the technology the child used. Of parents who indicated that they had time rules ($n = 1148$) about their children's use of technology (e.g., television, computers, video games), 62% enforced these rules "all" or "most of the time." Just under one-quarter of parents (23%) reported that they "never" check the content on their child's devices; however, a similar number of parents (22%) reported that they "always" check the content on their child's devices.

In summary, and in answer to RQ1 and RQ2, these descriptive data demonstrated among a nationally-representative sample that media technologies were readily available in the homes of 8–18-year-old American children and adolescents. Further, parents saw great potential in technology as a supportive tool for their children, and in general, did not seem to be too concerned about their use of the Internet or social media. Further, a majority of respondents indicated that they enforced both time and content rules, although these rules did not seem to differ across different media technologies, and many parents reported that they check their children's devices regularly.

Table 4 Hierarchical linear regression analysis for variables predicting child media use

Child Total Media Time	Model 1 $n = 1671$ ß	Model 2 $n = 1165$ ß	Model 3 $n = 1165$ ß
Child Age	19.29**	17.33**	15.07**
Child Gender	1.81	12.37	14.38
Parent Age	1.32	2.88*	2.27
Parent Gender	52.97**	38.10*	29.62*
Parent Education	−14.31	−0.77	3.50
Income	3.08	−2.87	−1.40
Black	97.62**	85.52*	34.64
Hispanic	44.73	14.83	3.69
Mixed/Other	10.19	39.33	19.93
Tech as Support	68.58*	56.88**	31.37
Internet Worries	−0.034	−3.80	−1.35
Device Struggles	25.64**	27.57**	17.26
Content Rules	–	−37.06	−58.94
Enforcement of Time Rules	–	−17.76*	−20.08**
Parent Total Time		–	0.20**
R^2	0.11	0.13	0.23

*Indicates a statistically significant difference at the $p < 0.05$ level

**Indicates a statistically significant difference at the $p < 0.01$ level

Youth Media Use

We used hierarchical linear regression analyses to test all hypotheses. As suggested above, we were interested in the ways in which demographic variables, parent attitudes, parent behaviors, and parents' own media use were related to children's media use. Therefore, we included these main variables in separate steps of the hierarchical linear regression to determine the differential relations of these variables on our main outcome variable. In model 1, we included demographic and parent attitudes as independent variables. In model 2, we added in parent media use rules as an independent variable, and in model 3 we included parents' own media use time as an independent variable (see Table 4).

Model 1 was significant, $R^2 = 0.11$, F (12, 1659) = 100.56, $p < 0.01$ (see Table 4). Child media use was positively predicted by child age, parent attitudes of technology as a tool, parent technology concerns, and parent struggles with controlling the child's device. Black parents, as well as mothers, reported significantly higher child media use. There was a positive relationship between parent

technology attitudes and children's media use; thus, H1a is supported. There was no significant relationship between parent concerns and child media use, therefore, H1b is not supported. In Model 2, parental media use rules were added to the model. All of the previous variables remained significant, and parental enforcement of time rules was negatively related to child media use time. Thus, H2 received support. For Model 3, parent media use time was added to the model, and the overall model remained significant, $R^2 = 0.23$, F (13, 1658) = 15.17, $p < 0.01$. With the addition of parent media use time to the model, only child age, parent gender, and parent media use remained significant predictors of child media use. The addition of parent media use into the model nearly doubled R^2 term resulting in $\Delta R^2 = 0.10$, which supported H3, predicting that parent media use would predict youth media use.

Discussion

Media technologies, including televisions, smartphones, and computers, have become an integral part of young people's lives and use has been associated with a range of negative outcomes (e.g., Lin and Tsai 2002; Morahan-Martin and Schumacher 2003). The results from this nationally-representative survey provide empirical data about variables that are crucial to consider, but are often not examined, when focusing on media use and youth within this age range. Specifically, this study indicates that parent attitudes toward technology use vary by the context and type of technology being used, but overall are relatively positive. Moreover, this study demonstrates that parents' own media use behavior is highly correlated with their children's media use behavior even through adolescence, which is consistent with earlier findings by Vaala and Bleakley (2015) in the context of computer use. These findings confirm the importance of considering aspects related to the greater context in which children are growing up and how the contexts in which they live play a role in their own media use experiences.

There are two main findings from this study. First, youth media use behaviors are related to a variety of factors including parental media attitudes, media rules, and most strongly, parents' own media use. This is consistent with previous research on parent media use and young children's media time (Lauricella et al. 2015), but provides new insight into the important role that parental media use plays in the lives of older children and adolescents. This is important to note as our study and others document that adolescent ownership of their own personal devices increases with age yet their behaviors with regard to time use are still heavily related to their parents' media use regardless of age. These findings suggest that device access and ownership only partially explain adolescent media use behaviors.

More substantially, many parent-related factors influence and predict youth media use, supporting the theoretical argument that a variety of aspects of the child's home media ecology influence how the child uses technology. Prior to including parent media use time in the models, parents who viewed technology as having a more supportive role on youth, those who report that they struggle getting their children to put down their devices, and those that do not enforce media time rules reported having children who spent more time with technology. Once parental media use was added into the model, only parent gender, enforcement of time rules, child age, and parents' own media use predicted child's media use. Each of these variables detail aspects of parents and the home media environment that play a direct role in child's media use. Consistent with previous research on children under age 8 (Lauricella et al. 2015), this study demonstrates that even among older children and adolescents who presumably have more independence and choice with their own media use, parental media use time is still the strongest predictor of youth media use time. This mirrors the results found by Bleakley et al. (2013) which found that parent TV use was highly correlated with child TV use from ages 5 to 17 but expands the findings to other media use variables within the analysis as well as parental attitudes and media use rules.

Second, this study documents important nuances about parent attitudes toward technology that likely influence the home media environment. While parents admittedly have concerns, especially regarding Internet use with younger children, parents also see the positive ways in which technology is supporting their children. This provides a more nuanced understanding of the struggles that parents face when making decisions about their adolescent's media use. Furthermore, while popular press has focused on parental concerns about adolescent technology use and behavior, calling attention to the "dangerous levels of cell phone use" (Ungar 2018), and regularly using the term "addiction" (Homayoun 2018; Walton 2018), parents in this study appear to hold a more balanced perception of the costs and benefits related to their children's media use, which likely influences their parental practices and behaviors regarding media use in their home.

Coupled with recent findings from Common Sense Media Reports (2019a, 2019b), these data suggest similarities and differences in terms of attitudes among parents around the world. For example, parents of adolescents in Mexico report greater level of concern about their child's media use in comparison to parents in the current sample, and other research reports that they feel that their children are distracted by the use of media (Common Sense Media 2019a). Conversely, and similar to the data reported here,

parents of adolescents in the United Kingdom report that media technologies are important in the lives of their children, and see value in their use (Common Sense Media 2019b). Taken together, these studies suggest that researchers must take cultural differences into account to fully understand the role of parents, parent media attitudes, and parents' own media use on the media use of adolescents.

Theoretical Implications

While adolescence is a developmental period that is heavily influenced by peer behavior and attitudes (Brown and Larson 2009), parental behaviors, attitudes, and rules still heavily influence child and adolescent behaviors. Users of Bronfrenbrenner's (1979) ecological systems theory have struggled to determine where the influence of media should be situated within the model (see Bickham 2015). Indeed, research has demonstrated many ways in which media influences children and adolescents through direct use (Field et al. 2005; Huesmann et al. 2003); however, less research has considered how parents, as part of their children's microsystem, can influence older children's and adolescents' media use. The exception to this is the body of research on parent mediation of their children's and adolescent's media use at the actual moment of exposure (see Krcmar and Cingel 2016; Nathanson 2002). This is valuable research, but it tends to consider the role of parents only in the moment of media use or exposure, rather than examining the greater influence that the parent may have over time though the way that they integrate media into the home environment.

The findings of the present study extend our understanding of how parents influence youth media use patterns. First, it is clear that parents are themselves active media users, spending about 10 h per day with media, not unlike children and adolescents (Common Sense Media 2015; 2018), and their own media use is significantly related to their children's media use. When considering the home media ecology, parental media use, attitudes, and rules are important factors to explore as they likely act as proximal processes or the reciprocal factors that over time continue to influence the child and their environment. Parents who have more positive attitudes toward media use may engage in media use in their home more often, thus providing models of media use for their children. The present study suggests that, in order to fully understand adolescent media behaviors, researchers must consider the role of parents in integrating and normalizing media behaviors in the home. Beyond direct modeling behavior, parents have a powerful influence on the home environment in which their children grow up in and this likely extends to the home *media* environment (e.g., Jordan 1992; Lauricella et al. 2015), even as children age into adolescence. For example, the more parents utilize media themselves, the more media becomes a salient part of the child's microsystem, or closest layer of influence (Bronfenbrenner 1979).

Thus, the home media ecology seems to relate to child and adolescent media use. Our data support this conclusion in the following ways. First, the data demonstrate that parents who are heavier media users have children who spend more time with media. Second, parents who have more positive attitudes toward technology have children who spend more time with media, although concerns about child media use are not related. Importantly, these parent-level variables explain significantly more variance in children's media use than a number of demographic predictors that have been used in previous studies. Therefore, these data suggest that previous research focusing on demographic differences may only be reporting a portion of the overall story. Youth media use does differ as a function of key demographic variables but it appears that it is not because a child is low-income or of a particular race/ethnicity that they spend more time with media. Rather, some children spend more time with media because their parents simply value it more and use it more themselves.

Limitations

This study provides insight into the important role of parents and the home media environment on youth media use behaviors but is not without limitations. First, this is a parent self-report survey, thus we are limited in our interpretation of media use times, as this is a difficult question for parents to answer regarding their own media use time and that of their adolescent. Moreover, measuring media use as a collective variable has its limitations as we lack detailed information on the content and ways in which both parents and adolescents are using the media. Additionally, given that we are relying on the same person to report their own media use time and that of their child, there is potential for these responses to be related based on an external variable that is not accounted for or measured in our dataset. Relatedly, we know there are challenges to self-report measurements of media use time given the vast amount of time that is now spent on various devices. Second, while we included many demographic, attitudinal, and behavioral variables in our model, we are still limited in the variables we can use as a proxy of home media ecology. Other variables related to the child's peers, school environment, cultural background, and others are not included in the model, and should be considered in future research. In this paper, we have argued that it is important to consider parent factors, as part of the child's microsystem, to understand their use of media technologies, but Bronfenbrenner's model suggests that each of the systems are influencing the child concurrently; thus, a

more complex model should be examined in future studies to further explicate the role of child, family, and other environmental factors in children's media use. Despite these limitations, we did use data from a probability sample of American parents, which clearly indicate that parent variables are important predictors of child media use; therefore, future research must continue to examine such variables and their relation to child and adolescent media use.

In conclusion, using a nationally-representative sample of parents, this study documented the relation between parental-level variables and child and adolescent media use and demonstrated that the context of the home environment and the media use behaviors of parents impacts adolescents and their own media use behaviors. This study demonstrates that variables beyond those directly related to the adolescent are important to consider when trying to both understand what factors predict media use. We hope that future research will continue to consider media use from an ecological perspective, and further examine how family and home context are related to the effect that media has on children and adolescents.

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Author Contributions ARL: designed the survey and oversaw the data collection process in collaboration with Common Sense Media's Director of Education, Michael Robb, conducted the statistical analyses and co-wrote the paper with second author DC. DC: co-designed the survey, supported the statistical analyses, and co-wrote the paper with second author ARL.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval The original survey and study was approved by Northwestern University's Institutional Review Board and adhered to the approved ethics of the institution.

Informed Consent All adult participants completed an informed consent for themselves prior to completing any survey questions.

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