See the video abstract at jdbp.org

Association Between Television Viewing and Parent-Child Reading in the Early Home Environment

Kiren S. Khan, PhD,* Kelly M. Purtell, PhD,*† Jessica Logan, PhD,* Arya Ansari, PhD,‡ Laura M. Justice, PhD*§

ABSTRACT: ***Objective:*** **This study examines whether there is an association between time spent by preschoolers in parent-child shared book reading versus TV viewing in two distinct samples.** ***Methods:*** **Data were used from both the preschool wave of the Early Childhood Longitudinal Study Cohort, a nationally representative sample of 4-year-olds (N = 8900), as well as a low-income, rural sample of children enrolled in the Preschool Experience in Rural Classrooms study (N = 407). Information regarding frequency of shared book reading and daily TV consumption was obtained through caregiver report. A regression approach was used to estimate how the frequency of parent-child book reading accounted for variance in TV consumption. Estimated marginal mean values were then compared for the amount of TV viewed by children who were reported as being read to daily, frequently, occasionally, and not at all.** ***Results:*** **Parent–child book reading was negatively associated with the amount of TV viewed by children in both samples. Specifically, television consumption was significantly lower for children who were read to daily as compared to those who were read to occasionally. This inverse association was not moderated by contextual factors including maternal education, household size, and composition, or time spent in nonparental care.** ***Conclusion:*** **This study provides empirical support for an inverse association between TV viewing and parent-child book reading activities. Implications for policy and practice are discussed.**

(*J Dev Behav Pediatr* 38:521–527, 2017) **Index terms:** screen time, television viewing, reading, preschoolers.

The home environment is the primary context in which children develop the linguistic and social skills necessary for later school success. Many efforts to study children's home environment have focused on the importance of children's engagement with books, especially as part of parent-child reading routines, as crucial determinants of school success. At the same time, data show that 99% of U.S. families with children 6 years or younger own at least 1 TV, and strikingly, 43% of these children view TV for at least 2 hours on a typical day.[1] Indeed, for children between the ages of 4 and 6 years, the average time spent watching TV on a typical day is 59 minutes, compared with reading books (40 min), listening to music (48 min), and playing video games (6 min). This snapshot of young children's consumption of media indicates that TV viewing is an important and pervasive element of the home environment. Furthermore, whereas parent-child shared book reading has consistently been linked to gains in early language and literacy skills,[2–4] less positive effects have been reported for TV viewing in early childhood.[5] In fact, recent research has linked excessive TV watching to obesity,[6,7] irregular sleep patterns,[8] and less prosocial behavior,[9,10] leading the American Academy of Pediatrics (AAP)[11,12] to recommend that parents restrict their children's screen time (including TV, video game, and computer use) to 1 hour of coviewed, high-quality television programming per day.[13]

Some experts assert that parental mediation around TV viewing may buffer some of the negative effects reported in the literature.[14] However, recent research examining maternal responsiveness to children during various activities showed that children experienced substantially less frequent and responsive forms of communication and a higher percentage of noncontingent talk during TV viewing.[15] By contrast, mothers were significantly more likely to ask questions, imitate child responses, and provide appropriate contingent responses to their children during parent-child book reading. Thus, although educational TV may have the potential to support rich dialogue between parents and children, empirical evidence indicates otherwise.

If TV content is not favorably exploited for its educational value, then a popular view among developmental psychologists and communication theorists is

From the *Crane Center for Early Childhood Research and Policy, The Ohio State University, Columbus, OH; †Department of Human Sciences, The Ohio State University, Columbus, OH; ‡Center for Advanced Study of Teaching and Learning, University of Virginia; §Department of Teaching and Learning, The Ohio State University, Columbus, OH.

Received September 2016; accepted May 2017.

Supported by Grant R305A080459 from the Institute of Education Sciences.

Disclosure: The authors declare no conflict of interest.

The opinions expressed are those of the authors and do not necessarily represent views of the Institute or the U.S. Department of Education.

Address for reprints: Kiren S. Khan, PhD, Crane Center for Early Childhood Research and Policy, The Ohio State University, Columbus, OH 43210; e-mail: khan.518@osu.edu.

that TV viewing may take time away from intellectually demanding, creative, imaginative activities[16] as well as physical activity and social interaction.[17] Thus, the ways in which parents structure children's time spent watching TV versus engaging in other activities such as book reading and play[18] in the early years before school entry may have important consequences for children's educational, social-emotional, and health outcomes. The existing literature examining interrelations between TV viewing and parent-child book reading has not found significant associations between these activities in children between 3 and 5 years[18]; however, estimates for parent-child reading activities were based on time spent reading or being read to on particular days rather than patterns of shared book reading across a longer period of time.

Supporting the notion that parent-child book reading and TV viewing patterns may be associated, there is evidence for variation in the type and amount of media use in the homes of children with varying levels of reading risks. Specifically, kindergarten children considered most at risk of reading difficulty based on early reading abilities were found to spend less time reading, showed less interest and enjoyment in reading, had fewer books available to them, and watched more TV than their peers who were at moderate to no risk of reading difficulties.[19] The ways in which parents structure and mediate literacy activities and media use may also vary based on cultural beliefs regarding the importance and value of these activities. For instance, parents with higher educational expectations for their children are more likely to take on a "family as educator" role in supporting children's learning, and consequently engage children in more literacy-related activities.[20]

Other contextual factors that may influence media use and shared book reading frequency include time spent in other activities such as in child care, as well as additional demands on the parent such as being a single parent. Specifically, it is possible that there is a pattern of greater TV viewing and less parent-child reading in single-parent households or households that include a greater number of dependents because of additional time constraints on the parent.[21] Research further suggests that children in child care centers are exposed to significantly less screen time than those at home or receiving home-based care.[22]

Given the importance of time spent in various activities in the home on children's subsequent cognitive and social-emotional development, this study seeks to examine possible contingencies between parent-child book reading and children's TV viewing. An important contribution of this study is an examination of the influence of specific contextual factors including maternal education, household composition, and time spent in daycare on the association between TV viewing and parent-child book reading. Specifically, this study addressed the following questions: (1) Do families that engage in parent-child book reading also encourage TV viewing, or is an inverse association observed such that more time spent engaged in literary activities is associated with less TV viewing? (2) Is the association between TV viewing and parent-child book reading different in single-parent households, households of mothers with higher educational attainment, larger households, and for children attending daycare? This study uses the preschool wave of data from the Early Childhood Longitudinal Study Birth Cohort, allowing for inferences at the population level, as well as a comparison with associations observed in a rural, Appalachian sample to address the research questions in multiple samples and increase generalizability of findings.

METHODS

Population and Study Design

Nationally Representative Sample

Our national sample was drawn from the Early Childhood Longitudinal Study Birth Cohort (ECLS-B) (n = 10,700; Snow et al., 2009). The initial sample of children excluded those who had died, those who had been adopted after the issuance of the birth certificate, and children who were born to a mother younger than 15 years of age. Children who met these criteria were then followed longitudinally at 9 months, 2 years, 4 years (preschool), and 5 years of age (kindergarten). Data were collected from multiple informants including parent and teacher interviews as well as direct assessments of children. For the purposes of this study, we focus on the preschool wave of data collection and on the 8900 children who had a valid statistical longitudinal weight through the end of preschool (per Institute for Education Sciences/ National Center for Education Statistics [IES/NCES] regulations, all sample sizes have been rounded to the nearest 50).

On average, children in the ECLS-B were 4.37 years of age during the preschool year (SD = 0.35, range 3.67–5.44), with an even distribution of males (49%) and females (51%).

Weighted descriptives also revealed that a little over half the children were identified as white (55%); the remaining children were identified as African-American (14%), Latino (25%), or other (e.g., Asian/Pacific Islander, American Indian/Native Alaskan, 6%). Approximately 6% of children were receiving special education services during the preschool year. With respect to socioeconomic status, 16% of mothers had less than a high school education, 27% had a high school degree, 31% had some college experience, 15% had a bachelor's degree, and 11% had some graduate school experience. Forty-three percent of families had an annual income of less than $35,000, whereas 30% had an annual income that ranged from $35,001 to $75,000, and 27% of families had a household income that exceeded $75,000.

Rural Sample

A total of 506 children were enrolled in the Preschool Experiences in Rural Classrooms (PERC) study in their preschool year as part of a cluster randomized controlled trial (RCT) investigating the impacts of an early-literacy curriculum implemented in preschool programs. Eligible

programs were located in rural, Appalachian communities in 2 states and prioritized enrollment for children from low-income homes (e.g., Head Start). From each enrolled classroom (n = 99), 5 children were randomly selected for participation from those for whom caregiver consent was provided. Data included in this study were collected before the beginning of the RCT. After missing cases on the variables of interest in this study were deleted, the total number of participants dropped to 407 children.

The average age of children was 4.34 years in the fall of the preschool year (SD = 0.47 yr, range = 4–5 yr) with slightly more girls (54%) than boys (46%). Most children were white, non-Hispanic (n = 383, 94%), with 7% of children identified as African-American (n = 28), and 4% of children identified as either Hispanic, Asian/Pacific Islander, American Indian/Native Alaskan, or other (n = 17). Fewer than 2% of the children were receiving special education services or were considered to be English language learners.

In terms of maternal education, most mothers had a high school diploma as their highest degree earned (n = 227, 56%). Fewer mothers had not completed high school (n = 40, 10%), and only a few had obtained a university degree (n = 40, 10%). Moreover, 74% of families had an annual income of less than $35,000 (n = 291), whereas 16% had an income of $35,001 to $65,000 (n = 64), and 10% had an annual income that exceeded $65,001 (n = 39).

Measures

Frequency of Parent-Child Shared Reading

In both samples, a parent questionnaire was administered to parents when their children were in preschool and included items intended to assess the home learning and language environment. To assess frequency of reading, parents reported the frequency with which they read to their children in a typical week in both samples. In the ECLS-B, response options were 1 = not at all, 2 = once or twice, 3 = 3 to 6 times, and 4 = every day, whereas response options for PERC were 1 = never, 2 = sometimes, 3 = a lot, and 4 = all the time. Although the response options for the 2 samples do not overlap perfectly, the 4-item scales correspond fairly well.

Children's TV Viewing

In both samples, parents also reported on their children's TV viewing concurrent to reports of parent-child shared reading. Specifically, parents reported the number of hours on a typical weekday (i.e., Monday through Friday) their children watched TV.

Covariates

All multivariate models controlled for maternal education, child gender, household size, household composition (2 parent households, 2 parents plus other adults, single parent plus other adults, and single parent households), and time spent in daycare. Maternal education was assessed on a 9-point scale in the ECLS-B (1 = eighth grade or below and 9 = doctorate degree) and on an 8-point scale (1 = some high school but no diploma and 8 = doctoral degree) in the PERC sample. As per recommendations for developmental research,[23] maternal education was selected as a proxy for socioeconomic status.

Statistical Analyses

To estimate the association between parent-child book reading and children's TV viewing, bivariate correlations were calculated for the variables of interest. For the ECLS-B data, a regression model was estimated using Mplus version 7.[24] All models included the following: (1) clustering and stratification variables to adjust standard errors that result from the clustered sampling frame; (2) full information maximum likelihood estimation to address missing data; and (3) sampling weights to ensure that results were nationally representative. For the PERC sample, a regression model was estimated in SPSS. To account for the ordinal nature of the parent-child book reading variable, we next included it as a categorical predictor in the regression analyses for both samples, allowing us to estimate marginal mean values for TV viewing across the 4 reported book-reading frequencies.

RESULTS

On average, children viewed approximately 2 hours of TV per day in both samples (Early Childhood Longitudinal Study Birth Cohort [ECLS-B]: M = 2.35, SD = 2.46; Preschool Experience in Rural Classrooms [PERC]: M = 2.17, SD = 1.12), and the modal response was parents reporting reading to their child daily in the national sample and reading to their child a lot in the rural sample. When looking at the breakdown for each reading frequency, we found that in the ECLS-B sample, 23% of parents never read to their child; 26% of parents read once or twice a week to their child; 33% of parents read to their child three to 6 times per week; and 39% of parents read to their child every day. In the PERC rural sample, we found that 1% of parents never read to their child; 20% of parents sometimes read to their child; 46% of parents read a lot to their child; and 34% of parents read all the time to their child.

Bivariate analyses indicated that the frequency with which parents read to their child was negatively associated with TV viewing (Table 1). Moreover, across both samples, maternal education was positively associated with reading frequency and inversely related to TV viewing. Finally, in the ECLS-B, we found that girls were read to slightly more often than boys, but similar patterns were not documented in the PERC sample.

Multivariate analyses revealed that the frequency with which parents read to their child was negatively associated with TV viewing in both the ECLS-B (B = −0.25, SE = 0.05) and the rural sample (B = −0.25, SE = 0.08). In addition, lower maternal education was associated with significantly higher levels of TV viewing (see Model 1 of Table 2). Specifically, reading frequency explained a significant 2.3% of variance (p = .002), and

Table 1. Descriptives and Bivariate Correlations Among Focal Variables for the 2 Samples

Variable	M (SD)	1	2	3	4	5
National sample						
Reading frequency	3.07 (0.86)	1.00				
Television hours	2.35 (2.46)	−0.15***	1.00			
Mom education	4.36 (1.90)	0.37***	−0.21***	1.00		
Child female	0.49 (0.50)	0.05***	−0.01	0.01	1.00	
Household size	4.54 (1.39)	−0.09***	0.05***	−0.15***	−0.01	1.00
Hours in daycare	22.81 (19.73)	−0.06***	−0.06***	0.08***	0.01	−0.16***
Rural sample						
Reading frequency	3.13 (0.73)	1.00				
Television hours	2.17 (1.12)	−0.18**	1.00			
Mom education	3.16 (1.54)	0.13**	−0.15**	1.00		
Child female	0.54 (0.50)	0.03	0.02	−0.03	1.00	
Household size	4.37 (1.29)	−0.052	−0.70	−0.131**	0.025	1.00
Hours in daycare	22.37 (9.52)	0.021	−0.073	0.002	−0.075	0.007

**$p < .01$, ***$p < .001$.

maternal education contributed an additional 1.3% increase in variance in TV time ($p = .023$) in the PERC sample. Similarly, reading frequency explained a significant 2.3% of variance ($p < .001$), and maternal education explained an additional 2.7% of variance in TV time ($p < .001$) in the national sample. Child gender and household size were not significantly associated with TV viewing in either sample.

Table 2. Regressions Predicting the Frequency with Which Children View Television in the 2 Samples

	National Sample	Rural Sample
	B (SE)	B (SE)
Model 1		
Reading frequency	−0.248 (0.044)***	−0.204 (0.075)**
Mother's education	−0.228 (0.022)***	−0.082 (0.036)*
Child female	−0.006 (0.068)	0.044 (0.111)
R squared	0.050	0.036
Model 2		
Reading frequency	−0.253 (0.044)***	−0.269 (0.078)***
Mother's education	−0.205 (0.021)***	−0.091 (0.038)*
Child female	−0.003 (0.067)	−0.024 (0.113)
Household size	−0.004 (0.033)	−0.088 (0.049)
Two parent HH+	0.238 (0.155)	−0.305 (0.240)
Single parent HH	0.146 (0.142)	0.091 (0.154)
Single parent HH+	0.366 (0.148)*	0.071 (0.193)
Hours in daycare	−0.007 (0.002)***	−0.009 (0.006)
R squared	0.054	0.079
Model 3 (Interactions)		
Mother's education × reading	0.000 (0.027)	0.028 (0.055)
Household size × reading	0.034 (0.033)	0.062 (0.076)
Two parent HH+ × reading	−0.002 (0.143)	−0.105 (0.297)
Single parent HH × reading	−0.207 (0.109)	−0.115 (0.225)
Single parent HH+ × reading	0.171 (0.154)	0.043 (0.262)
Hours in daycare × reading	−0.001 (0.002)	−0.003 (0.008)

*$p < .05$, **$p < .01$, ***$p < .001$.

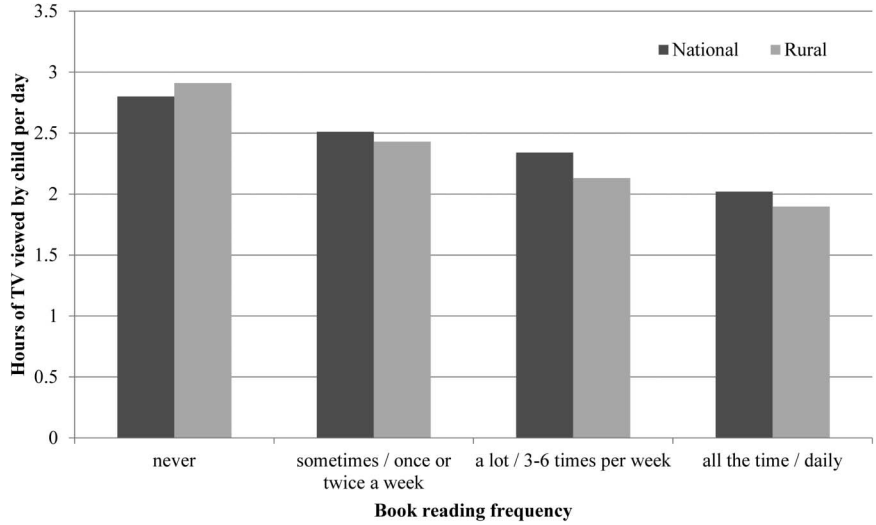

Figure 1. Association between television-time and book-reading frequency in the ECLS-B (national) and PERC (rural) samples.

By contrast, time spent in daycare and single parent households were significantly associated with more TV viewing in the national sample but not in the rural sample (see Model 2 of Table 2). All covariates were also tested for interactions with shared book reading, and none were found to be significantly different than zero (see Model 3 of Table 2). In other words, the inverse association between shared book reading and TV viewing did not vary as a function of mothers' educational attainment, household size, parenting type, or time spent in daycare in either sample.

Having established the inverse association between TV viewing and the frequency of parent-child book reading and to account for the ordinal nature of parent-child book reading, we next included it in the analyses as a categorical variable. Estimated marginal mean values were calculated and are reported in Figure 1 for both samples. Again, similar patterns were observed across the 2 samples, with hours of TV viewed daily decreasing as reading frequency increased from "never/not at all" to "sometimes/once or twice" to "a lot/3 to 6 times" to "all the time/every day" (Fig. 1). In the ECLS-B sample, pairwise comparisons further indicated that children who are read to every day watched significantly less TV ($p < .05$) than the remaining 3 groups. In the PERC sample, significant differences in TV viewing were only observed for children who were read to sometimes as compared with children who were read to all the time. As only 2 children were never read to in the rural sample, mean comparisons with this group were not meaningful.

DISCUSSION

The home context is critically important to the development of young children.[25] Given the importance of early childhood to long-term health and development, a better understanding of children's contextual experiences is needed to promote positive development in the future. With this in mind, we examined how 2 important contextual experiences, time watching TV and time reading with parents, are related. Our rationale for choosing these variables is 2-fold. First, each of these experiences has been repeatedly linked to children's health, learning, and development,[2–10] and thus constitute important aspects of their lives. Second, they both have important ramifications for public health and have been targets for policy statements by the American Academy of Pediatrics.

We examined associations between TV viewing and parent-child shared reading in 4-year-olds using 2 large datasets and found strikingly similar patterns. The more parents reported reading to their children, the less time they reported that their children spent watching TV. Although the overall mean number of hours spent watching TV was approximately 2 hours per day, children whose parents read to them daily averaged less than 2 hours. Conversely, parents who read less frequently or not at all reported that their children watched more than 2 hours per day. In fact, for parents who reported not reading to their children at all, the average hours of TV watching was approximately 3 hours daily in both samples. This provides strong evidence that these 2 contextual experiences are highly related, and that an inverse association may exist between the two.

Our use of 2 large datasets, one of which is nationally representative, increases the strength of evidence that this inverse association is occurring in the homes of young American children. Previous research on this topic has presented mixed results[18]; for example, an inverse association was found in one study with marginal significance ($p = .07$ for weekday reading and $p = .05$ for weekend reading).[18] It should be noted that in this previous work, time use was randomly sampled across a single day, which may not depict patterns of use over an extended period of time. We believe that our results with replication across 2 independent samples suggest

that the association between reading and TV viewing warrants further attention. In particular, it is important for future research to consider why this inverse association may exist. It may be due purely to time constraints, in that parents who have less time to read to their children may also encourage more TV viewing, but may also be reflecting other processes in the home. For example, it may be that parents who are less focused on preparing their children for schooling simultaneously spend less time reading and allow their child more TV time. Although we were not able to test this attitudinal variable in our model, we did examine whether or not these relations varied by maternal education, as this is highly related to parenting practices and beliefs.[26] We found the same patterns across all levels of maternal education, suggesting that this association occurs across all socioeconomic strata in the United States.

Interestingly, we did not find this association between TV viewing and joint book reading to vary by contextual factors such as single parenting, household size, or time spent in daycare. The lack of an interaction with contextual factors indicates that this inverse association between TV viewing and parent-child book reading is widespread, occurring in different types of families, and whether or not children are being cared for at home versus in daycare. This robust association further indicates that these activities may be connected through parental beliefs and expectations, for example, regarding the value of these activities. Future work should examine parental attitudes and beliefs regarding shared book reading and literacy activities compared with TV viewing and other activities to better understand the motivation behind these patterns of behavior, and whether different mechanisms account for the tradeoff in rural versus urban settings or samples stratified using other markers such as socioeconomic resources. In addition, future work should examine how child temperament[27] influences interactions with media and book reading, as such information would be beneficial to human service professionals seeking to assist parents in their interactions with children.

The primary limitation of our work is that it relies on parent reports of TV watching and of reading. Although this opens the possibility of self-report bias, these are the most commonly used measures of these constructs.[28,29] Future work should seek to incorporate other types of measurement. For example, time diary methods and in-home observations are frequently used to capture other aspects of children's home environment and could provide new information on children's TV exposure, such as detailed information on the type of media viewed per week as well as the interactions during TV viewing and parent-child reading.[30,31] Both duration and frequency of exposure to these different activities should be examined to provide a better understanding of possible trade-offs. In addition, as the Early Childhood Longitudinal Study Birth Cohort data were collected before widespread mobile and tablet use, the current study does not include data on other types of screen time that have become more common in recent years. However, given that TV viewing remains a predominant aspect of total screen time exposure in young children,[32] this study provides insight regarding the interplay between media use and literacy-related activities in the home. Future work should also seek to examine the frequency of other relevant daily activities as well as the quality of parent-child interactions during various activities to better understand the positive and negative effects of these contextual experiences. In addition, as some TV programming is set up to be more appropriate for child viewing, future research should take into consideration the type of TV content being viewed as well. Last, given the recent recommendations by AAP that encourage coviewing when young children are engaged with screens, it is critical that future research examines how parental coviewing behaviors are associated with other contextual experiences children have, as well as children's developmental outcomes.

Despite these limitations, we believe this work has implications for policy and practice. AAP has issued a recent policy statement that encourages pediatricians and other public health providers to encourage parents to read to their children as a way to reduce the well-documented discrepancies in early vocabulary.[33] Based on our findings, it may be prudent for pediatricians to discuss parent-child book reading and screen time at the same time, as parents' decision making about the 2 seem to be intertwined. Concomitantly, we acknowledge the need for experimental work showing that reduction in screen time in response to such parent-based interventions is accompanied by an increase in frequency of shared book reading.

The AAP has also recently encouraged parents to create positive screen-time environments for their children, as total abstention from media is nearly impossible in today's digital age. In particular, the AAP recommended that parents use digital media with their children.[34] These interactions may facilitate positive development in ways similar to that of parent-child book reading.[2–4] Thus, an alternate strategy for health professionals to take when working with parents of young children is to stress the importance of positive engagement with their children, through both traditional book reading and various types of media.

In conclusion, our findings suggest that young children's exposure to screen time is inversely related to the frequency with which their parents read with them. In addition, this association is not influenced by contextual factors such as household size and composition, maternal education, or time spent in daycare, indicating that this is a widespread and prevalent phenomenon warranting future attention. Given the importance of both of these experiences to children's learning and development, future research should focus on understanding why parents choose these patterns of exposure for their children and how to change parental beliefs and behaviors related to these patterns.

REFERENCES

1. Rideout VJ, Hamel E. *The Media Family: Electronic Media in the Lives of Infants, Toddlers, Preschoolers and Their Parents*. Menlo Park, CA: Kaiser Family Foundation; 2006.
2. Dickinson DK, Tabors PO. *Beginning Literacy with Language: Young Children Learning at Home and School*. Baltimore, MD: Brookes Publishing Company; 2001.
3. Scarborough HS, Dobrich W. On the efficacy of reading to preschoolers. *Dev Rev.* 1994;14:245–302.
4. Justice LM, Kaderavek J. Using shared storybook reading to promote emergent literacy. *Counc Exceptional Child*. 2002;34:8–13.
5. Zimmerman FJ, Christakis DA. Children's television viewing and cognitive outcomes: a longitudinal analysis of national data. *Arch Pediatr Adolesc Med.* 2005;159:619–625.
6. Crespo CJ, Smit E, Troiano RP, et al. Television watching, energy intake, and obesity in US children: results from the third national health and nutrition examination survey, 1988–1994. *Arch Pediatr Adolesc Med.* 2001;155:360–365.
7. Dennison BA, Erb TA, Jenkins PL. Television viewing and television in bedroom associated with overweight risk among low-income preschool children. *Pediatrics*. 2002;109:1028–1035.
8. Nathanson AI, Fries PT. Television exposure, sleep time, and neuropsychological function among preschoolers. *Media Psychol.* 2014;17:237–261.
9. Christakis DA, Zimmerman FJ. Violent television viewing during preschool is associated with antisocial behavior during school age. *Pediatrics*. 2007;120:993–999.
10. Ostrov JM, Gentile DA, Mullins AD. Evaluating the effect of educational media exposure on aggression in early childhood. *J Appl Dev Psychol.* 2013;34:38–44.
11. American Academy of Pediatrics Council on Communications and Media. Policy statement: media violence. *Pediatrics*. 2009;124:1495–1503.
12. American Academy of Pediatrics. Council on communications and media. Children, adolescents, and the media. *Pediatrics*. 2013;132:958–961.
13. American Academy of Pediatrics. Council on communications and media. Media and young minds. *Pediatrics*. 2016;138:e20162591.
14. Gentile DA, Reimer RA, Nathanson AI, et al. "Protective effects of parental monitoring of children's media use: a prospective study." *JAMA Pediatr.* 2014;168:479–484.
15. Nathanson AI, Rasmussen EE. TV-viewing compared to book-reading and toy-playing reduces responsive maternal communication with toddlers and preschoolers. *Hum Commun Res.* 2011;37:465–487.
16. Koolstra CM, Van THA, Voort D. Longitudinal effects of television on children's leisure-time reading: a test of three explanatory models. *Hum Commun Res.* 1996;23:4–35.
17. MacBeth TM. *Tuning in to Young Viewers: Social Science Perspectives on Television*. Thousand Oaks, CA: Sage; 1996.
18. Vandewater EA, Bickham DS, Lee JH. Time well spent? Relating television use to children's free-time activities. *Pediatrics*. 2006;117:181–191.
19. Linebarger DL, Kosanic AZ, Greenwood CR, et al. Effects of viewing the television program between the lions on the emergent literacy skills of young children. *J Educ Psychol.* 2004;96:297–308.
20. Bennett KK, Weigel DJ, Martin SS. Children's acquisition of early literacy skills: examining family contributions. *Early Child Res Q.* 2002;17:295–317.
21. Bagley SJ, Salmon O, Crawford D. Family structure and children's television viewing and physical activity. *Med Sci Sports Exerc.* 2006;38:910–918.
22. Tandon PS, Zhou C, Lozano P, et al. Preschoolers' total daily screen time at home and by type of child care. *J Pediatr.* 2011;158:297–300.
23. Duncan GJ, Magnuson KA. Off with Hollingshead: socioeconomic resources, parenting, and child development. In: Bornstein M, Bradley R, eds. *Socioeconomic Status, Parenting, and Child Development*. London, United Kingdom: Erlbaum; 2003:83–106.
24. Muthén L, Muthén BO. *Mplus Version 7 & Mplus Users' Guide*. 1998–2013. Available at: http://www.statmodel.com. Accessed February 2, 2016.
25. Shonkoff JP, Philips DA. *From Neurons to Neighborhoods: The Science of Early Childhood Development*. Washington, DC: National Academies of Science; 2000.
26. Laureau A. *Unequal Childhoods: Class, Race, and Family Life*. Berkeley, CA: University of California Press; 2003.
27. Ansari A, Crosnoe R. Children's hyperactivity, television viewing, and the potential for child effects. *Child Youth Serv Rev.* 2016;61:135–140.
28. de Jong E, Visscher TL, HiraSing RA, et al. Association between TV viewing, computer use and overweight, determinants and competing activities of screen time in 4-to 13-year-old children. *Int J Obes.* 2013;37:47–53.
29. Forget-Dubois N, Dionne G, Lemelin JP, et al. Early child language mediates the relation between home environment and school readiness. *Child Dev.* 2009;80:736–749.
30. Kalil A, Ryan R, Corey M. Diverging destinies: maternal education and the developmental gradient in time with children. *Demography*. 2012;49:1361–1383.
31. Bradley RH, Corwyn RF, McAdoo HP, et al. The home environments of children in the United States part 1: variations by age, ethnicity, and poverty status. *Child Dev.* 2001;72:1844–1867.
32. Vandewater EA, Rideout VJ, Wartella EA, et al. Digital childhood: electronic media and technology use among infants, toddlers, and preschoolers. *Pediatrics*. 2007;119:e1006–e1015.
33. American Academy of Pediatrics, Council on Early Childhood. Literacy promotion: an essential component of primary care pediatric practice. *Pediatrics*. 2014;134:404–409.
34. Shifrin D, Brown A, Hill D, et al. Growing up digital: media research symposium. *Am Acad Pediatr.* 2015;1:1–7.