

# Social Support May Buffer the Effect of Intrafamilial Stressors on Preschool Children's Television Viewing Time in Low-Income Families

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## Abstract

**Background:** Excessive television (TV) viewing in preschool children has been linked to negative outcomes during childhood, including childhood obesity. In a sample of low-income families, this study examined associations between intrafamilial factors and preschool children's TV-viewing time and the moderating effect of social support from nonfamily members on this association.

**Methods:** In 2010, 129 mothers/female guardians of 2- to 5-year-old children enrolled at five Head Start centers in Rensselaer County, New York, completed a self-report survey. The survey assessed child TV-viewing time (including TV, DVDs, and videos) and intrafamilial risk factors, including maternal perceived stress, depressive symptoms, TV viewing, leisure-time physical activity (inactivity), and family functioning. Social support from nonfamily members (nonfamily social support) was also measured and examined as an effect modifier.

**Results:** Children watched TV an average of 160 minutes per day. Moderate depressive symptoms (Personal Health Questionnaire depression scale scores  $\geq 10$ ), higher perceived stress, poorer family functioning, and higher maternal TV-viewing were significantly and independently associated with greater minutes of child TV viewing, controlling for covariates. In all instances, nonfamily social support moderated these associations, such that negative experiences within the family environment were linked with higher child TV-viewing time under conditions of low nonfamily social support, but not high nonfamily support.

**Conclusions:** Social support from nonfamily members may buffer potentially negative effects of intrafamilial factors on preschool children's TV-viewing time.

## Introduction

Screen-based sedentary behaviors, especially excessive television (TV) viewing, in preschool children have been linked with negative outcomes during childhood, including obesity,<sup>1,2</sup> physical inactivity,<sup>3</sup> attention problems,<sup>4</sup> and delinquent and aggressive behaviors.<sup>5</sup> Many of these negative outcomes are also observed during adulthood.<sup>6,7</sup> Both the content and volume of TV viewing have been linked with negative outcomes in children.<sup>8</sup> The American Academy of Pediatrics (AAP) recommends that parents limit their children's total screen time to no more than 2 hours per day, and Australian and Canadian authorities recommend limiting child total screen time to less than 1 hour per day.<sup>9-11</sup> Despite such recommendations, multiple studies indicate that between 30-70% of preschool-aged children watch more than 2 hours of TV per day.<sup>1,2,12</sup>

For preschool children, most TV viewing occurs at home.<sup>13</sup> As a result, there is a need to identify effective family interventions prompting parent limit setting around child TV viewing. The Family Ecological Model (FEM),<sup>14</sup> derived from Bronfenbrenner's ecological models,<sup>15</sup> and Family Systems Theory<sup>16-18</sup> posit that, in addition to contextual factors, intrafamilial factors, such as family functioning and parents' perceived stress and depression, affect parenting practices and, in turn, child outcomes.<sup>14,19</sup> Consistent with these expectations, mothers' perceived stress and depression have been linked with lower restriction of child TV viewing<sup>20</sup> and greater minutes of child viewing time.<sup>12,21</sup>

Although it has been acknowledged that TV viewing may serve as a coping mechanism in families experiencing significant stress and disruption,<sup>16</sup> much less is known about factors that may mitigate or buffer the negative effects of intrafamilial stressors on child TV viewing. According to the stress-buffering hypothesis outlined by

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Cohen,<sup>22</sup> social support (i.e., the perception that social relationships will provide resources, such as emotional support or information) can reduce the effect of stress on health outcomes. That is, social support moderates the association between stress and health outcomes, such that negative outcomes are reduced under circumstances of high support.<sup>22</sup> Consistent with the stress-buffering hypothesis, social support from individuals outside the family (i.e., nonfamily support) has been linked with increased physical activity,<sup>23,24</sup> lower depression, and increased ability to cope with stressful life events<sup>25</sup> in women. These outcomes could, in turn, affect how they parent their children based on the role models they set. To our knowledge, no study has examined the potential buffering effect of social support on the association between intrafamilial risk factors and child TV viewing. This is an important question to address because it may highlight new avenues through which to support parent behavioral change around child TV viewing.

Focusing on low-income families who are disproportionately exposed to parent stress and depression,<sup>26,27</sup> this study examines associations between preschool-aged children's TV-viewing time and intrafamilial factors, including maternal perceived stress, maternal depression, poor family functioning, and maternal TV viewing and physical inactivity. Moreover, as illustrated in Figure 1, we will assess the moderating effect of nonfamily social support on these associations. Based on the stress-buffering hypothesis, we predict that nonfamily support will buffer the effect of intrafamilial risk factors on children's TV viewing.

## Methods

### *Participants and Procedures*

Data for the current study are drawn from the baseline assessment of a family-centered preventive intervention targeting childhood obesity among low-income families. Completion of the baseline survey was independent of

intervention participation. That is, parents were not recruited to participate in the intervention at the time they completed the baseline survey. Thus, findings from the baseline survey are not contaminated by the intervention that followed. Families were recruited from five Head Start centers in Rensselaer County, New York, between September and November 2010. Of the 423 families with age-eligible children (2–5 years), a total of 154 (36%) parents or guardians provided written consent and completed the baseline survey; 129 mothers or female guardians provided valid responses for child TV viewing and were therefore included in the analyses. The study protocol was approved by the Institutional Review Board at the University at Albany (State University of New York). Parents or guardians provided written consent for their own participation and for the release of their child's height and weight information from Head Start records.

### *Measures*

#### *Outcome Variables*

*Children's TV-viewing time.* Mothers reported child TV-viewing time (hours and minutes), including time spent watching TV, DVDs, or videos, for a typical school day and a typical nonschool day (including a weekend day, a holiday and a day on vacation). Questions were modeled after items from the New York State Department of Health Eat Well Play Hard in Child Care Settings survey and closely mirrored those used in a national cohort study.<sup>28</sup> Average daily minutes of TV viewing were computed as (typical school day minutes  $\times$  5) + (typical nonschool day minutes  $\times$  2) / 7 days.

#### *Independent Variables*

*Maternal TV-viewing time.* Mothers reported their own TV-viewing time (TV, DVDs, or videos) in hours and minutes per day for a typical weekday and a typical weekend day. TV-viewing questions were modeled after a

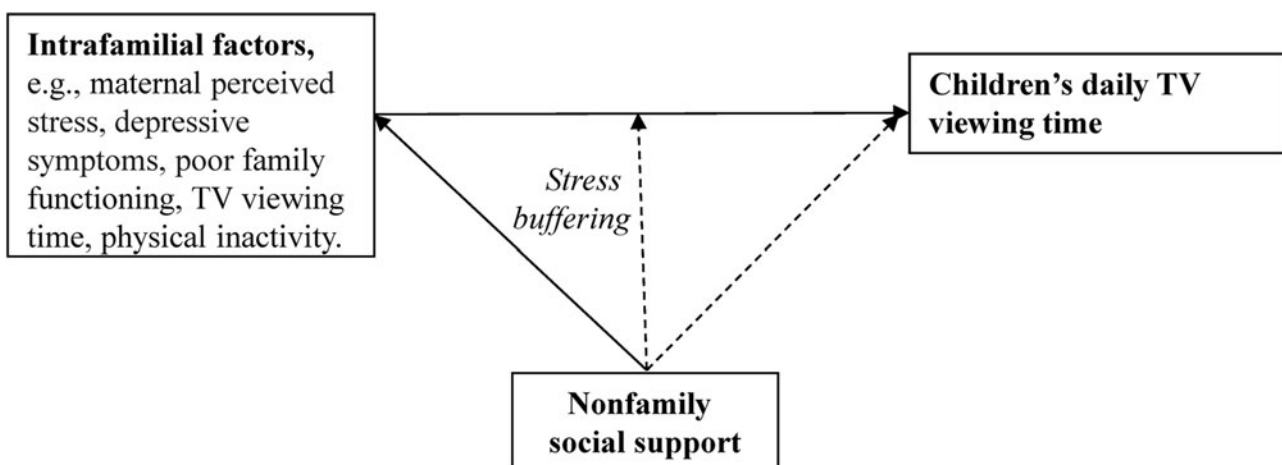


Figure 1. Interplay between children's daily TV-viewing behavior and intrafamilial factors and nonfamily social support (evidence was lacking for dotted lines). TV, television.

national cohort study.<sup>28</sup> No information on reliability and validity of these questions is found in previous studies. Average daily TV-viewing time (in minutes) was computed as [(weekday minutes × 5) + (weekend minutes × 2)]/ 7 days.

**Maternal physical inactivity.** Two questions derived from the International Physical Activity Questionnaire’s short form,<sup>29,30</sup> which assesses moderate physical activity (MPA) and vigorous physical activity (VPA), were used to measure maternal leisure time physical activity (LTPA).<sup>31</sup> LTPA includes physical activities engaged in during leisure time, such as walking, running, fast bicycling, aerobics, or basketball games; it does *not* include activities that are part of housework, job duties or transportation.<sup>32</sup> Total weekly LTPA minutes was computed as follows: (minutes of MPA) + (minutes of VPA × 2).<sup>33</sup> Given the skewness of the data, we elected to dichotomize maternal inactivity based on the national recommendations of 150 minutes of MPA per week.<sup>33</sup> Mothers were classified into two groups including (1) those participating in fewer than

150 minutes of LTPA per week and (2) those participating in 150 minutes or more of LTPA per week. Mothers who engaged in less than 150 minutes of LTPA per week were considered physically inactive.

**Maternal perceived stress.** Mothers’ perceived stress was measured using the four-item validated Perceived Stress Scale (e.g., “In the last month, how often have you felt that you were unable to control the important things in your life?”; “In the last month, how often have you felt that things were going your way?”).<sup>34</sup> Response options range from 0 = Never to 4 = Very often. The internal reliability coefficient for this study was  $\alpha = 0.75$ .

**Maternal depression.** Mothers’ depressive symptoms were measured using the nine-item validated Patient Health Questionnaire depression scale (PHQ-9; e.g., “Over the last 2 weeks, how often have you been bothered by any of the following problems?”).<sup>35</sup> Response options range from 0 = Not at all to 3 = nearly every day. PHQ-9 scores were

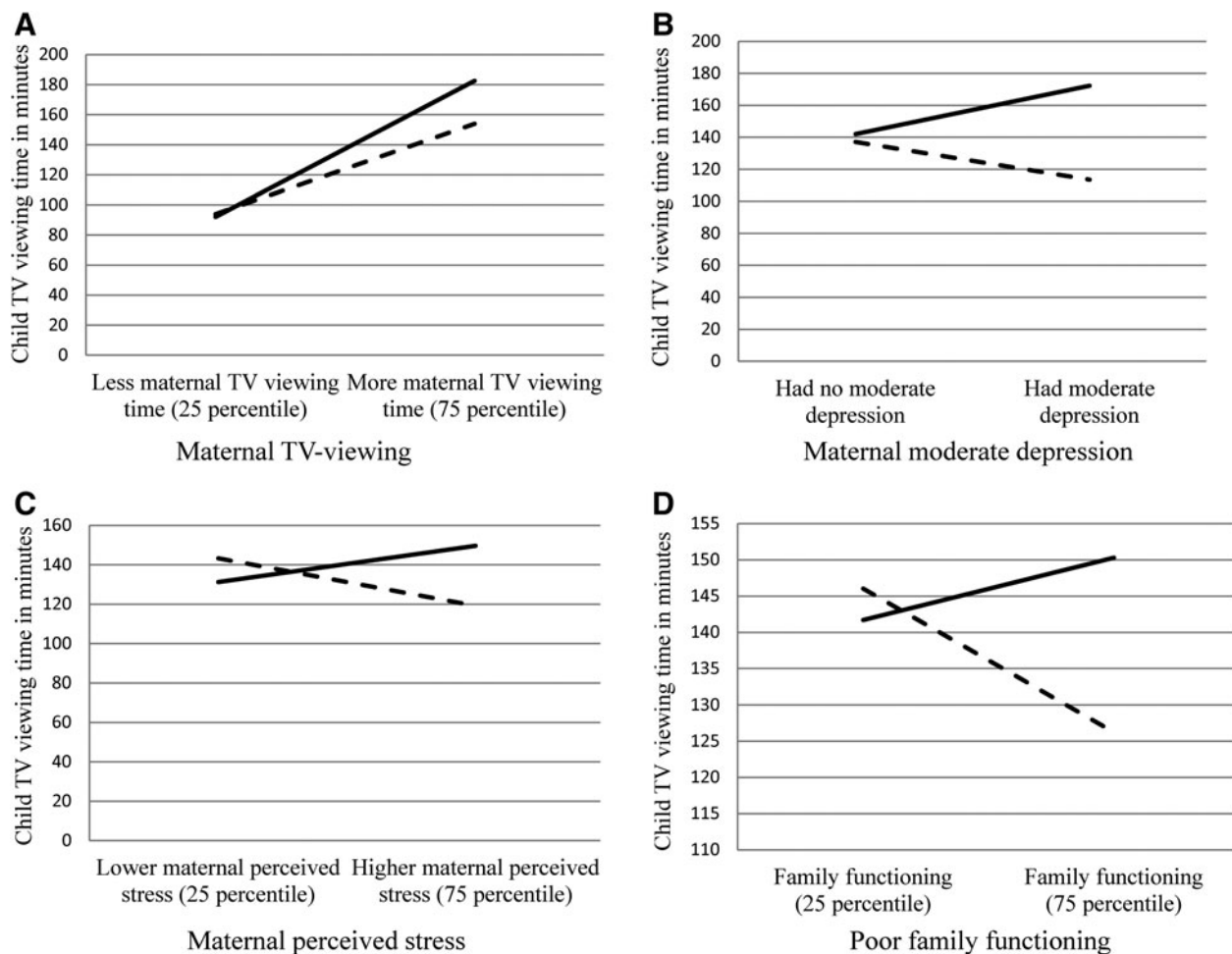


Figure 2. Nonfamily social support × Intrafamilial factors interaction for child TV-viewing time. TV, television.

— Lower nonfamily social support (25 percentile)      - - - higher nonfamily social support (75 percentile)

obtained by summing across all nine items. The internal consistency coefficient in this study was  $\alpha=0.88$ . Given the skewed nature of the data, mothers were categorized as exhibiting moderate depressive symptoms (summed PHQ-9 scores  $\geq 10$ ;  $N=22$ ) versus no depressive symptoms (summed PHQ-9 scores  $< 10$ ;  $N=107$ ).<sup>35</sup>

*Poor family functioning.* Family functioning was measured using the five-item family conflict subscale from the validated Family Assessment Measure<sup>36</sup> (e.g., “We fought a lot in our family”; “Family members sometimes got so angry they threw things”). Response options range from 1 = Very untrue to 4 = Very true. A mean family functioning score was obtained by reverse scoring two positive items and then calculating the average of the five items. The internal reliability coefficient for this study was  $\alpha=0.73$ . High scores reflect poor family functioning.

*Nonfamily social support.* Social support from individuals outside of the family was assessed using a validated “Significant other” subscale (four items) of the Multidimensional Scale of Perceived Social Support (e.g., “There is a special person who is around when I am in need”; “There is a special person with whom I can share my joys and sorrows”),<sup>37</sup> and participants were asked to only think about the support they received from a special person who is not a family member. Response options range from 1 = Very strongly disagree to 7 = Very strongly agree. A total score was calculated using the average of the four items. The internal consistency coefficient was  $\alpha=0.99$ .

*Demographic variables and covariates.* Mothers completed a brief background questionnaire assessing their race/ethnicity (Hispanic vs. not Hispanic; white, black/African American, Asian/Pacific Islander, Native Alaskan/American Indian, or Native Hawaiian/Pacific Islander), education (less than high school, high school graduate, and more than high school), and children’s sex. In addition, mothers self-reported their height and weight, which was used to calculate their weight status (obese, BMI  $\geq 30$ ).<sup>38</sup> Children’s weight status (obese, BMI  $\geq 95$ th percentile)<sup>39</sup> was determined using child height and weight data extracted from Head Start records. Children’s height and weight were originally measured twice by trained research assistants in conjunction with trained Head Start nurses, using a stadiometer measuring to the closest one eighth of an inch and a scale measuring to the closest 0.2 pounds, and averages of the two measured heights and weights were used to calculate BMI. Children were measured in light clothing and without shoes.

### Statistical Analyses

The association between demographic factors and child TV-viewing time was initially examined using linear regression. Demographic variables related to child TV viewing with a  $p$  value  $\leq 0.10$  were included in the

regression models as potential confounders. Bivariate associations among study variables were assessed using Pearson’s correlation analysis. In the primary analyses of interest, multiple linear regression was used to examine the (1) independent effect of each intrafamilial factor on child TV viewing, controlling for demographic covariates, and (2) effect of each intrafamilial factor and its interaction with nonfamily social support on child TV-viewing time. Models for item 2 included the main effect of the intrafamilial factor, the main effect of nonfamily social support, and their interaction; interaction terms were created by multiplying two centered continuous variables or a

**Table 1. Relationship of Demographic Variables and Correlates to Child TV-Viewing Time**

	Children’s daily TV viewing (average min/day)		
	N <sup>a</sup>	Mean (SD)	p <sup>b</sup>
Total	129	159.95 (112.73)	—
Child sex			0.69
Male	56	155.33 (104.72)	
Female	73	163.50 (119.10)	
Age group, years			0.47
2–3	27	136.51 (74.78)	
3–4	46	163.94 (108.71)	
4 or older	56	167.97 (130.05)	
Race			0.84
Black	22	146.17 (130.26)	
White	93	162.94 (115.40)	
Other	4	151.07 (82.47)	
Child weight status			0.47
Obese	27	174.02 (133.56)	
Nonobese	102	156.23 (106.98)	
Maternal weight status			0.10
Obese	43	182.19 (144.10)	
Nonobese	76	146.31 (90.77)	
Maternal education			0.07
Less than high school	27	192.06 (145.53)	
High school (GED)	49	170.31 (127.30)	
More than high school	53	134.02 (66.40)	

<sup>a</sup>Numbers may not add to the total ( $N=129$ ) as a result of missing values.

<sup>b</sup>Linear regression was used to test the bivariate association between child TV-viewing time and demographic variables and correlates.

GED, general educational development; TV, television; SD, standard deviation.

**Table 2. Bivariate Associations between Intrafamilial Factors, Nonfamily Social Support, and Child TV Viewing**

		1	2	3	4	5	6	7
1	Child TV viewing	1						
2	Moderate depression	0.33***	1					
3	Perceived stress	0.26**	0.51***	1				
4	Poor family functioning	0.26**	0.29***	0.38***	1			
5	Maternal physical inactivity	0.29***	0.17*	0.20*	0.06	1		
6	Maternal TV-viewing time	0.68***	0.38***	0.29***	0.28***	0.26**	1	
7	Nonfamily social support	-0.25**	-0.18*	-0.18*	-0.08	-0.22*	-0.12	1

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

TV, television.

centered continuous variables and a categorical variable. The remaining intrafamilial factors were included as covariates in the model, in addition to demographic covariates. Upper and lower quartiles of continuous variables were used to illustrate the interaction in Figure 2.

## Results

Children were predominantly female (57%), were, on average, 3 years of age (2–3, 21%; 3–4, 36%; 4–5, 43%) and watched TV for an average of 160 minutes per day. Moreover, 67% of children watched TV for more than the recommended 120 minutes per day. The majority of mothers were non-Hispanic white (72% non-Hispanic white, 17% African American, and 3% others), younger than 30 years (<30, 64%; 30–39.9, 21%; ≥40, 12%) and had at least a high school diploma (no high school diploma, 21%; high school diploma, 38%; some tertiary education, 41%). It should be noted that percentages may not add to 100% as a result of missing values. As shown in Table 1, no significant associations were identified between child TV viewing and the demographic factors of child sex, age, and weight status or mothers' race/ethnicity. Mothers' education and weight status were related to child TV viewing ( $p \leq 0.10$ ) and therefore included in the regression analyses as covariates.

Table 2 presents correlations between the intrafamilial risk factors and child TV viewing. With one exception (i.e., maternal inactivity/poor family functioning), all intrafamilial factors were significantly and positively correlated with each other ( $r = 0.17$ ,  $p < 0.05$  to  $r = 0.51$ ,  $p < 0.001$ ) and with child TV-viewing time ( $r = 0.26$ ,  $p < 0.01$  to  $r = 0.68$ ,  $p < 0.01$ ). In addition, higher nonfamily social support was associated with significantly lower child TV-viewing time as well as lower maternal depression, lower perceived stress, and less physical inactivity. Independent associations between intrafamilial risk factors and child TV-viewing time, controlling for demographic covariates, were also examined. Results from the regres-

sion analysis showed that higher depressive symptoms ( $\beta = 0.32$ ;  $p < 0.001$ ), perceived stress ( $\beta = 0.24$ ;  $p < 0.01$ ), maternal inactivity ( $\beta = 0.24$ ;  $p < 0.05$ ), and TV viewing ( $\beta = 0.66$ ;  $p < 0.001$ ), as well as poorer family functioning ( $\beta = -0.24$ ;  $p < 0.01$ ), were independently and significantly associated with greater child TV-viewing time, controlling for mothers' education and weight status (data not shown).

Table 3 displays associations between child TV-viewing time and intrafamilial factors and their interaction with nonfamily social support, controlling for mothers' education and weight status and the remaining intrafamilial factors. Results showed that nonfamily social support moderated the association between child and maternal TV viewing, maternal depressive symptoms, poor family functioning, and maternal perceived stress. Effect modification was not observed for maternal inactivity. These interactions are illustrated in Figure 2A–D. Under conditions of low social support, higher maternal TV viewing, depressive symptoms, and perceived stress, as well as poorer family functioning, were associated with greater minutes of TV viewing among children. In contrast, under conditions of high social support, children tended to watch fewer minutes of TV when intrafamilial stressors (maternal depression, maternal stress, and poor family functioning) were high versus low.

## Discussion

This study examined the association between intrafamilial risk factors and child TV viewing and the moderating effect of social support from nonfamily members on this relationship. With the exception of maternal inactivity, all intrafamilial risk factors were associated with higher child TV viewing. In addition, results support the stress-buffering hypothesis, such that associations between intrafamilial factors (maternal depressive symptoms, TV viewing, and perceived stress, as well as poor family functioning) and children's TV viewing were

**Table 3. Moderating Effect of Social Support from Nonfamily Members on the Relationship between Intrafamilial Factors and Children's TV Viewing**

Independent variable	Dependent variable Children's daily TV viewing (average min/day)		
	n <sup>a</sup>	Adjusted $\beta^b$	p
Social support	118	-0.12	0.06
Maternal TV-viewing time	118	0.66	<0.001
Social support $\times$ Maternal TV viewing	118	-0.23	<0.001
Social support	118	-0.01	0.93
Moderate depression	118	0.04	0.54
Social support $\times$ Moderate depression	118	-0.25	<0.001
Social support	118	-0.10	0.14
Perceived stress	118	0.03	0.69
Social support $\times$ Perceived stress	118	-0.20	<0.01
Social support	118	-0.11	0.08
Poor family functioning	118	-0.002	0.98
Social support $\times$ Poor family functioning	118	-0.18	<0.01
Social support	118	-0.03	0.75
Maternal physical inactivity	118	0.06	0.40
Social support $\times$ Maternal physical inactivity	118	-0.15	0.11

Social support refers to social support from nonfamily members.

<sup>a</sup>Numbers may not add to the total ( $N=129$ ) as a result of missing values on independent variables.

<sup>b</sup>Standardized coefficient adjusted for mothers' education, weight status, and remaining intrafamilial factors.

TV, television.

moderated by social support from nonfamily members. Specifically, higher maternal stress, moderate depressive symptoms, poorer family functioning, and higher maternal TV viewing were linked with higher daily TV viewing in children when nonfamily social support was low, but not when it was high. Although previous studies have found that nonfamily social support is linked with lower depression and increased ability to cope with stressful life events,<sup>25</sup> no previous studies, to our knowledge, have examined its moderating effect on the association between intrafamilial risk factors and children's TV viewing.

Findings from this study are particularly salient for low-income families who disproportionately experience chronic stress and poor mental health,<sup>26,27</sup> as well as higher than recommended levels of TV viewing.<sup>40</sup> Findings are

also consistent with the FEM and Family Systems Theory in that they highlight the need for family interventions to address intrafamilial risk factors in combination with factors beyond the family (in this case, nonfamily social support) to support behavioral change in families. Family interventions targeting child TV-viewing time typically focus on factors within the family, such as parent knowledge of screen-time recommendations and awareness of strategies to minimize children's electronic media use.<sup>41-43</sup>

Although this study presents novel data on the potential role of social support in mitigating associations between intrafamilial risk factors and child TV viewing, results should be interpreted cautiously because of a number of study limitations. First, given the use of a cross-sectional design, we cannot determine the temporal ordering of child TV viewing and intrafamilial risk factors. Second, the data were collected by self-reported surveys, with mothers reporting both the independent and dependent variables. Findings would be strengthened by the use of a multi-method approach and more objective measures. A reliable, valid objective approach to monitor the use of TVs and TV-based sedentary activities is needed. Third, findings may not be generalizable to all low-income families. The sample size was relatively small and participants were disproportionately non-Hispanic white. However, because the study was conducted in a small postindustrial northeast city, it may be demographically representative of other small cities with similar characteristics. Finally, our assessment of nonfamily social support was relatively narrow, focusing largely on emotional support. Future research could expand on this work by measuring other dimensions of social support, such as tangible support (e.g., provision of child care), and measuring support from specific sources outside the family, such as friends and communities members. This would permit greater specification of interventions informed by this research.

## Conclusion

Despite these limitations, this study has important implications for research and practice. Consistent with previous studies,<sup>44,45</sup> the findings suggest that family interventions to reduce TV viewing among low-income preschool children should seek to reduce parent TV-watching time, improve family functioning, and foster strategies to prevent and cope with stress and depression. Moreover, family interventions to reduce child TV viewing should look beyond factors within families and help low-income mothers to access social support systems outside their families to buffer the stressors experienced.

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### Author Disclosure Statement

No competing financial interests exist.

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