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Social–Cognitive Predictors of Low-Income Parents’ Restriction of Screen Time Among Preschool-Aged Children

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Abstract

Parents’ rules regarding child television, DVD, video game, and computer use (screen time) have been associated with lower screen use in children. This study aimed to identify modifiable correlates of this behavior by examining social–cognitive predictors of parents’ restriction of child screen time. Low-income parents ($N = 147$) of preschool-aged children (2–6 years) completed self-administered questionnaires examining parent and child screen time, parent restriction of screen time, self-efficacy to restrict screen time, and beliefs about screen time. Structural equation modeling results indicated that greater self-efficacy to restrict screen time ($\beta = .29, p = .016$) and greater perceived importance of restricting child screen use ($\beta = .55, p < .001$) were associated with greater restriction of child screen use, after controlling for parent screen time. Family-based interventions that consider broader attitudinal factors around child screen time may be necessary to engage parents in restricting screen use.

Keywords

child; media use; parenting; sedentary behavior; social–cognitive predictor

Television (TV) viewing among preschool-aged children is associated with overweight and obesity in childhood and adulthood (Hawkins & Law, 2006). The American Academy of Pediatrics recommends that children’s TV viewing be limited to less than 2 hours per day (American Academy of Pediatrics Committee on Public Education, 2001), but fewer than 40% of U.S. preschool-aged children meet this recommendation (Tandon, Zhou, Lozano, & Christakis, 2011).

A recent review found that parents’ restriction of child TV time, including rule setting about TV viewing and restricting overall TV time, is associated with less TV use among preschool-aged children (Hoyos Cillero & Jago, 2010). However, approximately one third of parents of preschool-aged children have no rules regarding their children’s TV viewing time

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Declaration of Conflicting Interests

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(Vandewater, Park, Huang, & Wartella, 2005). Increasing parents' restriction of child screen time (TV, DVD, video game, and computer use) may be particularly important in low-income families where youth are at increased risk for excess TV viewing (Dubois, Farmer, Girard, & Peterson, 2008) and obesity (Janssen, Boyce, Simpson, & Pickett, 2006).

To intervene effectively, it is necessary to identify modifiable correlates and determinants of low-income parents' restriction of child screen time. While some studies have investigated parental mediation of TV viewing, which includes co-viewing, discussion of program content, and rules regarding the timing and content of viewing, research investigating the predictors of parents' restriction of screen *time* specifically is lacking. To our knowledge, only one study has investigated modifiable familial correlates of parents' rules regarding screen time. Vandewater et al. (2005) examined parent rules regarding child TV viewing time in a nationally representative sample of parents of preschool-aged children. Contrary to expectation, negative attitudes regarding the effect of TV on child learning were not associated with parent rules in bivariate analysis. As the selection of familial correlates in this previous study was limited, further research is needed to identify predictors of parents' restriction of child screen time.

In this study, we used structural equation modeling to identify social–cognitive predictors of low-income parents' restriction of screen time among preschool-aged children. Our selection of potential predictors was guided by Bandura's (2004) social–cognitive theory and the theory of planned behavior (Ajzen, 1991), which predict that self-efficacy to restrict child screen time and beliefs and attitudes regarding screen time may influence parents' restriction. Parental self-efficacy has been shown to predict a range of positive parenting behaviors (Coleman & Karraker, 1998) but has not been examined in the realm of parents' restriction of child screen time. In addition, while Vandewater et al. (2005) found no correlation between negative attitudes regarding the effect of TV on child learning and parent rules, additional attitudes may predict this behavior. We hypothesized that stronger belief in the health risks of child screen use, less positive attitudes about screen time, greater perceived importance of restricting child screen time, and greater perceived self-efficacy for restricting child screen time would be associated with greater restriction of child screen time.

Method

Participants

Parents (including caregivers) of all children attending one of five Head Start centers in upstate New York were invited to participate ($n = 423$). Parents were recruited between September and November 2010 through poster displays in Head Start centers and flyers sent home with children. Of 154 respondents (36.2% of the eligible sample), 7 reported data for children outside the target age range (2–6 years), reducing the current sample size to 147.

Measures and Procedures

Parents completed a self-report survey assessing family demographic characteristics (parent age, sex, relationship to child, and ethnicity; child date of birth and sex), parent restriction of

child screen time, parent and child screen time, and relevant social–cognitive factors. Parents were compensated for their time (\$20 gift card). Child weight and height data, extracted from Head Start records, were used to calculate age and sex-specific body mass index (BMI) z scores, and to identify children who were overweight (85.00–94.99 percentile) or obese (>95th percentile), based on Centers for Disease Control and Prevention 2000 growth charts (Kuczmarski et al., 2000). Self-reported parent weight and height data were used to calculate parent BMI (kg/m^2). Parents were classified overweight ($25 \leq \text{BMI} < 30$) or obese ($\text{BMI} \geq 30$) in accordance with World Health Organization (1995) classifications.

Parents' restriction of screen time was assessed using three items adapted from the Limiting Sedentary Activities subscale of the Activity Support Scale (Davison, Li, Baskin, Cox, & Affuso, 2011). A previous study has supported the factor structure, internal reliability, and factorial invariance of the Activity Support Scale for non-Hispanic White and Black parents (Davison et al., 2011). Items (“I limit how long my child can watch TV or DVDs each day”; “I limit how long my child plays video games”; and “I make sure that my child watches TV, plays video games, or uses the computer for no more than 2 hours per day [in total]”) were rated on a 4-point scale (ranging from 1 = *strongly disagree* to 4 = *strongly agree*). Higher scores indicate greater restriction of child screen time (sample $\alpha = .80$).

Parent and child screen time were assessed using items modeled on the New York State Department of Health Eat Well Play Hard Survey and the Fragile Families and Child Wellbeing Survey. Parents reported the average time spent in (a) watching TV, DVDs, or videos; (b) playing video games; and (c) using a computer for leisure, on a typical weekday, and weekend day, for themselves and their preschool-aged child. Responses were combined (i.e., average time = $[\text{weekday time} \times 5 + \text{weekend time} \times 2]/7$) to measure average minutes per day of parent and child screen use.

Self-efficacy to restrict child screen time was measured using three items developed for this study. Items asked “How confident are you that you can ...” (a) “keep your child’s bedroom TV free,” (b) “master the skills necessary to limit your child’s screen time (TV, video games, computer),” and (c) “continue to influence your child’s screen time as he or she gets older.” Items were rated on a 5-point scale (ranging from 1 = *not at all confident* to 5 = *very confident*). Higher scores indicate greater self-efficacy to restrict child screen time (sample $\alpha = .67$).

Three constructs related to knowledge and beliefs about screen time were assessed with items developed for this study. *Positive beliefs about child screen time* were assessed using the item “Watching TV is good for my child” and perceived *health risks of screen time* was assessed using the item “Watching TV for more than 2 hours per day will increase my child’s risk of becoming overweight”. Both items were rated on a 7-point scale (ranging from 1 = *very strongly disagree* to 7 = *very strongly agree*). *Importance of restricting child screen time* was assessed using the item, “For me to limit my child’s screen time (including TV, video games, and computer use) is ...” rated on a 7-point scale (ranging from 1 = *extremely unimportant* to 7 = *extremely important*).

Data Analysis

Structural equation modeling (SEM; AMOS Version 20) was used in the current study to estimate and partition measurement error in observed variables. First, a *measurement model* was tested to evaluate the measurement of latent variables (measured with multiple indicators). Second, a *structural model* was tested to estimate structural parameters between exogenous variables (social–cognitive predictors) and the endogenous variable (parents' restriction of screen time). Exogenous variables were free to correlate within the model. Measurement error variance was fixed ($0.20 \times$ observed variance) for single-indicator latent variables (e.g., parent screen time) in accordance with procedures outlined by Kline (2005). Fit of the model was assessed using confirmatory fit index (CFI) and root mean square error of approximation (RMSEA). Recommended parameters for a good model fit include CFI greater than .95 and RMSEA less than .05 (good fit) or .08 (reasonable fit; Byrne, 2001).

One case reported an impossible value for parent screen time (>24 hours per day) and was removed prior to analysis ($n = 146$). As the parent screen time variable displayed substantial positive skew, a log transformation was applied for use in SEM. In accordance with recommendations by Kline (2005), data were examined for multivariate outliers using Mahalanobis's distance; two multivariate outliers were detected and removed as such outliers can markedly influence parameter estimates, fit statistics, and standard errors in SEM (West, Finch, & Curran, 1995; $n = 144$). As missing values were observed (1.5%), full information maximum likelihood estimation was used in AMOS (Byrne, 2001).

Results

Participant Characteristics

Parents were on average 31 years old ($M = 30.7$ years, $SD = 9.5$) and the majority were female (93.1%). Children had a mean age of 3.7 years ($SD = 0.9$); 55.4% were female. Most caregivers were mothers (89.5%), but grandmothers (5.6%) and fathers (4.2%) also participated. Parents were primarily White (71.0% non-Hispanic White, 21.7% Black, 3.6% Hispanic, and 3.7% other). The majority of parents were overweight (30.2%) or obese (36.4%). In addition, 25.4% of children were overweight and 20.9% obese.

Preliminary Analysis

Median parent screen time was 249 minutes per day and median child screen time was 174 minutes per day. Only 30.1% of parents “strongly agreed” with the statement, “I make sure that my child watches TV, plays video games, or uses the computer for no more than 2 hours per day.” Greater parent restriction of child screen time was associated with less child screen time (bivariate correlation, $r = -.48$, $p < .001$; partial correlation controlling for parents' screen time, $r = -.42$, $p < .001$).

Less than half of parents (44.4%) agreed that watching TV for more than 2 hours per day increases the risk of overweight for their child, and 54.2% disagreed that watching TV is good for their child. Parents' self-efficacy to restrict child screen time was moderate; 65.3% of parents were “fairly confident” or “very confident” that they could limit their child's

screen time. Approximately one tenth (9.7%) of parents stated that it was unimportant to limit their child's screen time, and 16.7% were neutral (neither important nor unimportant).

Structural Equation Modeling Predicting Parents' Restriction of Screen Time

Demographic variables were examined for inclusion in the structural model. Parents' restriction of child screen time was not significantly correlated with parent BMI ($r = -.01, p = .96$), child BMI z score ($r = -.06, p = .51$), or child age ($r = .06, p = .48$) and did not differ significantly by child sex, $t(137) = -.15, p = .88$ or parent education (high school graduate, attended some college, or college graduate), $F(2, 137) = 1.09, p = .34$. These demographic variables were therefore not included in the multivariate model.

Four social-cognitive predictors were examined for inclusion in the structural equation model (*self-efficacy to restrict screen time, importance of restricting screen time, positive beliefs about screen time, and health risks of screen time*). Descriptive statistics and correlations between study variables are reported in Table 1. As beliefs about the health risks of screen time were not significantly associated with parents' restriction of screen time, this variable was excluded from the multivariate model.

A measurement model composed of the two latent variables (*self-efficacy to restrict screen use and parents' restriction of screen time*) was tested. Each latent variable comprised three observed variables. The measurement model was a reasonable fit to the data, $\chi^2(8) = 14.58, p = .07$; RMSEA = .08; CFI = .98. Standardized factor loadings were significant ($p < .05$) and ranged between .52 and .97.

The proposed structural model, which included three social-cognitive predictors of screen time and controlled for parent screen time (Figure 1), was a reasonable fit to the data, $\chi^2(20) = 33.12, p = .033$; RMSEA = .07; CFI = .97). Greater parent restriction of child screen time was predicted by higher perceived importance of restricting screen time ($\beta = .55, p < .001$) and greater self-efficacy for restricting screen time ($\beta = .29, p = .016$). The model accounted for a substantial proportion of the variance in parents' restriction of child screen time (squared multiple correlation = .57).

Discussion

This study identified that low-income parents' restriction of screen time for their preschool-aged children was predicted by greater self-efficacy for restricting screen time and greater perceived importance of restricting screen time, after controlling for parent screen time. As has been observed in previous studies, greater parent restriction of screen time was associated with less screen use in children.

In contrast to hypotheses, parents' beliefs about the health risks of screen use and positive beliefs about screen use were not associated with restriction of child screen time. This result indicates that knowledge and beliefs about screen use may not be a strong motivating factor for low-income parents to restrict screen time. Furthermore, interventions that aim to educate parents about the health risks of screen use in children may have limited efficacy in producing behavior change.

Self-efficacy predicted parents' restriction with moderate strength. Previous research has found an inverse association between TV viewing among preschool-aged children and maternal self-efficacy to limit child TV use (Campbell, Hesketh, Silverii, & Abbott, 2010), but this is the first study to identify parental self-efficacy as a predictor of parents' restriction of child screen time. Self-efficacy is thought to be particularly important in the context of demanding task situations (Coleman & Karraker, 1998), and restricting child screen use is a challenging parenting practice. Self-efficacy to restrict screen time may therefore be an important intervention target.

Perceived importance of restricting screen time was strongly associated with parent restriction. Low-income parents' judgments about the importance of restricting screen time are likely influenced by family contextual factors, including stress. Restricting screen time may be a low priority for low-income parents dealing with chronic stressors, including financial hardship, poor mental health, or food insecurity. Future research needs to explore the role of chronic family stress in inhibiting parent restriction of child screen time.

As this study assessed cross-sectional associations between social-cognitive factors, parents' restriction of child screen time, and screen use among preschool-aged children, conclusions about the temporal relations between these factors cannot be drawn. Nevertheless, results from this preliminary investigation highlight clear avenues for future research. Research is needed to determine whether improvements in parent self-efficacy and parent rated importance of restricting screen time lead to increased parent restriction of child screen time and decreased screen use among children. In addition, family ecological factors that influence low-income parents' self-efficacy and beliefs about the importance of restricting screen time need to be identified in order to intervene effectively with this population.

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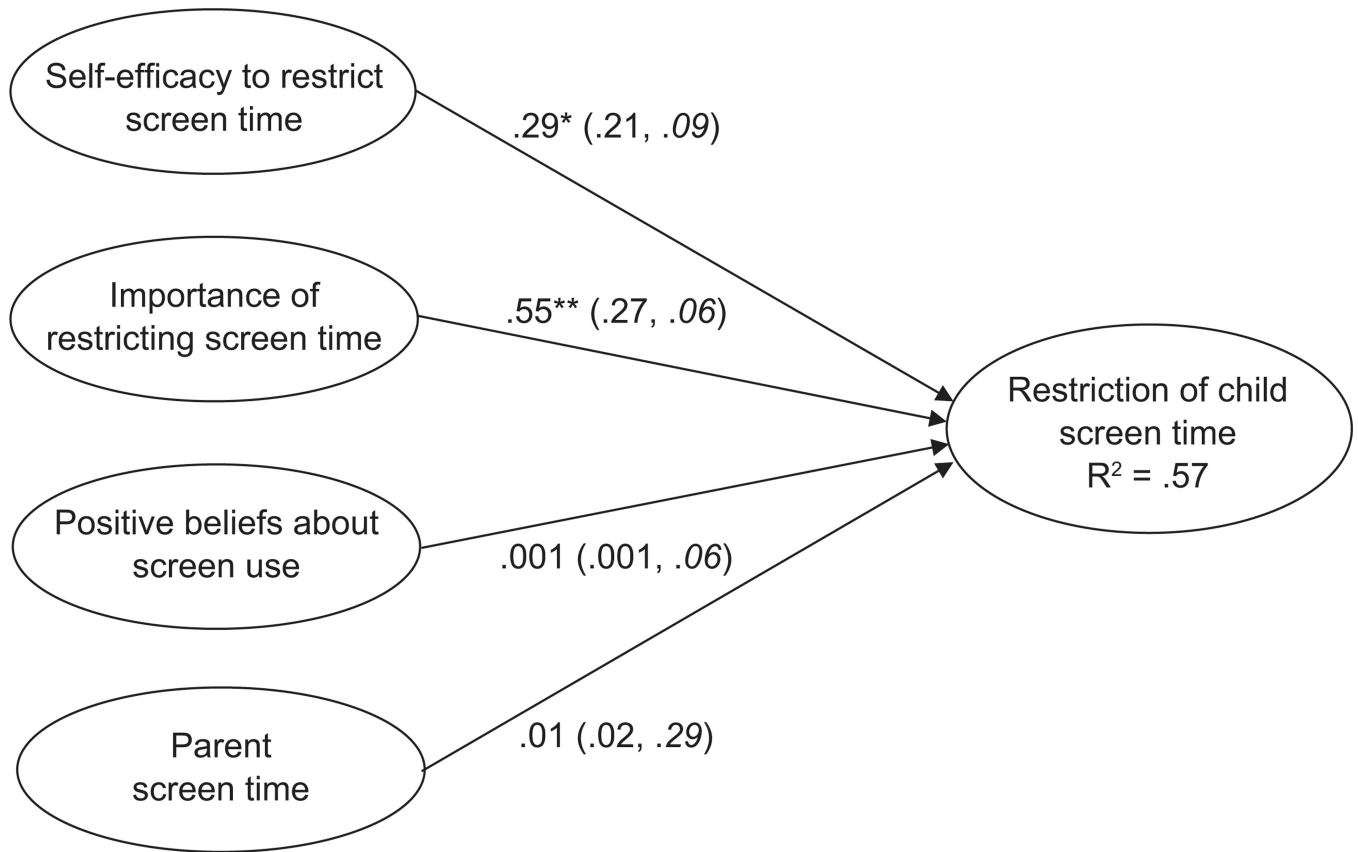


Figure 1. Structural model predicting parents' restriction of child screen time

Note. Standardized estimates (unstandardized estimate, *standard error*). $\chi^2(20) = 33.12$, $p = .033$; root mean square error of approximation = .07; confirmatory fit index = .97.

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

Table 1

Descriptive Statistics and Correlations Between Model Variables

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	2	3	4	5	6
1. Parent restriction of child screen time ^a	144	3.22	0.62	.48***	.61***	.03	-.23**	-.27**
2. Self-efficacy to restrict child's screen time ^b	144	3.70	0.95	—	.46***	.11	-.15	-.30***
3. Importance of limiting screen use ^c	144	5.45	1.55	—	—	.20*	-.31***	-.20*
4. Health risks of child screen time ^d	144	4.15	1.68	—	—	—	-.27**	-.13
5. Positive beliefs about child screen time ^d	144	3.24	1.31	—	—	—	—	.30***
6. Parent screen time (minutes per day)	126	304 ^e	207	—	—	—	—	—

^a. Subscale score; scale ranged from 1 (strongly disagree) to 4 (strongly agree).

^b. Subscale score; scale ranged from 1 (not at all confident) to 5 (very confident).

^c. Scale ranged from 1 (extremely unimportant) to 7 (extremely important).

^d. Scale range from 1 (very strongly disagree) to 7 (very strongly agree).

^e. Three outliers were detected in the parent screen time variable (outlier = *z* score > 3). With outliers removed, mean parent screen time = 282 minutes per day, *SD* = 151.

* *p* < .05.

** *p* < .01.

*** *p* < .001.