Short Communication

# Household food insecurity during childhood and adolescent misconduct 

Dylan B. Jackson ${ }^{\text {a,* }}$, Michael G. Vaughn ${ }^{\text {b }}$<br>${ }^{\text {a }}$ The University of Texas at San Antonio, United States<br>${ }^{\mathrm{b}}$ Saint Louis University, United States

## A R T I C L E I N F O

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#### Abstract

A large body of research has found that household food insecurity can interfere with the healthy development of children. The link between household food insecurity during childhood and misbehaviors during adolescence, however, is not commonly explored. The objective of the current study is to assess whether household food insecurity across childhood predicts four different forms of misconduct during early adolescence. Data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999 (ECLS-K), a nationally representative sample of U.S. children, were employed in the present study. Associations between household food insecurity during childhood and adolescent misconduct were examined using Logistic and Negative Binomial Regression. Analyses were performed separately for males and females. The results revealed that household food insecurity and food insecurity persistence were predictive of most forms of misconduct for males, and were consistently predictive of engagement in multiple forms of misconduct and a greater variety of forms of misconduct for males. For females, however, household food insecurity generally failed to predict adolescent misconduct. The behavioral development of males during adolescence appears to be sensitive to the presence and persistence of household food insecurity during childhood. Future research should seek to replicate and extend the present findings to late adolescence and adulthood.


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## 1. Introduction

Estimates indicate that over 15 million children in the United States confront challenges stemming from household food insecurity (Coleman-Jensen et al., 2016). Food insecurity refers to the consistent lack or scarcity of healthy household foods (or food in general), and, when particularly severe, may also include the experience of frequent hunger. Prior research has found that food insecurity 1) tends to cooccur with a number of household risk factors (Chilton et al. 2015; Melchior et al., 2009) and 2) increases the likelihood of various deleterious outcomes for children and families (Nord et al. 2006; Timmer 2012; Whitaker et al. 2006). To illustrate, food insecurity during childhood has been linked to asthma, frequent hospitalizations, suicidal ideation, and deficits in academic, neuro-cognitive, and psychosocial skills (Alaimo et al. 2001, 2002; Belsky et al. 2010; Chilton et al. 2009; Chilton et al. 2007; Cook et al. 2004; Jyoti et al. 2005; Kirkpatrick et al. 2010; Rose-Jacobs et al. 2008). In short, household food insecurity has widespread implications for the healthy development of children.

While an emerging body of research has examined the links between food insecurity and a variety of health and developmental outcomes (e.g., Cook et al. 2004), a related body of scholarship has begun to investigate the association between food insecurity and conduct problems. Extant studies have found that after adjusting for various

[^0]indicators of disadvantage, food insecurity increased the odds of externalizing behavior, suggesting that food insecurity exerts an independent risk over and above other features of poverty (McLaughlin et al. 2012; Slopen et al. 2010). Although the mechanisms by which food insecurity exerts its influence on externalizing behavior is unresolved, presumed explanations include nutritional inadequacies and malnutrition leading to neurodevelopmental insults that compromise self-regulation and executive functioning in the early formation of temperament (DeLisi and Vaughn 2014; Jackson 2016; Liu and Raine 2006; Liu et al. 2004; Vaughn et al. 2016) and the influence of material hardship, maternal deprivation, and family neglect, which are intertwined with household food insecurity (Zilanawala and Pilkauskas 2012).

Despite the advances made by these studies, what is lacking is an examination of the associations between household food insecurity during childhood and specific forms of problem behavior such as bullying, theft, lying, and defiance and the unfolding nature of these associations over time. These associations are important to unravel for the prevention of conduct problems, as household food insecurity represents a modifiable risk factor. The objective of the present study is to shed light on these aforementioned connections. We hypothesize that household food insecurity during childhood will be associated with specific forms of adolescent misconduct, even after controlling for a host of individual and household-level confounds. Given that males are more likely to evince early externalizing behavioral problems that are linked to selfregulation capacity in the executive centers of the brain (Barkley 1997), and in turn these areas are sensitive to nutrition (Liu and Raine 2006),


Fig. 1. Predicted probabilities of engaging in multiple forms of misconduct by food insecurity persistence and gender. Covariates are set to their means.
we hypothesize that effects will be stronger in males than in females. In addition to testing these hypotheses, we explore the developmental timing of food insecurity on these specific forms of misconduct and assess their cumulative risk.

## 2. Materials \& methods

The data for the present study come from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999 (ECLS-K). The ECLS-K is a longitudinal study of a nationally representative sample of over 21,000 American children that spans from the kindergarten school year through early adolescence. In total, seven waves of data were collected. The first wave of data began in the fall of the 1998-1999 school year. The second wave of data collection occurred during the spring of the kindergarten school year. The third and fourth waves of data collection occurred during the fall and spring of the first grade school year (19992000). Finally, the fifth, sixth, and seventh waves of data collection occurred during the spring of the third grade (2002), fifth grade (2004), and eighth grade school years (2007) respectively. The data are wellsuited to the present study, as they include a large number of items measuring food insecurity across multiple waves, as well as questions about a number of acts of misconduct during the final wave of data collection, when subjects were approximately 13-14 years of age. Final sample sizes ranged from 6531 to 7028.

### 2.1. Misconduct measures

The outcome variables of interest in the present study cover a number of acts that are designated as distinct forms of misconduct. The forms of misconduct relate to fighting/bullying, stealing, cheating/ lying, and defying/misbehaving. ${ }^{1}$ During the seventh wave of data collection, parents were asked to state whether the following statements concerning their child were not true (1), somewhat true (2), or certainly true (3) over the course of the school year:
" $\{\mathrm{He} / \mathrm{She}\}$ often fights with other youth or bullies them."

[^1]"\{He/She\} steals from home, school, or elsewhere."
" $\{\mathrm{He} / \mathrm{She}\}$ often lies or cheats."
" $\{\mathrm{He} / \mathrm{She}\}$ is generally well behaved, usually does what adults request."

Due to the pronounced skew of these items, we opted to dichotomize them. For the first three items, subjects whose parents reported that the statement was not true were assigned a value of 0 and subjects whose parents reported that the statement was either somewhat or certainly true were assigned a value of 1 . However, in the case of the final item, subjects whose parents reported that the statement was certainly true were assigned a value of 0 and subjects whose parents reported that the statement was either not true or only somewhat true were assigned a value of 1 .

Finally, we included a composite measure that is indicative of the number of reports affirming each form of misconduct. This measure was constructed by summing the scores from each of the four binary misconduct items. Possible scores on this item ranged from 0 to 4, with higher scores reflecting involvement in misconduct across a greater number of misconduct categories. In an effort to assess youth's tendency to engage in multiple forms of misconduct, an additional binary misconduct item was created. Youth whose parents reported that they were involved in more than one form of misconduct were assigned a value of 1 , whereas youth involved in a single form of misconduct, or no misconduct at all, were assigned a value of 0 .

### 2.2. Food insecurity measures

### 2.2.1. Food insecurity (kindergarten, third grade, \& fifth grade)

In the present study, measures of household food insecurity from waves 2 (kindergarten), 5 (third grade), and 6 (fifth grade) were employed. At each of these waves, household food insecurity was assessed using 18 items derived from the standard U.S. household food security survey module (HFSSM). These items collectively assess the extent to which a healthy variety of household foods, and food in general, was scarce, unavailable, or in danger of running out (for a complete list of items, see Appendix A). Following the lead of prior research using the ECLS-K (Ryu and Bartfeld 2012), and consistent with the recognized criterion, households in which at least 3 of the 18 questions were responded to in the affirmative were categorized as food insecure. To capture patterns of food insecurity over time, we created a measure

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[^0]:    * Corresponding author.

    E-mail address: Dylan.Jackson@utsa.edu (D.B. Jackson).

[^1]:    ${ }^{1}$ It should be noted that these dimensions of misconduct have some overlap with key behavioral disorders relevant to late childhood/early adolescence (e.g., oppositional defiant disorder, conduct disorder).

