

## Background

Food insecurity (the lack of availability or access to healthful food because of insufficient resources) negatively influences children's development.

For instance, living in a food insecure household is associated with early childhood behavior problems.

While numerous studies have been cross-sectional, few studies have followed the long-term effects of early childhood food insecurity.

**Objective:** To examine the association between early childhood experiences with food insecurity and school behavior

## Methods

### Participants

Data was drawn from the main and child surveys from the Fragile Families & Child Well-being study. The analyses focused on 1,666 mothers and their children who had complete data at collection time points when the child was 3, 5, and 9 years of age.

### Measures

**Food insecurity.** Mothers reported on the 18-item USDA scale when child was 3 & 5 years.  $\geq 3$  affirmative responses at either time point = early childhood food insecurity.

**School Behavior.** Child reported at age 9.

- **School Connectedness:** 4-items: inclusiveness, closeness, happiness, and safety the child experienced at school on a 0 = *not in the past month* to 4 = *everyday* scale. Higher scores indicated greater school connectedness ( $\alpha = .70$ ).
- **Peer Bullying:** 4-items: picked on, hit, lunch being taken, and purposely being left out of activities on a 0 = *not in the past month* to 4 = *everyday* scale. Higher scores indicated greater peer bullying ( $\alpha = .67$ ).
- **School Delinquency:** 3-items: cheated on a test, skipped school without an excuse, suspended/expelled from school. Higher number of affirmative responses indicated greater school delinquency ( $\alpha = .22$ ).

### Analyses

Covariate-adjusted OLS regression models were conducted to predict school behavior problems in middle childhood based on early childhood experiences with food insecurity.

## Results

**Table 1. Characteristics: Full Sample & by Early Childhood Food Security Status [Mean (SD) or %]**

Characteristics	Full Sample (N = 1,666)	Food Insecure (n = 619)	Food Secure (n = 1,047)
<b>Dependent Variables</b>			
School connectedness	12.44 (3.81)	<b>12.11 (4.04)</b>	<b>12.64 (3.66)**</b>
Peer bullying	2.51 (3.16)	2.52 (3.15)	2.51 (3.17)
School-related delinquency	0.27 (0.52)	0.27 (0.52)	0.25 (0.49)
<b>Independent Variable</b>			
Early childhood food insecurity	37%	100%	0%
<b>Control Variables</b>			
Maternal age (years)	27.92 (5.82)	27.72 (5.68)	28.03 (5.91)
Race/ethnicity			
White	21%	<b>19%</b>	<b>23%*</b>
Black ^	49%	50%	48%
Hispanic	30%	31%	29%
Relationship status			
Married	32%	<b>26%</b>	<b>35%***</b>
Cohabiting	27%	27%	27%
Single ^	41%	<b>47%</b>	<b>38%**</b>
Education			
Less than high school	27%	<b>32%</b>	<b>24%***</b>
High school diploma	28%	26%	29%
Associates or higher ^	45%	<b>42%</b>	<b>47%*</b>
Household income			
< 199% FPL	68%	<b>77%</b>	<b>63%***</b>
$\geq 200 - 299\%$ FPL^	32%	23%	47%
Health insurance			
No health insurance	7%	8%	6%
Public ^	61%	<b>69%</b>	<b>58%***</b>
Private	32%	<b>23%</b>	<b>36%***</b>

^Comparison group in regression models (Table 2). FPL = Federal Poverty Line

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

**Table 2. OLS Regression Models Predicting School Behavior Problems (n = 1,666)<sup>a</sup>**

Characteristics	School Connectedness	Peer Bullying	School Delinquency
<b>Independent Variable</b>			
Early childhood food insecurity	<b>-0.51 (0.20)**</b>	0.05 (0.16)	<b>0.06 (0.03)*</b>
<b>Controls</b>			
Maternal age (years)	-.01 (0.02)	.02 (0.01)	-.00 (0.00)
Race/ethnicity			
White	.15 (0.27)	-.27 (0.22)	.03 (0.04)
Hispanic	.25 (0.23)	-.15 (0.19)	.01 (0.03)
Relationship status			
Married	.34 (0.25)	-.00 (0.21)	.02 (0.03)
Cohabiting	-.07 (0.24)	.21 (0.20)	.01 (0.03)
Education			
Less than high school	-.30 (0.26)	.10 (0.21)	.00 (0.03)
High school diploma	-.36 (0.24)	.30 (0.20)	.04 (0.03)
Household income			
< 199% FPL	.06 (0.25)	-.30 (0.21)	<b>-.07 (0.03)*</b>
Health insurance			
No health insurance	-.08 (0.38)	-.46 (0.32)	-.07 (0.05)
Private	-.02 (0.26)	-.09 (0.22)	-.06 (0.04)

<sup>a</sup>Unstandardized beta coefficient (standard error of unstandardized beta coefficient). \* $p < .05$ , \*\* $p < .01$

### Sample Characteristics by Early Childhood Food Security Status (Table 1)

Children who were food insecure during early childhood had lower levels of school connectedness ( $p < .01$ ), but similar instances of peer bullying and school delinquency ( $p > .05$ ).

Food insecure children lived in households that were more socio-economically disadvantaged compared to food secure children. There was increased prevalence of minority status ( $p < .05$ ), single parents ( $p < .01$ ) and household income less than 199% FPL ( $p < .001$ ).

Mothers of children who experienced food insecurity during early childhood had lower rates of high school education attainment ( $p < .001$ ).

### Early Childhood Food Insecurity Predicting School Behavior Problems during Middle Childhood (Table 2)

Early childhood food insecurity predicted lower levels of school connectedness ( $p < .01$ ) and greater levels of school delinquency ( $p < .05$ ) during middle childhood.

However, early childhood food insecurity did not predict peer bullying experiences in middle childhood ( $p > .05$ ).

## Conclusions

Results indicate that there are long-term effects of experiencing early childhood food insecurity on school behavior problems in middle childhood.

### Implications for prevention programs

Early childhood prevention programs geared towards children living in poverty, such as Head Start, have been shown to promote social-emotional school readiness.

Continuing these prevention programs during middle childhood may reduce school behavior problems.

## Contact Information

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