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Parental Social Support, Ethnicity, and Energy Balance-Related Behaviors in Ethnically Diverse, Low Income, Urban Elementary School Children

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Abstract

Objective—This study assessed levels of child-reported parent and family social support associated with physical activity (PA) and fruit and vegetable consumption (FVC) by ethnicity among a lower-income sample of U.S. elementary school students.

Design—Analysis of cross-sectional baseline data of an elementary school-based study from fall 2010.

Setting—19 schools in a large urban school district in central Texas.

Participants—Fourth and fifth grade children (n=581) and their parents.

Main Outcome Measure(s)—Child-reported parental and family social support, seven day PA, previous day FVC, and weight status.

Analysis—Examined child-reported social support, PA, and FVC using descriptive statistics, ANOVA, chi-square tests, and multiple linear regressions.

Results—Child-reported parent and family social support varied by ethnicity ($p<.01$), with Hispanic children consistently reporting the lowest support. Child-reported social support had a positive association across the three energy-balance related behaviors examined ($p<.001$)

Conclusions and Implications—While child-reported social support was associated with energy-balance related behaviors across ethnic groups, the lower perceived parental and family social support in Hispanic children may represent an important opportunity for intervention.

Keywords

social support; physical activity; nutrition; socioeconomic status; Hispanic

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INTRODUCTION

Physical activity (PA) and fruit and vegetable consumption (FVC) are key energy-balance behaviors for the prevention of childhood obesity¹ that also provide multiple additional chronic disease prevention benefits, including the prevention of hypertension, Type 2 diabetes, cardiovascular disease, and some types of cancer^{1, 2, 3}. Beyond these multiple health benefits, a growing body of research has found that PA can enhance children's academic achievement,⁴ with an emerging body of research also documenting academic benefits for healthy eating^{5, 6}. Despite these benefits, less than half of U.S. school-aged children meet national recommendations of 60 minutes of daily PA⁷ and approximately one third or less meet recommendations³ for FVC⁸. As PA and eating behaviors established during childhood have been found to track into adulthood⁹, childhood is a key developmental age for promoting PA and healthy eating.

A consistent correlate of PA and FVC among children has been social support^{10–12}. Three primary types of social support include direct/instrumental support, such as a parent taking a child to a park to be physically active, emotional support or praise—which may include positive parental encouragement for a child's engagement in PA, and modeling support, such as a parent eating fruit and vegetable or exercising in front of his/her child^{1, 13}. Parents are a primary source of social support for elementary school children¹³ and hold the potential to directly influence their children's PA and healthy eating behaviors¹.

Although a growing body of research has found parental support to be positively associated with children's PA^{11, 14} and healthy eating^{12, 15}, research is sparse on the prevalence of parental support for children's PA and healthy eating behaviors among ethnic minority and lower income populations in the United States. A limited body of research has found parental social support to be positively associated with PA for an African American sample¹⁶, with healthy eating for an all Latino sample¹⁷, and with PA for a multi-ethnic, low income sample¹⁸. Given current ethnic and SES disparities in childhood obesity in the United States¹⁹ as well as the deficiencies in U.S. children's meeting of PA and FVC guidelines,^{7, 8} further research is warranted on potential disparities in parent and family social support for children's PA and healthy eating by ethnicity and socio-economic status in order to better inform child health promotion efforts²⁰.

Texas is an important location for exploring potential disparities in the provision of parent social support for physical activity and healthy eating based on the high prevalence of childhood obesity, with 42% of 4th graders classified as overweight or obese²¹—a prevalence rate that is higher than the national rate of 32.6% for children aged 6–11 years in 2009–2010²². This study examined levels of child-reported *parent and family social support*, hereafter referred to as social support, for PA and FVC by ethnicity, family income, and parent education level among a sample of elementary school-aged children in central Texas as well as the associations of child-reported *social support* with PA (running), FVC, and child weight status among 3 ethnic groups (Hispanic, African American, and White children) and among higher and lower income SES children. For the purpose of this study, running was used as a proxy measure for PA.

METHODS

Study Design and Sample

A secondary analysis was conducted of cross-sectional baseline data from the Active Kids-Healthy Kids project, an evaluation study of the school and community-based Marathon Kids program. Marathon Kids aims to promote running and walking and fruit and vegetable consumption in elementary school children²³. Study participants were n=581 4th and 5th grade students and their parents attending 19 low-income public elementary schools located in a large urban school district in Central Texas. Schools were selected from a sampling frame of 55 low income schools (defined as 60% school composition of economically disadvantaged students based on data from Texas Education Agency). Five of these schools were initially invited to participate in an enhanced Marathon Kids program, and then 15 additional schools were randomly selected from the sampling frame of low income schools and matched on economic disadvantage and ethnicity with the 5 schools. Of these twenty schools, 19 agreed to participate, comprising the final sample for the study. Demographic characteristics of the 19 schools in the sample were found to be representative, based on ethnicity and economic disadvantage, of the broader sampling frame of the 55 economically disadvantaged schools, with no significant differences in demographics between the 2 groups based on ANOVA (Hispanic ethnicity: 86.4% district, 85.7% sample; African American: 7.5% district, 7.2% sample; White: 5.2% district, 5.9% sample; Economic disadvantage: 90.4% district, 89.4% sample).

Study Measures and Data Collection

Data were collected primarily via a self-administered survey with students and their parents in Fall 2010. The study objectives and protocols from the original study were reviewed and approved by the University of Texas School of Public Health Committee for the Protection of Human Subjects and by the participating school district internal review board. Parent data were collected by sending a letter of invitation, an informed parental consent form, and a parent questionnaire home with the students. After obtaining parental consent, student assent was obtained at the time the survey was administered during class time. Students and parents were provided the option of filling out the survey in English or Spanish. The majority of students (80.4%) and parents (52.1%) took the survey in English. Of the n=866 students attending 4th and 5th grade at the 19 schools at the time of the baseline survey, n=747 participated. Among those students, n=581 had complete student and parent data, comprising the final analytic sample and representing a response rate of 67.1%.

The student and parent surveys included measures on socio-demographic characteristics, FVC, PA, and psychosocial-related constructs. For this study, data on parent and family social support, PA, FVC, gender, age, and child ethnicity were reported by and collected from the child (see Table 1 for description) whereas parent ethnicity, family income, and parent education were obtained from the parents. Study measures were adapted primarily from previously tested measures on children's PA and FVC as described below. Study questionnaires were translated, back-translated and centered by 2 bilingual research staff (a native Spanish speaker and a native English speaker). Flesch Reading Ease assessments

indicated a 4th grade reading level for the student questionnaire and a 7th grade reading level for the parent questionnaire. The following section describes the primary study measures.

Child-Reported Social Support—Child-reported social support measures for PA were adapted from the Amherst Health and Activity Study¹³ and the Athletic Identify Questionnaire for Children²⁴, which support the factorial and construct validity for measurement of social support in ethnically diverse children. In this study, 6 questions were completed by the child to assess social support for PA. Respondents were asked to rate statements using a 5-point Likert-type scale ranging from never (coded 1) to always (coded 5). Child-reported social support measures for healthy eating were adapted from the Family Influence scale, which has been found to exhibit acceptable internal consistency and good test-retest reliability²⁵. Four items on social support for FVC were completed by the child on a 5-point Likert-type scale (ranging from never to always).

For the current study, the authors created the following 3 composite social support variables by summing responses from the 6 social support questions related to PA to create “child-reported social support for PA”, the 4 questions related to healthy eating to create “child-reported social support for FVC”, and all 10 questions to create “combined child-reported social support”. Composite scores for child-reported social support of PA ranged from 6 (low support) to a total possible score of 30 (high support). Composite scores for child-reported social support of healthy eating ranged on a similar scale from 4 to 20. Composite scores for combined child-reported social support ranged from 10–50. Exploratory factor analyses indicated a good level of internal consistency for the 3 measures of social support (PA: $\alpha=.81$; FVC: $\alpha=.80$; and combined FVC and PA social support: $\alpha=.85$).

Physical activity—PA was assessed using the running item from the Physical Activity Questionnaire for Older Children (PAQ-Q), a 7-day recall measure designed to assess general PA levels in children in grades 4 and higher. The PAQ-C has been found to have good internal consistency and test-retest reliability in children^{26–28}, and has been related to the Caltrac accelerometer ($r = .39$) and step test of fitness ($r = .28$)²⁶. Seven-day recall measures have also been found to have adequate reliability and validity for 5th, 8th and 11th grade children in the United States²⁹. This study focused specifically on past 7-day running, as this behavior was a primary target of the Marathon Kids program.

Fruit and vegetable consumption—Two items assessing FVC were adapted from the School Physical Activity and Nutrition (SPAN) survey, which has been tested for validity and reliability^{30–33}. The SPAN survey items ask students to indicate how many times they have eaten fruits (or vegetables) on the previous day, with response options of 0, 1, 2, and 3 or more times. The SPAN survey has been found to have an acceptable level of reproducibility in 4th grade students, with Kappa statistics for fruit and vegetable items ranging from 0.60 to 0.65³².

Weight status—Weight status was assessed both as an outcome variable as well as a covariate in the regression analyses that assessed the association of child-reported social support with child PA and FVC. Anthropometric measures of the child’s height and weight were taken by trained and certified research staff at the child’s school in a private area using

a portable stadiometer and digital scale and following standard protocols previously reported³¹. Quality assessments of height and weight were conducted on 10% of measurements and indicated 95% inter-rater reliability. A variable for Body Mass Index (BMI) was constructed from the measured height and weight based on standard formulas^{34, 35} using height, weight, age, and gender to categorize children as underweight, normal, overweight, and obese based on age and gender specific percentiles. Overweight was classified as between the 85th to less than 95th percentile, and obese was classified as at or above the 95th percentile.

Parent income—Parents were asked to mark their total household income per month from a list of 6 options. The categories, in \$1,000 increments, ranged from less than \$1,000 a month to \$5,000 or more a month. Income was used as a measure of socioeconomic status in the regression analysis.

Parent education—Parents were asked to mark the highest level of education among all adults living in the household by choosing from a list of 6 options. The categories were 8th grade or less; some high school, but did not graduate; high school graduate or GED; some college, or 2-year degree; 4-year college graduate; and more than a 4-year college degree.

Ethnicity—Students were asked to describe themselves by choosing from a list of 7 possible response options. For this study, the authors focused on the 3 largest ethnic groups: African American; Mexican American or Hispanic; and White, non-Hispanic. An “Other” category was created to include students who described themselves as American Indian, Asian, Native Hawaiian/Pacific Islander, or other.

Other socio-demographic characteristics—These variables included age, measured in years and child gender (male/female).

Statistical Analyses

Statistical analyses were performed using IBM SPSS Statistics version 19.0, SPSS Inc., Chicago, IL, 2010. Descriptive statistics were performed to describe the frequency of FVC and PA and the prevalence of obesity. Chi-square tests, ANOVA, and Tukey’s Post Hoc tests were run to examine statistical differences in PA, FVC, and obesity by levels of child-reported social support. Lastly, multiple linear regression analysis was performed to assess differences in PA and FVC by child-reported social support, controlling for child-reported gender, child-reported ethnicity, and parent-reported income. Statistical significance was set using a type I error level of $p < .05$.

RESULTS

Demographic Characteristics of the Sample

Details on the characteristics of the study sample can be found in Table 2. In general, just over half of the child sample was comprised of girls (59.3%). While the child sample was ethnically diverse, the majority was Hispanic (62.6%) (Table 2). Among Hispanic students, 69.2% reported speaking Spanish with their parents at home. The parent sample ($n=581$)

was primarily female (83.7%), and 68.0% reported to be of Hispanic ethnicity (Table 2). Among Hispanic parents, 68.6% reported speaking Spanish at home with their child. In the parent sample, 44% of respondents reported some high school education or had completed high school and 69% of the parent sample earned less than \$2,000 each month (Table 2). According to the U.S. Census Bureau, the federal monthly poverty line in 2010 for a 4 person family was \$1,900³⁶, indicating that roughly 69% of the sample was living below the poverty line if one assumes that, on average, each family consisted of 4 people.

Child-Reported Social Support by Socio-Demographic Factors

A one-way analysis of variance (ANOVA) was conducted to assess statistical differences between mean levels of child-reported social support for PA and FVC by socio-demographic factors (child-reported gender and race/ethnicity and parent-reported education and income) (Table 2). While no differences in children's reporting of social support were found by education level, significant differences in social support were found by ethnicity, income, and child gender. With regard to ethnicity, Hispanic children reported significantly lower mean social support scores for PA compared to African American children ($p=.014$). White children reported significantly higher mean social support scores for FVC compared to African American ($p=.044$), Hispanic ($p<.001$), and "Other" ($p=.016$) children. With regard to household income, no differences in PA were found across parent-reported income categories. However, children in households with a monthly income of \$0–\$999 reported significantly lower mean social support scores for FVC compared to children in households with a monthly income of \$5,000 ($p=.004$).

Child-Reported Social Support, PA, FVC, and Weight Status

Bivariate analyses—Higher levels of mean child-reported social support were found to be associated with higher frequency of PA ($p<.001$) and higher consumption of fruit and vegetables ($p<.001$) (Table 3). The positive association between PA and child-reported social support held when stratified by gender ($p<.001$) [data not shown in tables]. No significant association was found between social support with the child's weight classification [data not shown in tables].

ANOVA—ANOVA tests were conducted to evaluate the relationship between child-reported social support and PA and FVC when stratifying for child-reported race/ethnicity and parent-reported monthly income.

Physical Activity: When stratified by ethnicity, the significant association between child-reported social support and PA held for White children ($p<.05$), African American children ($p<.01$), and Hispanic children ($p<.001$) (Table 3).

When stratifying based on monthly income, the significant association between child-reported social support and PA held for less than \$1,000 a month ($p<.05$), between \$1,000 and \$1,999 a month ($p<.01$), and between \$2,000 and \$2,999 a month ($p<.05$). Children with parents who made less than \$1,000 a month and who reported exercising 7 or more times a week reported statistically significant higher levels of social support than children who exercised 1–2 times (based on Tukey's Post Hoc test, $p<.01$) [data not shown in tables].

Fruit & Vegetable Consumption: While vegetable consumption was significantly related to parent and family support in Hispanic children ($p<.001$), no significant associations between FVC and child-reported social support were found for White and African American children (Table 3). When stratifying based on monthly income, the significant association between child-reported social support and fruit consumption held for \$5,000 a month ($p<.05$) [data not shown in tables]. The association with vegetable consumption held for $< \$1,000$ a month ($p<.05$), \$3,000–\$4,000 a month ($p<.05$), \$4,000–\$5,000 a month ($p<.05$), and $> \$5,000$ a month ($p<.01$) [data not shown in tables].

Multiple linear regression—Separate multiple linear regression models for each outcome variable (PA, fruit consumption, and vegetable consumption) were found to significantly vary with child-reported social support in the bivariate analyses. Findings indicated that higher levels of social support were significantly related with higher mean scores of PA, fruit consumption, and vegetable consumption ($p<.001$) when adjusting for child-reported ethnicity, age, and gender and parent-reported income (Table 4).

DISCUSSION

This study aimed to provide further insights about the role of child-reported social support in children's engagement in PA and healthy eating among ethnically and socioeconomically diverse children in central Texas. The authors found that Hispanic children and children from lower income households reported the lowest levels of social support for PA and FVC. In contributing to a growing body of research on social support and children's PA^{37–38} and healthy eating^{12, 15}, the authors found child-reported social support was positively related to child engagement in 3 energy balance-related health behaviors examined (PA, fruit consumption, and vegetable consumption) for the total sample, across ethnic groups of Hispanic, African American and White children, and for the lowest income children. These findings provide further evidence on the role of child-reported social support in children's PA and healthy eating while underscoring potential disparities in the provision of social support for Hispanic and lower SES children.

In the United States, several studies have documented important disparities in PA and healthy eating for ethnic minorities and children from lower socioeconomic status households. Hispanic children have been found to engage in less PA compared to White children^{37, 39, 40}, and Hispanic children and lower income children have been found to have less access to safe places to be physically active^{41, 42}. Although research on fruit and vegetable intake by socioeconomic status in children is mixed¹⁵, secular trends based on NHANES data in the U.S. for adults indicate important disparities for lower income and less educated populations for fruit and vegetable intake⁴³.

The findings from this study indicate potential disparities of child-reported social support for PA and FVC for Hispanic children, for FVC among African American children, and for FVC among children from lower income households. Although the literature examining social support by ethnicity is sparse, recent research based on nationally representative data from the U.S. indicate that African American and Hispanic parents report providing lower levels of social support than White parents⁴⁴. These disparities may result from increased

barriers for lower income and ethnic minority parents and families to provide PA and healthy food options for their children. For example, healthier food outlets and opportunities for PA in the U.S. have been found to be less available in communities with low SES and high proportions of racial/ethnic minorities⁴⁵. Conversely, U.S. communities that have lower fruit and vegetable prices, higher fast food prices, and greater supermarket availability are associated with higher child FVC and lower BMI⁴⁶. Lower income families may also experience barriers with “time poverty”, given recent research that indicates that maternal employment is associated with less time spent grocery shopping, cooking, eating and playing with children⁴⁷.

Hispanic parents with limited English proficiency may be confronted with additional social barriers that limit their exposure to information and opportunities to provide PA and healthy eating social support. A lack of English ability has been cited as an important barrier to parents’ access to and comprehension of information on out-of-school programs and education⁴⁸, and nationally representative data from the U.S. indicate that a lower percentage of Spanish-speaking households compared to English-speaking households report receiving personal notes or emails about their child⁴⁹. Furthermore, Spanish-speaking Hispanic parents have been found to have lower involvement in schools⁵⁰, which may be a result of few opportunities for these parents to volunteer⁴⁹ feeling unwelcome, inconvenient meeting times, and language barriers⁴⁹. These language barriers may limit Spanish-speaking parents’ exposure to messages and programs that aim to increase parents’ role in providing social support for their children’s PA and FVC.

African American children reported higher levels of social support for PA compared to Hispanic children, but lower levels of social support for FVC compared to White children. The findings from this study support work by Watt et al. who found that Hispanic and African American parents were less likely to provide social support for child health behaviors than White parents⁴⁴.

Child-reported social support was not found to be significantly related to child’s weight status in this sample of Texas elementary school children. Previous research on the association between social support and child weight status is sparse. A study examining parental social support and children’s overweight/obesity across parent race/ethnicity, language, and sex found that social support in parenting was a significant predictor in the prevention of overweight/obesity for English-speaking Hispanic fathers, but not any other parent ethnicity, language, sex combination⁴⁴. One possible explanation for the lack of association may be due to parents and families adjusting the social support being provided for their children’s PA and healthy eating upon realization that their child is overweight or obese.

Key strengths of the current study include the exploration of child-reported social support for physical activity and healthy eating by ethnicity, education and income using an ethnically diverse sample of 4th and 5th grade students. These strengths notwithstanding, this study has specific limitations that merit mention. First, because the study was based on cross-sectional data, the authors cannot infer causality. Second, this sample was recruited from 1 school district in central Texas; as such, further research with larger and

geographically diverse samples is needed. The FVC and PA variables were based on child-reported measures, not objective measures, and as such may be subject to social desirability bias. As the vegetable measure was a general measure of vegetable consumption and did not include a specific probe on bean consumption, Hispanic children's vegetable consumption may have been underestimated. Furthermore, the authors were limited to analyzing only 1 measure of PA. Additionally, this study did not include measures of family structure, which may influence the associations observed. Lastly, all models had low beta and R^2 values, which suggests that other factors influence these energy-balance behaviors in addition to social support.

IMPLICATIONS FOR RESEARCH AND PRACTICE

This study contributes to a limited body of literature^{16–18} on child-reported parent and family social support for children's PA and healthy eating by ethnicity and SES. The findings from this study on the positive association between child-reported social support and PA and FVC across ethnic groups and among lower income families provide further evidence of the importance of social support for these key health behaviors. The lower levels of social support reported by Hispanic and lower SES children provide an important foundation for further investigation into the social and environmental factors that may limit parents' ability to provide social support. Additionally, as African American children in the U.S. are at greater risk for obesity compared to White children²², the lower levels of parent and family support for healthy eating reported by African American children may point to a potential area for intervention.

While these measures of PA and FVC have evidence of reliability and validity^{26–28, 30–33}, future research is warranted that includes more comprehensive and objective measures of children's eating and PA behaviors. Although the authors did not find child-reported social support to be associated with child weight status based on CDC classifications, further research with ethnicity-specific cut-points for BMI may provide additional insights given some research that has found that the CDC BMI-for-age cut-points may fail to distinguish high adiposity among some racial/ethnic groups.⁵¹ Additionally, future research on family structure may provide greater insights into the role of social support in promoting or inhibiting PA and FVC. Lastly, given the limited body of research on social support by ethnicity and SES, future research is needed to confirm the findings from this study and to explore the potential barriers and factors that can inform interventions aimed at increasing child-reported social support.

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Table 1

Description of Study Measures, Marathon Kids Study, Fall 2010

Variable	Description
Physical activity/running (PA)	Question: "Have you done any of the following activities in the past 7 days? ... running or jogging for exercise?" Responses: "No," "1–2 times," "3–4 times," "5–6 times," or "7 or more times"
Fruit consumption (F)	Question: "Yesterday, did you eat fruit? Do not count fruit juice" Responses: "No," "1 time," "2 times," or "3 or more times"
Vegetable consumption (V)	Question: "Yesterday, did you eat any vegetables? Vegetables are all cooked and uncooked vegetables; salads; and boiled, baked and mashed potatoes." Responses: "No," "1 time," "2 times," or "3 or more times"
Child-reported social support for PA	Question: "I have parents and family who... (1) want me to exercise or be physically active, (2) exercise with me, (3) encourage me to do sports or exercise, (4) watch me when I exercise or play sports and give me feedback on what I'm doing, (5) spend time teaching me how to play a sport or do a physical activity, and (6) are proud of me when I exercise" Constructed by sum of responses: "never (coded 1)," "almost never (coded 2)," "sometimes (coded 3)," "almost always (coded 4)," or "always (coded 5)" Range: 6(low)–30(high), $\alpha = .80$
Child-reported social support for FV	Question: "I have parents and family who... (1) eat fruit and vegetables, (2) want me to eat fruit and vegetables, (3) give me fruit and vegetables to eat, and (4) encourage me to eat fruit and vegetables" Constructed by sum of responses: "never (coded 1)," "almost never (coded 2)," "sometimes (coded 3)," "almost always (coded 4)," or "always (coded 5)" Range: 4 (low)–20 (high), $\alpha = .81$
Combined PA and FVC child-reported social support	Range: 10 (low)–50 (high), $\alpha = .85$

Table 2

Descriptive Characteristics of Parent and Child Study Samples and Child-Reported Parent and Family Social Support Scores by Socio-Demographic Factors, Marathon Kids Study, Fall 2010 (n= 581).

	Total Parent Sample n (%)	Total Child Sample n (%)	Child-Reported Social Support for PA (6–30) Mean (SD)	Child-Reported Social Support for FV (4–20) Mean (SD)
Mean Age in Years (SD)	36.1 (7.49)	9.8 (.68)		
Gender				
Male	92 (16.3)	232 (40.7)	22.9 (5.34)	15.9 (3.41) *
Female	471 (83.7)	338 (59.3)	23.6 (5.08)	16.6 (3.41)
Ethnicity				
White	71 (12.6)	38 (6.7)	23.9 (4.35) *	18.4 (2.18) *** ^a
African American	87 (15.5)	85 (14.9)	24.8 (4.68)	16.7 (3.59)
Hispanic	382 (68.0)	357 (62.6)	22.9 (5.27) ^b	16.0 (3.39)
Other	22 (3.9)	90 (15.8)	23.9 (5.41)	16.4 (3.47)
Highest Level of Edu. ^d				
8th grade	86 (17.0)		23.4 (5.89)	16.0 (3.30)
some HS	96 (19.0)		23.2 (4.60)	16.1 (3.45)
HS or GED	126 (25.0)		23.6 (5.02)	16.3 (3.22)
some college/2 yr deg.	99 (19.6)		23.1 (5.15)	16.4 (3.55)
4 yr college degree	47 (9.3)		23.1 (5.70)	16.5 (3.39)
more than 4 yr degree	51 (10.1)		24.0 (4.15)	17.6 (3.04)
Monthly Income ^d				
\$0–\$999	163 (32.4)		23.2 (5.16)	15.8 (3.44) *** ^c
\$1000–\$1999	184 (36.6)		23.1 (5.16)	16.3 (3.41)
\$2000–\$2999	44 (8.7)		23.7 (5.50)	17.1 (3.07)
\$3000–\$3999	30 (6.0)		23.8 (5.60)	16.1 (3.57)
\$4000–\$4999	22 (4.4)		24.9 (3.05)	17.1 (2.66)
\$5000	60 (11.9)		24.0 (4.63)	17.6 (2.99)

Note. PA, physical activity. FV, fruit and vegetable consumption.

*
p<.05

**
p<.01

p<.001, significant differences based on ANOVA tests (significance level holds for all categories within the variable)

^aBased on Tukey's Post Hoc test, significant differences between White children and African American children (p<.05), Hispanic children (p<.001), and "Other" children (p<.05) for social support of FVC.

^bBased on Tukey's Post Hoc test, significant differences between Hispanic children and African American children (p<.05) for social support of PA.

^cBased on Tukey's Post Hoc test, significant differences between monthly household income of \$0–\$999 and \$5,000+ (p<.01) for social support of FVC.

^dHighest level of education and monthly income are based on parent information

Table 3

Mean scores of Child-Reported Parent and Family Social Support for Different Child Ethnicities across Physical Activity Levels, Fruit Consumption, and Vegetable Consumption among 4th and 5th Grade Students-Central Texas, Fall 2010 (n=581).

	Child Fruit Consumption Yesterday		
	0 times	1 time	2 times 3 times
Mean Child-Reported Social Support Score (N) **	37.6(68)	38.6(190)	40.5(162) 40.9(152)
White (N)	40.3(6)	40.4(8)	45.3(14) 40.9(10)
Hispanic (N)	36.6(33)	38.2(131)	39.1(103) 40.2(85)
African American (N)	39.1(17)	40.9(24)	41.1(14) 43.3(30)

	Child Vegetable Consumption Yesterday		
	0 times	1 time	2 times 3 times
Mean Child-Reported Social Support Score (N) ***	36.1(111)	39.3(190)	40.1(144) 43.0(124)
White (N)	39.1(7)	41.7(7)	43.6(15) 43.1(9)
Hispanic (N) ***	35.7(70)	39.0(131)	38.7(81) 42.0(69) ^d
African American (N)	37.5(17)	41.4(26)	42.3(21) 44.0(19)

	Child Physical Activity ^e			
	0 times	1–2 times	3–4 times	5–6 times 7 times
Mean Child-Reported Social Support Score (N) ***	34.6(18)	36.8(120)	39.9(143)	41.4(90) 41.5(192)
White (N) *	40.9(7)	44.5(15)	45.2(6)	38.3(10)
Hispanic (N) ***	34.1(13)	36.2(79)	38.8(88)	40.7(61) ^b 40.9(105) ^c
African American (N) **	29.0(3) ^a	38.2(15)	40.6(18)	44.5(8) 43.3(41)

Note.

* (p<.05)

** (p<.01)

*** (p<.001). All data based on ANOVA tests.

Based on Tukey's Post Hoc:

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Significant differences between 0 times and 5–6 times and 7 times for Black children ($p<.01$)
b Significant differences between 5–6 times and 0 times and 1–2 times for Hispanic children ($p<.01$)
c Significant differences between 7 times and 0 times ($p<.01$) and 1–2 times ($p<.001$) for Hispanic
d Significant differences between 3 times and 0 times, 1 time, 2 times for Hispanic children ($p<.001$)
e Physical Activity measured by past 7 day running

Table 4

Multiple Linear Regression Results for the Associations of Child-Reported Parent and Family Social Support and Physical Activity, Fruit Consumption, and Vegetable Consumption among 4th & 5th Grade Students in Central Texas, Fall 2010 (n= 581).

	Dependent Variable	Beta	SE	t-value	p-value	R ²
Child-Reported Social Support	PA	0.081	0.013	6.265	<0.001 ***	0.068
Child-Reported Social Support	FC	0.019	0.006	3.459	<0.001 ***	0.015
Child-Reported Social Support	VC	0.038	0.006	6.684	<0.001 ***	0.071

Note: PA, Physical Activity, FC, Fruit Consumption, VC, Vegetable Consumption.

p<.001

Adjusted for income, child ethnicity, age, and gender.