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Psychosocial factors as mediators of food insecurity and weight status among middle school students

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ABSTRACT

Research regarding the association between food insecurity and weight status among youth has produced mixed results. However, few studies on this topic have utilized data that includes survey responses from children themselves regarding their experience with food insecurity. This study was undertaken to examine the association between food insecurity and weight status among youth, as well as the potential mediation by psychosocial factors. A survey of 5th-7th grade students was administered to gather information on food insecurity, social and psychological resources, and health. The primary analysis includes OLS (Ordinary Least Squares) regression conducted using SPSS software and Sobel's test for mediation. Results suggest a positive association between food insecurity and weight status even when controlling for key demographic variables. In addition, we find that this association is mediated by psychosocial factors—namely, perceived social status and depression. Insights from this work highlight the need to consider non-nutritional pathways through which food insecurity impacts health as well the need to continue surveying youth directly when examining their experiences with food insecurity.

1. Introduction

Approximately 49 million Americans were living in food insecure households in 2013; among them were 15.8 million children (Coleman-Jensen, Gregory, & Singh, 2014). According to the definition of food security provided by the U.S. Department of Agriculture, these families did not have "access by all people at all times to enough food for an active, healthy life" (Coleman-Jensen et al., 2014). At the same time, another major health concern is prevalent in the United States; over a third of school-aged children are overweight and nearly one in five are obese (Ogden, Carroll, Kit, & Flegal, 2012). Both sets of statistics are alarming because of the documented associations between obesity with diabetes, hypertension, and heart disease (Freedman, Mei, Srinivasan, Berenson, & Dietz, 2007; Schwimmer, Burwinkle, & Varni, 2003) and the major health and developmental consequences scholars have shown to be linked with food insecurity (Alaimo, Olson, & Frongillo, 2001a,b; Jyoti, Frongillo, & Jones, 2005). These two phenomena—obesity and food insecurity—are often experienced simultaneously by the same households and individuals (Dinour, Bergen, & Yeh, 2007; Franklin et al., 2012; Larson & Story, 2011).

While the association between food insecurity and obesity has been fairly consistent for women, few studies find an association among men, and evidence remains inconsistent across groups of youth (Dinour et al., 2007; Franklin et al., 2012; Larson & Story, 2011). Using a cross-sectional data set with measures of child food insecurity that overcome limitations of previous work—namely, their lack of direct responses from children themselves regarding food insecurity despite research showing that youth experience food insecurity differently than their parents (Fram et al., 2011; Harvey, 2016)—this study addresses three central questions related to the link between food insecurity and weight status. First, is food insecurity associated with weight status among middle-school age children? Second, does the association remain significant when controlling for key demographic factors such as race, ethnicity, poverty, and sex? And third, is the relationship mediated by psychosocial factors such as depression, perceived social status, social capital, or self-esteem?

1.1. Health, food, and a psychosocial framework

The psychosocial framework emphasizes exposure to both risks and resources that influence health and well-being over time.

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Everyday stressors as well as major life events shape how we experience our material circumstances (Pearlin, Menaghan, Lieberman, & Mullan, 1981, 2005). Psychosocial risks (e.g. depression) and resources (e.g. social capital, self-esteem, and social status) have profound influences on the health outcomes of a general population (Wilkinson, 2005). Chronic exposure to stressors can result in serious "wear and tear on the body and brain," or "allostatic load" (McEwen, 1998). Both risks and resources potentially mediate external stressors such as food insecurity, or other forms of inequality as Wilkinson (2005) has persuasively argued, and thereby influence physiological responses such as weight gain.

As Wilkinson (2005) explains, "psychosocial factors reflect material life because material life is a source of stress, whether in the form of unhappiness, depression, insecurity, anger, or anxiety." Food insecurity is likely a state that carries with it both stress related to perceptions of social status *and* truly vulnerable material conditions in terms of access to healthy food. Thus, while it is possible that a good portion of the relation between food insecurity and obesity is due to the fact that food insecurity is not just about lack of access but lack of access to balanced, healthy meals on a regular basis, (Fram, Ritchie, Rosen, & Frongillo, 2015; Nackers & Appelhans, 2013), it also remains reasonable that the relation may be partially due to the adversity, anxiety, and stress (i.e. non-nutritional pathways) related to food insecurity (Chilton & Knowles, 2014; Chilton, Knowles, Rabinowich, & Arnold, 2015; Fram et al., 2011, 2013). Hunger and food insufficiency have been linked to depression and suicidal ideation among adolescents (Alaimo, Olson, & Frongillo, 2002; McIntyre, Williams, Lavorato, & Patten, 2013).

Food insecurity, poverty, and social status are closely linked. Low social status can be a salient stressor in the everyday life experience. While status is often thought of in economic terms, there are other daily practices closely linked to status that may signify our social position. One such practice is eating. Not just the way one eats, but also the types of foods one eats, are among the many ways individuals distinguish class and status in everyday practices (Bourdieu, 1984). Thus, eating unhealthy foods, or attaining them in socially unacceptable ways, can signify lower social status and/or be stigmatizing. Food may be one of the primary ways through which status is signified among youth given that they typically have little control over any significant amount of money.

1.2. What about the Kids?

Food insecurity disrupts the family dynamic in ways that may place members of the household at different levels of exposure to stress (Harvey, 2016; Martin & Lippert, 2012). Understanding how children experience this disruption is difficult because most research has relied on reports from adults, or focused on the ways in which household or parental stressors influence children's health outcomes (Bronte-Tinkew, Zaslow, Horowitz, & McNamara, 2007; Casey et al., 2006; Garasky, Stewart, Gundersen, Lohman, & Eisenmann, 2009; Lohman, Stewart, Gundersen, Garasky, & Eisenmann, 2009). For example, the "sacrifice theory" or "buffering hypothesis" suggests that parents alter their own eating practices with the intent to shield their children from food insecurity (Franklin et al., 2012). The sacrifice theory helps makes sense of evidence showing that children living in food insecure households are only insecure themselves—based on parent reports—about half the time (Nord, Andrews, & Carlson, 2009). Moreover, research suggests that this burden of sacrifice falls largely on mothers due to the gendered expectation that they are the primary caregivers in terms of feeding children (DeVault, 1994; Martin & Lippert, 2012). This research, while valuable, can tell us little about the individual experiences of food insecurity for children within the household.

In addition to the sacrifice theory, discrepancies between parent and child levels of food insecurity may be due to differences in food insecurity reporting between parents and children (Bernal, Frongillo, Herrera, & Rivera, 2014; Fram et al., 2013; Harvey, 2016). Possible explanations for this incongruity include both the social desirability of parents to report less or no food insecurity for their children, as this may threaten expectations of their role as parents/mothers and personal identities attached to this role, as well as the fact that parents may simply be unaware of children's experiences due to attempts by both children and parents to protect each other from knowing the full extent of their hardship (Harvey, 2016).

Moreover, food insecurity is experienced and responded to differently across the life course (Fram et al., 2011; Nord, 2013; Schlüssel, Silva, da, Pérez-Escamilla, & Kac, 2013). While the sacrifice theory offers a great deal of insight into how the association between food insecurity and weight status operates among adults, it conceptualizes children as passive, with little to no agency. Few studies have approached the question of how food insecurity might relate to overweight or obese weight status among children by either surveying or interviewing children directly; however, those that have taken this approach have found that youth are anything but passive when experiencing food insecurity (Bernal, Frongillo, Herrera, & Rivera, 2012; Connell, Lofton, Yadrick, & Rehner, 2005; Fram et al., 2011) and that their food practices are deeply tied to social relationships (Neely, Walton, & Stephens, 2014). Overall, this research highlights youth as having distinct experiences from adults (Bernal et al., 2012; Fram et al., 2011), underreporting of child food insecurity by adults (Bernal et al., 2014; Fram et al., 2013), as well as conscious efforts by youth to cope with material hardship (Bernal et al., 2012; Connell et al., 2005; Fram et al., 2011). Additional research suggests that the reports from children capture the adverse effects and correlates of child food insecurity better than reports from parents (Bernal, Frongillo, & Rivera, 2015; Choi, Frongillo, & Fram, 2013; Fitzpatrick & Willis, 2015; Fram et al., 2013).

Altogether, four studies have examined the association between food insecurity and obesity among children/adolescent samples close to the age of the youth sample (ages 9–14; Mean = 11.42) in this study. Three of them found no association; however, two of those three used the same sample, which was limited to low income adolescents (ages 10–15), had a surprisingly low rate of food insecurity, and did not survey the youth directly (Gundersen, Garasky, & Lohman, 2009; Gundersen, Lohman, Eisenmann, Garasky, & Stewart, 2008; Lohman et al., 2009). Moreover, the study that did find a significant relationship was limited to homeless adolescents (ages 9–18) in Minnesota (Smith & Richards, 2008). Olson, Bove, and Miller (2007) offer parallel evidence from adults who were asked questions about their childhood experiences with food. Households that were previously food-insecure currently tended to overeat during times when food was most available, in part due to the excitement of the influx of food (Olson et al., 2007). Their results suggest that food deprivation related to poverty in childhood has a lasting impact on eating practices well into adulthood, as well as deep emotional responses to the potential of experiencing food insecurity again.

Kaur, Lamb, and Ogden (2015) recently analyzed nationally representative data from the National Health and Nutrition Examination Survey (NHANES) that included individual-level data for children age 2–11. They found no associations between aggregated household food insecurity and child obesity, but did find a significant association among children aged 6–11 using the individual-level measure. While this solves the issues of food insecurity