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Familial psychosocial risk classes and preschooler body mass index: The moderating effect of caregiver feeding style

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ABSTRACT

Background: Early child weight gain predicts adolescent and adult obesity, underscoring the need to determine early risk factors affecting weight status and how risk factors might be mitigated. Socioeconomic status, food insecurity, caregiver depressive symptomology, single parenthood, and dysfunctional parenting each have been linked to early childhood weight status. However, the associations between these risk factors and children's weight status may be moderated by caregiver feeding styles (CFS). Examining modifiable factors buffering risk could provide key information to guide early obesity intervention efforts.

Methods: This analysis used baseline data from the Growing Healthy project that recruited caregivers/child dyads ($N = 626$) from Michigan Head Start programs. Caregivers were primarily non-Hispanic white (62%) and African American (30%). After using latent class analysis to identify classes of familial psychosocial risk, CFS was tested as a moderator of the association between familial psychosocial risk class and child body mass index (BMI) z-score.

Results: Latent class analysis identified three familial psychosocial risk classes: (1) *poor, food insecure and depressed families;* (2) *poor, single parent families;* and (3) *low risk families*. Interactive effects for uninvolved feeding styles and risk group indicated that children in poor, food insecure, and depressed families had higher BMI z-scores compared to children in the low risk group. Authoritative feeding styles in low risk and poor, food insecure, and depressed families showed lower child BMI z-scores relative to poor, single parent families with authoritative feeding styles.

Conclusions: Uninvolved feeding styles intensified the risk and an authoritative feeding style muted the risk conferred by living in a poor, food-insecure, and depressed family. Interventions that promote responsive feeding practices could help decrease the associations of familial psychosocial risks with early child weight outcomes.

1. Introduction

Childhood obesity is a widespread and complex public health concern that places children at risk for elevated blood pressure and high lipid concentration, as well as long-term consequences such as insulin resistance and cardiovascular disease (Bridger, 2009).

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Evidence that weight gain in early childhood predicts obesity in later childhood and adulthood supports the need for early prevention efforts (Druet et al., 2012; Sutharsan, O'Callaghan, Williams, Najman, & Mamun, 2015). The prevalence of obesity among United States preschool-aged children, though recently showing some decline, remains high at about 9%, with higher rates among minority populations (Ogden et al., 2016) and children in poverty (Pan, Blanck, Sherry, Dalenius, & Grummer-Strawn, 2012). To develop effective interventions targeting this priority public health concern, it is vital to identify the factors that influence weight status in early childhood including modifiable factors that may buffer or exacerbate obesity risks. Given the role of parenting in moderating the effects of risks on children's outcomes in the broader parenting literature, the purpose of this study was to examine multiple, family psychosocial risk factors associated with obesity and early parenting practices in feeding contexts as moderating the associations between family psychosocial risk and preschoolers' weight status.

1.1. Family psychosocial risks and child obesity

Poverty and its associated risk factors have been linked with obesity prevalence in young children. In developed countries, childhood obesity is inversely related to socioeconomic status (Shrewsbury & Wardle, 2008), an association more pronounced in preschool age children (CDC, 2014). Likewise, food insecurity has been associated with obesity (Casey et al., 2006; Kaur, Lamb, & Ogden, 2015). For example, greater food insecurity may lead to a limited diet and unusual consumption patterns, such as overeating when food becomes available (Kaur et al., 2015). Other risk factors concomitant with poverty include poor psychosocial functioning, such as higher rates of parental depression and parenting distress, which have been linked with childhood obesity (Lampard, Franckle, & Davison, 2014; Tate, Wood, Liao, & Dunton, 2015). In fact, the cumulative risks of poverty are thought to influence child obesity prevalence (Wells, Evans, Beavis, & Ong, 2010).

Altered family structure also has been associated with childhood obesity. Both single parenthood and parental divorce have been linked to increased risk of obesity in several studies (Biehl et al., 2014; Chen & Escarce, 2010; Hesketh, Crawford, Salmon, Jackson, & Campbell, 2007; Huffman, Kanikireddy, & Patel, 2010). Possible mechanisms for these associations include divorce and single parenthood reducing the amount of time, attention, or consistency caregivers can give to their children's health and nutrition, or compromising the child's psychosocial health, another obesity risk factor (Chen & Escarce, 2010; Nunes-Costa, Lamela, & Figueiredo, 2009). Dysfunctional parenting styles, which may be more common in single parent families (Waldfogel, Craigie, & Brooks-Gunn, 2010), also have been associated with increased obesity risk (Morawska & West, 2013).

Clearly, risk factors for childhood obesity are multifaceted and complex. For this study, we focused on five risk factors that were reflective of economically vulnerable families: low household socioeconomic status (Shrewsbury & Wardle, 2008), food insecurity (Casey et al., 2006; Kaur et al., 2015), caregiver depressive symptomology (Lampard et al., 2014), single parenthood (Huffman et al., 2010), and dysfunctional parenting (Morawska & West, 2013).

1.2. Caregiver feeding style and child obesity

Caregiver feeding style is also related to childhood obesity (Shloim, Edelson, Martin, & Hetherington, 2015). Feeding styles refer to patterns of parent-child interaction at mealtime, and, are grouped into four categories: *authoritative* (high parent demandingness about the child's food consumption and high parent responsiveness to the child's preferences), *authoritarian* (high demandingness and low responsiveness), *indulgent* (low demandingness and high responsiveness), and *uninvolved* (low demandingness and low responsiveness) (Maccoby & Martin, 1983). Recent reviews suggest that authoritative feeding styles are optimal for most children with regard to weight status (see Vollmer & Mobley, 2013). Authoritative styles are characterized as providing a balance between parental oversight and consideration of the child's cues and preferences, which are thought to promote healthier weight status. However, mixed findings suggest that authoritarian and uninvolved styles do not differ from authoritative styles with regard to their associations with BMIz (Tovar et al., 2012). This is surprising given that authoritarian feeding styles often lack caregiver responsiveness, a practice thought to promote child self-regulation and reduce obesity risk (DiSantis, Hodges, Johnson, & Fisher, 2011), and uninvolved styles are similar to indulgent styles in their lack of oversight in children's feeding behaviors.

In recent literature, the indulgent feeding style has been relatively consistently associated with higher child BMI z-score (see Vollmer & Mobley, 2013 for a review). Moreover, several studies have compared indulgent feeding styles with authoritative or authoritarian styles in their associations with BMIz. For example, among minority preschoolers from low-income families, an indulgent feeding style (Hughes et al., 2011; Frankel et al., 2014) or an uninvolved feeding style (Frankel et al., 2004), in comparison to an authoritarian style (Frankel et al., 2014; Hughes, Power, Fisher, Mueller & Nicklas, 2005) and to all other styles (Hughes et al., 2011) has been linked to higher BMIz. Minority children from low-income families show greater BMIz when their caregivers hold indulgent feeding styles compared to an authoritative feeding style; and, other feeding styles do not differ from the authoritative style with regard to BMIz (Tovar et al., 2012). This association holds for school age children, too, such that among poor, school-aged children, the indulgent versus authoritative feeding style is associated with higher BMIz with no differences in the other feeding styles with regard to BMI (Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2010).

Although the indulgent feeding style is responsive to the child's cues and preferences, it may place too few boundaries on the child's food intake and subsequent obesity could reflect the consequences of a child being offered foods with poor nutrient density (Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2012). Examining feeding styles may be especially important among low-income children, given the increased number of familial psychosocial risks present in poverty. In the same way that psychosocial risks are related to parenting quality (e.g., Braungart-Rieker, Moore, Planalp & Lefever, 2014), so, too, may feeding styles.

1.3. Associations between feeding styles and familial psychosocial risks

Specific caregiver feeding styles are associated with some familial psychosocial risk factors. For example, mothers from households experiencing very low food security may be more likely to use restrictive feeding practices (Bauer et al., 2015), which have been associated with authoritarian feeding styles (Hubbs-Tait, Kennedy, Page, Topham, & Harrist, 2008). Likewise, indicators of maternal stress, depression, and anxiety have been positively associated with uninvolved feeding style scores (Hurley, Black, Papas, & Caufield, 2008). Maternal depression also has been linked to more controlling feeding practices, and less sensitivity to child feeding cues (El-Behadli, Sharp, Hughes, Obasi, & Nicklas, 2015; Goulding et al., 2014). Such associations between feeding styles and familial psychosocial risks need to be explicated further to inform the development of intervention strategies.