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Fathers' feeding practices and children's weight status in Mexican American families

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Abstract

Mothers' feeding practices are associated with their children's weight status, but little is known about the associations between fathers' feeding practices and children's weight status. Moreover, there is a dearth of research on Latino fathers' feeding practices and children's weight status, even though Latino children suffer some of the highest obesity rates in the U.S. We examined the associations between fathers' feeding practices and child weight status, conditional on mothers' feeding practices, within 174 Mexican American families with children aged 8–10 years. Parents completed the Parental Feeding Practices Questionnaire, which consists of four subscales: positive involvement in child eating, pressure to eat, use of food to control behavior, and restriction of amount of food. To assess child weight status, body mass index (BMI) was calculated and converted to age- and gender-specific percentile scores (BMI z-score). We fit four sets of regression models, one set for each of the four parental feeding practices subscales, with child

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BMI z-score as the outcome variable. Fathers' pressure to eat (b = −0.20, p = 0.04; 95% CI: −0.39, −0.01) and use of food to control behavior (b = −0.36, p = 0.02; 95% CI: −0.65, −0.07) were associated with lower child BMI z-score, and restriction of amount of food (b = 0.56, p < 0.001; 95% CI: 0.27, 0.84) was associated with higher child BMI z-score, after accounting for mothers' feeding practices. Fathers' positive involvement in child eating was not associated with child BMI z-score. These findings provide empirical evidence that fathers' feeding practices are independently associated with children's weight status, even when mothers' feeding practices are taken into account, and suggest that fathers' feeding practices also matter in regard to children's weight status.

Introduction

Mexican American children ages 2–11 years have a higher prevalence of obesity, when compared to non-Latino White children (Ogden, Carroll, Kit, & Flegal, 2012). For the past several decades, Mexican American children have had an increased prevalence of obesity starting in preschool, when compared to non-Latino children (Crawford, Story, Wang, Ritchie, & Sabry, 2001; Foreyt & Cousins, 1993; Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Although childhood obesity rates in the U.S. appear to be stabilizing, they remain high among children of Mexican origin. In Mexican American families, where fathers often influence family practices, it is important to understand how they may influence child-feeding practices, in addition to mothers.

Contemporary fatherhood has changed from being predominantly centered around an instrumental or "bread winning" role in the family to that of a co-parent involved in daily activities such as child feeding (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Guerrero, Chu, Franke, & Kuo, 2016; Khandpur, Charles, & Davison, 2016). Sixty-five percent of Latino children live in two-parent families ("Children who live in two-parent families, by race ethnicity | KIDS COUNT Data Center," 2016), yet there is a dearth of research on how fathers' feeding practices are associated with Latino children's weight status. Parental feeding practices (PFP) reflect the context in which families are embedded (Davison & Birch, 2001), are associated with children's weight status, and involve choices about the types of food children are offered, and about when, how frequently and how much children are fed (Birch & Ventura, 2009). PFP are the focus of this study because they are modifiable risk factors for childhood obesity, particularly when compared to other consistently associated parental risk factors such as parental obesity, low income, less years of education completed, or Latino ethnicity (Holland et al., 2014;Savage, Fisher, & Birch, 2007). Although the majority of the literature is cross-sectional and cannot clarify causal direction, extensive empirical evidence examining mothers' feeding practices has found that mothers' use of control in child feeding, such as pressure to eat (e.g., pressuring the child to eat even if the child is not hungry), restriction of food (e.g., limiting eating between meals) and use of food to control behavior (e.g., using food as a reward) are associated with children' weight status (Cardel et al., 2012; Galloway, Fiorito, Francis, & Birch, 2006; Joyce & Zimmer-Gembeck, 2009; Larios, Ayala, Arredondo, Baquero, & Elder, 2009; Matheson, Robinson, Varady, & Killen, 2006; Tschann et al., 2013; Wehrly, Bonilla, Perez, & Liew, 2014). In general, PFP that are high in control may impede children's ability to self-regulate

their food intake by shifting their focus to external cues and away from their own hunger and satiety (Birch & Ventura, 2009; Jansen et al., 2014). In the long run, these controlling PFP may increase children's risk for obesity.

In contrast to PFP that are high in control, positive involvement in children's eating is thought to reflect an authoritative style of parenting (Darling & Steinberg, 1993) and involves both parental demandingness for children's maturity and parental responsiveness to children's needs (Hughes et al., 2013; Shloim, Edelson, Martin, & Hetherington, 2015). Monitoring high-calorie food, encouraging and complimenting healthy eating and a variety of new foods, and providing small portions may allow children to develop self-regulation of energy intake in response to their own internal cues of hunger and satiety (Hennessy, Hughes, Goldberg, Hyatt, & Economos, 2010; Musher-Eizenman & Holub, 2007). There is limited empirical evidence about the associations between mothers' positive involvement children's eating and children's weight status, but two studies suggest it is associated with decreased children's weight status. For example, one study with non-Latino White mothers found that more encouragement of balance and variety was associated with a children's lower weight status (Musher-Eizenman, de Lauzon-Guillain, Holub, Leporc, & Charles, 2009). The second study was conducted with Mexican American mothers and found that feeding practices, such as tracking of children's consumption of sweets, sugary drinks and fresh fruits and vegetables, encouraging of healthy eating, and providing small servings of new foods on children's plates, were associated with children with a lower weight status (Tschann et al., 2013).

In a 2014 review of fathers' feeding practices (Khandpur, Blaine, Fisher, & Davison, 2014), 20 studies were identified that analyzed fathers' feeding practices, but only a few studies included Latino fathers. Results from the reviewed studies indicated that lower pressure to eat, lower monitoring of child food intake, higher restriction of food and greater attempts at building healthy eating habits were associated with increased children's weight status. Similar to studies conducted with mothers (Cardel et al., 2012; Galloway et al., 2006; Joyce & Zimmer-Gembeck, 2009; Wehrly et al., 2014), studies with fathers' suggest that increased pressure to eat and restriction of food are associated with the development of children's weight status in the opposite direction of parents' desires (Brann & Skinner, 2005; Musher-Eizenman et al., 2009; Musher-Eizenman, Holub, Hauser, & Young, 2007). For example, one study found that non-Latino White fathers who more often used pressure on their preadolescent sons and more often monitored their sons' eating had sons with a lower weight status, compared to fathers who less often used pressure or monitored eating. (Brann & Skinner, 2005). As with mothers (Cardel et al., 2012; Galloway et al., 2006; Wehrly et al., 2014), these findings suggest the possibility that children who are pressured to eat tend to weigh less, because the parental pressure reduces the desirability of the foods being offered and consequently children eat less. With regard to food restriction, two studies conducted with non-Latino White fathers' and their preschool age children found that higher restriction of food is associated with increased children's weight status (Musher-Eizenman et al., 2009, 2007). Similarly, studies with mothers indicate that children whose food is restricted weigh more, possibly because it increases the desirability of the food being restricted (Cardel et al., 2012; Joyce & Zimmer-Gembeck, 2009; Wehrly et al., 2014). Several studies also have reported statistically non-significant results for fathers' feeding practices. One study with

non-Latino White fathers found no association between fathers' food restriction and their school age children's weight status (Payne, Galloway, & Webb, 2011). Another study reported no association between fathers' pressure to eat or restriction and their preschool age children's weight status (Vollmer, Adamsons, Foster, & Mobley, 2015). More recently, one study examining the feeding practices of Latino and African American fathers of preschool age children reported no association between use of food as a reward and their children's weight status (Lora, Hubbs-Tait, Ferris, & Wakefield, 2016). To gain a deeper understanding of the home food environment, more research is needed on the role of parent gender in these associations.

Most research on the associations between fathers' feeding practices and children's weight status has been conducted in non-Latino White middle-class or mixed ethnic father-child dyad samples without reporting ethnic-specific associations, so what we know about Latino fathers is discerned from three published studies. One study (13% Latino) found that fathers' greater attempts at building healthy eating habits and lesser paternal encouragement to eat enough food was associated with higher children's weight status (Zhang & McIntosh, 2011). Another study (18% Latino) found that fathers' higher pressure to eat was associated with lower weight status among adolescents and fathers' higher restriction of food was associated with adolescents' higher weight status (Loth, MacLehose, Fulkerson, Crow, & Neumark-Sztainer, 2013). In a third study (100% Mexican American), fathers who exhibited more pressure to eat had children with lower weight status, compared to fathers who used less pressure (Tschann et al., 2013). Additionally, fathers higher in restriction of food had children with a higher weight status, compared to fathers lower in restriction (Tschann et al., 2013). Fathers who used food to control behavior more often had children with a lower weight status compared to fathers who used food to control behavior less often (Tschann et al., 2013). No associations were found between father's positive involvement in children's eating and their children's weight status. In general, results for father-child dyads appear to be consistent with previous research findings from studies with mother-child dyads, i.e., that PFP high in control may impede children's internalization of hunger and satiety cues and may lead to children's weight status in the opposite direction of parents' desires. None of these studies included both mothers' and fathers' feeding practices in the same analyses, so it was not possible to know whether fathers' feeding practices were important and independent of mothers' feeding practices.

Are fathers' feeding practices associated with children's weight status after accounting for mothers' feeding practices?

Fathers, like mothers, report using PFP that are high in control such as pressure to eat and restriction of food (Blissett, Meyer, & Haycraft, 2006; Khandpur et al., 2014), but the relationship between fathers' feeding practices and children's weight status after accounting for mothers' feeding practices has not been examined. It is unknown whether fathers have an impact above and beyond the influence of mothers (Davison et al., 2016). To reduce the high rates of obesity among Mexican American children, a clearer understanding of the extent to which the role that both mothers' and fathers' feeding practices play in shaping children's weight status is urgently needed. The current study addressed this gap in the literature by examining the associations of both mothers' and fathers' feeding practices in the same

analysis. The associations of fathers' feeding practices and child weight status were examined, after accounting for mothers' feeding practices. We hypothesized that fathers' positive involvement in child eating and pressure to eat would be associated with lower child weight status, when controlling for mothers' feeding practices in the same domain. We hypothesized that fathers' restriction of amount of food would be associated with higher child weight status, when controlling for mothers' restriction of amount of food. Finally, because there is little research that has examined fathers' use of food to control behavior, we examined whether or not this feeding practice was associated with child weight status, when controlling for mothers' use of food to control behavior. Findings from this study could provide empirical evidence that fathers' feeding practices are independently associated with children's weight status and could suggest that fathers, in addition to mothers, should be included in future research.

Methods

Study Design

The current study analyzed data from a larger study about family nutrition and children's health-related behaviors in Mexican American children (author citation). We examined the cross-sectional associations of fathers' feeding practices and children's weight status, after accounting for the associations of mothers' feeding practices and children's weight status. Families were recruited from the membership lists of a large health provider. Research assistants obtained written informed consent and interviewed family members in their homes, in the language of their choice (Spanish or English). Interviews lasted about 1.5 hours. Many parents (71% of mothers, 69% of fathers) chose to be interviewed in Spanish. Each family member was reimbursed $70 for study participation. This study was approved by the university and Kaiser Permanente Northern California institutional review boards.

Procedures

Participants. Of the 322 mothers and children participating in the study, 54% (n=174) of fathers participated. The present study included the 174 mother-father pairs who provided parental feeding practices responses. Families were eligible if the mother was Mexican origin (born in the US or Mexico), the child was 8–10 years of age, and the child had no major illnesses that might influence their weight. Fathers were either biological fathers or the primary father figure in the children's lives.

Fathers' Feeding Practices. Fathers completed the 55-item Parental Feeding Practices Questionnaire (Tschann et al., 2013), which consists of four parental feeding practices subscales: 1) positive involvement in child eating (24 items; $\alpha = 0.91$), which consists of monitoring and limiting the child's unhealthy food, and encouraging the child to eat new and healthy food; 2) pressure to eat (10 items; $\alpha = 0.84$), which consists of pressuring the child to eat everything on his/her plate, and pressuring the child to eat more even if not hungry; 3) use of food to control behavior (9 items; $\alpha = 0.75$), which consists of offering sweets in exchange for good behavior, and offering the child food when they are bored or sad even if the child is not hungry; and 4) restriction of amount of food (12 items; $\alpha = 0.70$), which consists of limiting the amount of the child's food, and not allowing the child to control

snacking. Parents were instructed to answer the questions with the study child in mind. All questions were worded in terms of frequency of behaviors, and response options ranged from *never* (=1) to *always* (=5). Composite measures for each subscale were computed as the mean response of the corresponding items.

Mothers' Feeding Practices. Mothers answered identical feeding practices questions as fathers. Four parental feeding practices subscales were calculated: 1) positive involvement in child eating ($\alpha = 0.88$); 2) pressure to eat ($\alpha = 0.86$); 3) use of food to control behavior ($\alpha = 0.78$); and 4) restriction of amount of food ($\alpha = 0.77$).

Body Mass Index. Parents' and children's height and weight were measured in duplicate by trained research assistants while the participant was wearing light indoor clothing and no shoes (Lohman, 1988). Body mass index (BMI) was calculated [BMI = weight(kg)/ height(m)^2] for each participant. Child BMI was converted to age- and gender-specific percentile scores (BMI z-score) using NCHS growth charts (Kuczmarski et al., 2000).

Demographic Characteristics. Children's demographic variables included age in months and gender. Parents' demographics included age, years of education, Spanish and English-language acculturation and occupational status. Acculturation was assessed using the Spanish and English Language Use subscales of the Bidimensional Acculturation Scale for Hispanics (BAS) (Marín & Gamba, 1996). Items are scored from *never* (=1) to *always* (=5) and have good reliabilities ($\alpha = 0.88$, mothers; 0.94, fathers). Higher scores on the two language acculturation scales reflected greater use of those languages. Occupational status ranged from unskilled worker (=1) to major professional (=9) (Hollingshead, 1975).

Analysis of Data

All data were analyzed using STATA version 12.1 (StataCorp, Texas). We first examined the associations between mothers' and fathers' four feeding practices measures using Pearson correlations. We next identified the covariates to be used in regression analyses by examining correlations between parents' demographic variables (i.e., parents' age, BMI, years of education, Spanish and English-language acculturation and occupational status) and child BMI z-score. Next, we fit four sets of regression models, one set for each of the four PFP measures, with child BMI z-score as the outcome variable. For each PFP variable, we fit three regression models and calculated unstandardized regression coefficients: (Model 1) a model including all mother and father demographic covariates; (Model 2) Model 1 plus the mothers' feeding practices variable; and (Model 3) Model 2 plus the corresponding fathers' feeding practices variable. Residual analysis identified five influential outliers in the regression for use of food to control behavior. We then used Cook's distance to calculate their potential influence and concluded that all five outliers should be removed for that model (Chatterjee & Hadi, 2009).

Results

Sample Characteristics

Seventy-four percent of mothers and fathers were born in Mexico (see Table 1). The majority of fathers were biological fathers (93%). Most parents were overweight (BMI > =

25 and < 30; 37% of mothers, 46% of fathers) or obese (BMI > = 30; 42% of mothers, 46% of fathers). Most parents were employed (73% of mothers, 89% of fathers). On average, parents' occupational status was skilled worker (mothers: M = 3.52, SD = 2.21; fathers: M = 3.72, SD = 1.85). Participating children were 50% female, ages 8–10 (M = 9.24 years, SD = .89), and 95% had been born in the U.S. Twenty percent of the children were overweight and 28% were obese.

Associations between mothers' and fathers' feeding practices measures

Mothers' and fathers' feeding practices scores within each domain were modestly to moderately correlated (r for positive involvement in child eating = 0.24; r for pressure to eat = 0.51; r for use of food to control behavior = 0.20; r for restriction = 0.33; see Table 2). Several mothers' and fathers' feeding practices across domains were also significantly correlated (rs = 0.18 – 0.28).

Covariates

BMI, Spanish-language acculturation and occupational status were significantly correlated with child BMI z-score for one or both parents and were included as covariates in regression models (see Table 3).

Fathers' feeding practices and child BMI z-score

Positive involvement in child eating. When adjusting for mothers' positive involvement in child eating (NS) plus other covariates, fathers' positive involvement in child eating was not significantly associated with child BMI z-score (b = 0.05, p = 0.66; 95% CI: −0.17, 0.27; see Table 4: Model 3). Of the three father covariates, fathers' BMI was significantly associated with child BMI z-score (b = 0.06, p < 0.01; 95% CI: 0.02, 0.09).

Pressure to eat. After adjusting for mothers' pressure to eat (b = −0.30, p < 0.01; 95% CI: −0.49, −0.11) plus other covariates, fathers' greater pressure to eat was significantly associated with children's lower BMI z-score (b = −0.20, p = 0.04; 95% CI: −0.39, −0.01). Of the three father covariates, fathers' BMI was significantly associated with child BMI z-score (b = 0.05, p < 0.01; 95% CI: 0.02, 0.09).

Use of food to control behavior. When adjusting for mothers' use of food to control behavior (NS) plus other covariates, fathers' greater use of food to control behavior was significantly associated with children's lower BMI z-score (b = −0.36, p = 0.02; 95% CI: −0.65, −0.07). Of the three father covariates, fathers' BMI was significantly associated with child BMI z-score (b = 0.08, p < 0.001; 95% CI: 0.04, 0.11).

Restriction of amount of food. After adjusting for mothers' restriction of amount of children's food (b = 0.73, p < 0.001; 95% CI: 0.42, 1.04) plus other covariates, fathers' greater restriction of amount of food was significantly associated with children's higher BMI z-score (b = 0.56, p < 0.001; 95% CI: 0.27, 0.84). Of the three father covariates, fathers' BMI was significantly associated with child BMI z-score (b = 0.05, p < 0.01; 95% CI: 0.02, 0.08).

Discussion

There has been little focus on the role of fathers' feeding practices in the development of overweight and obesity in school-age Mexican American children. Because parental feeding practices (PFP) are modifiable behaviors, a better understanding of how they influence children' weight status could inform new family-based obesity prevention strategies. This is the first study to examine the associations of fathers' feeding practices and children's weight status in Mexican American families, after accounting for the associations of mothers' feeding practices. In general, we found that fathers' feeding practices were related to their children's weight status, after accounting for mothers' feeding practices. Fathers' higher use of pressure to eat and use of food to control behavior were significantly related to children's lower weight status, after accounting for mothers' feeding practices. Fathers' restriction of food was significantly related to children's increased weight status, after accounting for mothers' feeding practices. Fathers' positive involvement was not associated with children's weight status. Our results suggest that it is not sufficient to only know what mothers do when feeding children, but that research on children's obesity should also elucidate what fathers do when feeding children.

Consistent with extensive cross-sectional literature about mothers' restrictive feeding practices (Cardel et al., 2012; Joyce & Zimmer-Gembeck, 2009; Tschann et al., 2013; Wehrly et al., 2014), fathers who restricted food more tended to have children with a higher weight status than fathers who restricted less. Fathers' restriction of food has also been associated with increased weight status in longitudinal research (Tschann et al., 2015). This PFP, which is controlling, may shift children's focus to restricted foods and may result in their overconsumption when food is freely available, and lead to obesity. Together, the associations of both parents' food restriction helped to better explain children's higher weight status. In families where both parents restrict food, there may be an additive effect that could result in an unintended risk for an unhealthy weight status. Future research should explore these associations among Mexican American children of preschool-age, when both parents are beginning to structure children's experiences with food and eating in order to inform new obesity interventions.

In keeping with considerable cross-sectional literature about mothers' feeding practices (Cardel et al., 2012; Galloway et al., 2006; Matheson et al., 2006; Tschann et al., 2013; Wehrly et al., 2014), higher pressure to eat was associated with children's lower weight status. Fathers' pressure to eat has also been associated with lower children's weight status in longitudinal research (Tschann et al., 2015). It may be that children who are pressured to eat consume less food and weigh less, the opposite of parents' desires, because food becomes less desirable to them when associated with parental cues for food and not their own. Although this PFP is associated with children's lower weight status, no children in our sample were underweight.

After accounting for mothers' use of food to control behavior, fathers' use of food to control behavior was related to children's lower weight status. The association of fathers' use of food to control behavior and children's lower weight status indicates that this PFP may unintentionally undermine children's response to their own internal cues of hunger and

satiety. For example, this PFP may reflect fathers offering highly palatable energy dense foods, such as desserts, as rewards for eating healthful food, such as vegetables, that in turn leads to children only eating vegetables when sweets are used as a reward. Fathers my offer energy dense food because they perceive their child to be thin (Pasch et al., 2016). In contrast to the findings for fathers, mothers' use of food to control behavior was not associated with their children's weight status. To inform new interventions that help families develop co-parenting strategies that promote healthy eating, more research is needed to understand the context that leads parents in the same family to use different and possibly conflicting feeding practices (Khandpur et al., 2016).

The level of fathers' positive involvement in children's meals was not associated with children's weight status. This PFP may be reflective of a type of practice that encourages children's healthy eating behavior that is not directly related to children's weight status. Some literature suggests that the type and amount of food that parents make available influences what children consume (Cullen et al., 2003; Shriver & Buehler, 2016), and the American Heart Association recommends that parents decide what, when and where food is eaten, and allow the child to decide if they are hungry and how much they want to eat (Gidding et al., 2006). Future research should continue to explore fathers' cultural values that may promote the self-regulation of energy intake and the development of a healthy weight for age in order to prevent obesity (Rollins, Savage, Fisher, & Birch, 2015).

The parental feeding practices literature draws on concepts from general parenting styles, which have been extensively examined (Baumrind, 1967, 1991; Darling & Steinberg, 1993), and focused on variations in the level of parental warmth and parental control, and how these, in combination, were associated with different outcomes in children's development (Aunola & Nurmi, 2005). Parenting styles may stem from the values parents hold and the goals they set for their children's socialization, and may explain why parents from differing demographic backgrounds use different parenting styles (Darling & Steinberg, 1993). The influence of parenting styles and their associations with fathers' feeding practices in Mexican American families has not been specifically studied, but it is expected that socio-cultural factors influence the strategies that fathers use to feed their children (Hubbs-Tait, Kennedy, Page, Topham, & Harrist, 2008; Hughes et al., 2006; White, Zeiderso, Gonzales, Tein, & Roosa, 2013). A longitudinal study examining the relationship between parenting styles and children's weight status among Mexican American mothers and their school age children suggests that parenting styles high in warmth and low in control of the child's feeding environment supports the development of overweight (Olvera & Power, 2010). High warmth in feeding, such as high consideration and sensitivity to a child's energy needs, and high parental control over the feeding environment may lead to better weight outcomes in children (Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006; Shloim et al., 2015). In one study, fathers of Mexican descent reported that their parenting was a mix of both traditional and progressive roles that were influenced by cultural ideology, immigration experience and intergenerational relationships (Taylor & Behnke, 2005). More research is needed to understand how culture and ethnicity may influence the feeding practices of Latino fathers.

By including both mothers and fathers in the same analysis, we have new empirical evidence about fathers' feeding practices and children's weight status. The associations between

fathers' feeding practices and children's weight status, after accounting for mothers' feeding practices indicates that fathers may play a role in the development of children's weight status. Moreover, the direction and magnitude of the associations between fathers' and mothers' feeding practices and children's weight status were similar, but did not overlap completely, i.e., that the association of fathers' use of food to control behavior is stronger than for mothers', but that the associations of mothers' pressure to eat and restriction of amount of food are stronger than for fathers'. Together, these findings suggest that parents may play a role in children's weight status that is important and independent of the co-parent. The current best interventions on childhood obesity are family-based, and the findings from this study add one more reason to why fathers should be included in research on feeding practices and children's weight status. Although mothers typically spend more time per day with their children than fathers do (Drago, 2009; Horowitz, 2015), the amount of time that fathers spend with children appears to be sufficient to play a role in their children's weight status.

Because the majority of the literature on PFP is cross-sectional, it is important to note that PFP may contribute to children's weight status, but it is also possible that PFP are in response to their children's perceived body size (e.g., pressuring a child to eat because the child is perceived to be underweight; restricting the amount of food because the child is perceived to be too heavy). While studies have begun to address the causal direction of PFP and children's weight status among mothers (Afonso et al., 2016; Campbell et al., 2010; Jansen et al., 2014; Rhee et al., 2009; Tschann et al., 2015; Webber, Cooke, Hill, & Wardle, 2010), very little research has addressed this question for fathers. Understanding the causal direction of these relationships among parents would help expand our understanding of the role that PFP play in keeping children at a healthy weight.

We note that in adjusted analyses fathers' Spanish-language acculturation was related to children's higher weight status, but English-language acculturation was not, and may reflect their social, cultural and economic status as mostly immigrants, including their perceptions about child-feeding and ideal weight (Cardel et al., 2012; Ogden et al., 2010). Additionally, fathers' weight status was associated with children's weight status in each analysis. Parental weight status is well established as a risk factor for children's weight status, and may be associated with their shared genetics and environment, or a combination of both that influence children's eating and weight gain (Kral & Rauh, 2010). Moreover, neighborhood and community-level factors such as proximity to healthful food and social support may also impact fathers' feeding practices. To improve current intervention practices, further research with Mexican origin families should explore the associations of fathers' feeding practices and distal factors, such as proximity to affordable whole/unprocessed food, and family-based day care provided by grandparents.

Limitations. The purpose of this cross-sectional study was to examine whether fathers' feeding practices are related to child weight after accounting for mothers' feeding practices. As a result, no conclusions can be drawn about whether PFP influence children's weight status, or whether PFP are responses to concerns about children's weight status. Further, the findings of this study cannot be generalized beyond Mexican American families in this particular SES or immigrant status group; consequently, these findings may or may not

apply to other cultural or ethnic groups. In addition, because we studied only children 8–10 years old, we cannot generalize beyond this age range. Future research could explore the associations of fathers' feeding practices and children's weight status in different cultural and ethnic groups and children of younger ages. Another limitation of this study is that those fathers who responded may be a select group who had more time to interact regularly with their child. The amount of time that each parent spent feeding their child was not assessed, but may help further explain why the associations between mothers' and fathers' practices and children's weight status differ. Fathers in this study were also typically the biological parent and resided with the mothers and the child participating in this study, and may be different than stepfathers or fathers who reside outside the home. Future research could examine single-parent father households, because the share of Latino single mother households (22%) and single father households (24%) is about the same and is part of a growing national trend in single-parent households (Livingston, 2013).

Conclusions

This study found that fathers' feeding practices contributed uniquely to children's weight status. Findings suggest that when both fathers and mothers are involved in child feeding, fathers' feeding practices, in addition to mothers', matter in terms of children' weight status. It is important to include fathers, and not just mothers, in future family-based research and interventions aimed at preventing obesity among school-aged children.

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References

Afonso L, Lopes C, Severo M, Santos S, Real H, Durão C, Oliveira A. Bidirectional association between parental child-feeding practices and body mass index at 4 and 7 y of age. The American Journal of Clinical Nutrition. 2016; 103(3):861–867. https://doi.org/10.3945/ajcn.115.120824. [PubMed: 26843159]

Aunola K, Nurmi J-E. The role of parenting styles in children's problem behavior. Child Development. 2005; 76(6):1144–1159. https://doi.org/10.1111/j.1467-8624.2005.00840.x-i1. [PubMed: 16274431]

Baumrind D. Child care practices anteceding three patterns of preschool behavior. Genetic Psychology Monographs. 1967; 75(1):43–88. [PubMed: 6032134]

Baumrind D. The influence of parenting style on adolescent competence and substance use. The Journal of Early Adolescence. 1991; 11(1):56–95. https://doi.org/10.1177/0272431691111004.

Birch LL, Ventura AK. Preventing childhood obesity: what works? International Journal of Obesity(2005). 2009; 33(Suppl 1):S74–81. https://doi.org/10.1038/ijo.2009.22. [PubMed: 19363514]

Blissett J, Meyer C, Haycraft E. Maternal and paternal controlling feeding practices with male and female children. Appetite. 2006; 47(2):212–219. https://doi.org/10.1016/j.appet.2006.04.002. [PubMed: 16735080]

Brann LS, Skinner JD. More controlling child-feeding practices are found among parents of boys with an average body mass index compared with parents of boys with a high body mass index. Journal of the American Dietetic Association. 2005; 105(9):1411–1416. https://doi.org/10.1016/j.jada.2005.06.005. [PubMed: 16129082]

Cabrera NJ, Tamis-LeMonda CS, Bradley RH, Hofferth S, Lamb ME. Fatherhood in the twenty-first century. Child Development. 2000; 71(1):127–136. [PubMed: 10836566]

Campbell K, Andrianopoulos N, Hesketh K, Ball K, Crawford D, Brennan L, Timperio A. Parental use of restrictive feeding practices and child BMI z-score A 3-year prospective cohort study. Appetite. 2010; 55(1):84–88. https://doi.org/10.1016/j.appet.2010.04.006. [PubMed: 20420869]

Cardel M, Willig AL, Dulin-Keita A, Casazza K, Beasley TM, Fernández JR. Parental feeding practices and socioeconomic status are associated with child adiposity in a multi-ethnic sample of children. Appetite. 2012; 58(1):347–353. https://doi.org/10.1016/j.appet.2011.11.005. [PubMed: 22100186]

Chatterjee, S., Hadi, AS. Sensitivity analysis in linear regression. John Wiley & Sons; 2009.

Children who live in two-parent families, by race ethnicity | KIDS COUNT Data Center. 2016. Retrieved February 15, 2016, from http://datacenter.kidscount.org/data/Tables/8053-children-who-live-in-two-parent-families-by-race-ethnicity

Crawford PB, Story M, Wang MC, Ritchie LD, Sabry ZI. Ethnic issues in the epidemiology of childhood obesity. Pediatric Clinics of North America. 2001; 48(4):855–878. [PubMed: 11494640]

Cullen KW, Baranowski T, Owens E, Marsh T, Rittenberry L, Moor Cde. Availability, accessibility, and preferences for fruit, 100% fruit juice, and vegetables influence children's dietary behavior. Health Education & behavior. 2003; 30(5):615–626. https://doi.org/10.1177/1090198103257254. [PubMed: 14582601]

Darling N, Steinberg L. Parenting style as context: an integrative model. Psychological Bulletin. 1993; 113(3):487–496. https://doi.org/10.1037/0033-2909.113.3.487.

Davison KK, Birch LL. Childhood overweight: a contextual model and recommendations for future research. Obesity Reviews: An Official Journal of the International Association for the Study of Obesity. 2001; 2(3):159–171. [PubMed: 12120101]

Davison KK, Gicevic S, Aftosmes-Tobio A, Ganter C, Simon CL, Newlan S, Manganello JA. Fathers' representation in observational studies on parenting and childhood obesity: a systematic review and content analysis. American Journal of Public Health. 2016; 106(11):1980. https://doi.org/10.2105/AJPH.2016.303391a. [PubMed: 27715288]

Drago, R. The parenting of infants: a time-use study. 2009 Oct. Retrieved November 9, 2015, from http://www.bls.gov/tus/papersandpubs.htm

Foreyt JP, Cousins JH. Primary prevention of obesity in Mexican American children. Annals of the New York Academy of Sciences. 1993; 699(1):137–146. https://doi.org/10.1111/j.1749-6632.1993.tb18845.x. [PubMed: 8267304]

Galloway AT, Fiorito LM, Francis LA, Birch LL. "Finish your soup": counterproductive effects of pressuring children to eat on intake and affect. Appetite. 2006; 46(3):318–323. https://doi.org/10.1016/j.appet.2006.01.019. [PubMed: 16626838]

Gidding SS, Dennison BA, Birch LL, Daniels SR, Gillman MW, Gilman MW, American Heart Association. Dietary recommendations for children and adolescents: a guide for practitioners. Pediatrics. 2006; 117(2):544–559. https://doi.org/10.1542/peds.2005-2374. [PubMed: 16452380]

Guerrero AD, Chu L, Franke T, Kuo AA. Father involvement in feeding interactions with their young children. American Journal of Health Behavior. 2016; 40(2):221–230. https://doi.org/10.5993/AJHB.40.2.7. [PubMed: 26931754]

Hennessy E, Hughes SO, Goldberg JP, Hyatt RR, Economos CD. Parent behavior and child weight status among a diverse group of underserved rural families. Appetite. 2010; 54(2):369–377. https://doi.org/10.1016/j.appet.2010.01.004. [PubMed: 20079785]

Holland JC, Kolko RP, Stein RI, Welch RR, Perri MG, Schechtman KB, Wilfley DE. Modifications in parent feeding practices and child diet during family-based behavioral treatment improve child zBMI. Obesity (Silver Spring, Md.). 2014; 22(5):E119–E126. https://doi.org/10.1002/oby.20708.

Hollingshead, A de B. Four factor index of social status. New Haven, CT: Dept. of Sociology, Yale University; 1975.

Horowitz, J. Who does more at home when both parents work?. Depends on which one you ask [Fact Tank]. 2015 Nov. Retrieved from http://www.pewresearch.org/fact-tank/2015/11/05/who-does-more-at-home-when-both-parents-work-depends-on-which-one-you-ask/

Hubbs-Tait L, Kennedy TS, Page MC, Topham GL, Harrist AW. Parental feeding practices predict authoritative, authoritarian, and permissive parenting styles. Journal of the American Dietetic Association. 2008; 108(7):1154–1161. https://doi.org/10.1016/j.jada.2008.04.008. [PubMed: 18589022]

Hughes SO, Anderson CB, Power TG, Micheli N, Jaramillo S, Nicklas TA. Measuring feeding in low-income African–American and Hispanic parents. Appetite. 2006; 46(2):215–223. https://doi.org/10.1016/j.appet.2006.01.002. [PubMed: 16504340]

Hughes SO, Frankel LA, Beltran A, Hodges E, Hoerr S, Lumeng J, Kremers S. Food parenting measurement issues: working group consensus report. Childhood Obesity. 2013; 9(Suppl 1):S-95–S-102. https://doi.org/10.1089/chi.2013.0032. [PubMed: 23944928]

Jansen PW, Tharner A, van der Ende J, Wake M, Raat H, Hofman A, Tiemeier H. Feeding practices and child weight: is the association bidirectional in preschool children? The American Journal of Clinical Nutrition. 2014; 100(5):1329–1336. https://doi.org/10.3945/ajcn.114.088922. [PubMed: 25332330]

Joyce JL, Zimmer-Gembeck MJ. Parent feeding restriction and child weight. The mediating role of child disinhibited eating and the moderating role of the parenting context. Appetite. 2009; 52(3): 726–734. https://doi.org/10.1016/j.appet.2009.03.015. [PubMed: 19501772]

Khandpur, N., Blaine, RE., Fisher, JO., Davison, KK. Fathers' child feeding practices. A review of the evidence. Appetite. 2014. https://doi.org/10.1016/j.appet.2014.03.015

Khandpur N, Charles J, Davison KK. Fathers' perspectives on coparenting in the context of child feeding. Childhood Obesity (Print). 2016; 12(6):455–462. https://doi.org/10.1089/chi.2016.0118. [PubMed: 27636332]

Kral TVE, Rauh EM. Eating behaviors of children in the context of their family environment. Physiology & behavior. 2010; 100(5):567–573. https://doi.org/10.1016/j.physbeh.2010.04.031. [PubMed: 20457172]

Kuczmarski RJ, Ogden CL, Grummer-Strawn LM, Flegal KM, Guo SS, Wei R, Johnson CL. CDC growth charts: UnitedStates. Advance Data. 2000; (314):1–27.

Larios SE, Ayala GX, Arredondo EM, Baquero B, Elder JP. Development and validation of a scale to measure Latino parenting strategies related to children's obesigenic behaviors. The parenting strategies for eating and activity scale (PEAS). Appetite. 2009; 52(1):166–172. https://doi.org/10.1016/j.appet.2008.09.011. [PubMed: 18845197]

Livingston, G. The rise of single father. 2013. Retrieved August 7, 2013, from http://www.pewsocialtrends.org/2013/07/02/the-rise-of-single-fathers/

Lohman, TG., Roche, Alex F., Martorell, Reynaldo. Anthropometric Standardization Reference Manual. Champaign (Ill.): Human Kinetics; 1988.

Lora KR, Hubbs-Tait L, Ferris AM, Wakefield D. African-American and Hispanic children's beverage intake: differences in associations with desire to drink, fathers' feeding practices, and weight concerns. IT. Appetite. 2016; 107:558–567. https://doi.org/10.1016/j.appet.2016.09.012. [PubMed: 27620644]

Loth KA, MacLehose RF, Fulkerson JA, Crow S, Neumark-Sztainer D. Food-related parenting practices and adolescent weight status: a population-based study. Pediatrics. 2013; 131(5):e1443–1450. https://doi.org/10.1542/peds.2012-3073. [PubMed: 23610202]

Marín G, Gamba RJ. A new measurement of acculturation for Hispanics: the Bidimensional Acculturation Scale for Hispanics (BAS). Hispanic Journal of Behavioral Sciences. 1996; 18(3): 297–316. https://doi.org/10.1177/07399863960183002.

Matheson DM, Robinson TN, Varady A, Killen JD. Do Mexican-American mothers' food-related parenting practices influence their children's weight and dietary intake? Journal of the American Dietetic Association. 2006; 106(11):1861–1865. https://doi.org/10.1016/j.jada.2006.08.004. [PubMed: 17081838]

Musher-Eizenman D, de Lauzon-Guillain B, Holub SC, Leporc E, Charles MA. Child and parent characteristics related to parental feeding practices. A cross-cultural examination in the US and France. Appetite. 2009; 52(1) https://doi.org/10.1016/j.appet.2008.08.007.

Musher-Eizenman D, Holub S. Comprehensive feeding practices questionnaire: validation of a new measure of parental feeding practices. Journal of Pediatric Psychology. 2007; 32(8):960–972. https://doi.org/10.1093/jpepsy/jsm037. [PubMed: 17535817]

Musher-Eizenman D, Holub SC, Hauser JC, Young KM. The relationship between parents' anti-fat attitudes and restrictive feeding. Obesity (Silver Spring, Md.). 2007; 15(8):2095–2102. https://doi.org/10.1038/oby.2007.249.

Ogden CL, Carroll MD, Curtin LR, Lamb MM, Flegal KM. Prevalence of high body mass index in US children and adolescents, 2007–2008. JAMA: The Journal of the American Medical Association. 2010; 303(3):242–249. https://doi.org/10.1001/jama.2009.2012. [PubMed: 20071470]

Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999–2010. JAMA: The Journal of the American Medical Association. 2012; 307(5):483–490. https://doi.org/10.1001/jama.2012.40. [PubMed: 22253364]

Olvera N, Power TG. Brief report: parenting styles and obesity in Mexican American children: a longitudinal study. Journal of Pediatric Psychology. 2010; 35(3):243–249. https://doi.org/10.1093/jpepsy/jsp071. [PubMed: 19726552]

Pasch LA, Penilla C, Tschann JM, Martinez SM, Deardorff J, Groat CLde, Greenspan LC. Preferred child body size and parental underestimation of child weight in Mexican-American families. Maternal and Child Health Journal. 2016; 20(9):1842–1848. https://doi.org/10.1007/s10995-016-1987-z. [PubMed: 27016351]

Payne LO, Galloway AT, Webb RM. Parental use of differential restrictive feeding practices with siblings. International Journal of Pediatric Obesity: IJPO: An Official Journal of the International Association for the Study of Obesity. 2011; 6(2–2):e540–546. https://doi.org/10.3109/17477166.2011.575144.

Rhee KE, Coleman SM, Appugliese DP, Kaciroti NA, Corwyn RF, Davidson NS, Lumeng JC. Maternal feeding practices become more controlling after and not before excessive rates of weight gain. Obesity (Silver Spring, Md.). 2009; 17(9):1724–1729. https://doi.org/10.1038/oby.2009.54.

Rhee KE, Lumeng JC, Appugliese DP, Kaciroti N, Bradle y RH. Parenting styles and overweight status in first grade. Pediatrics. 2006; 117(6):2047–2054. https://doi.org/10.1542/peds.2005-2259. [PubMed: 16740847]

Rollins, BY., Savage, JS., Fisher, JO., Birch, LL. Alternatives to restrictive feeding practices to promote self-regulation in childhood: a developmental perspective. Pediatric Obesity. 2015. https://doi.org/10.1111/ijpo.12071

Savage JS, Fisher JO, Birch LL. Parental influence on eating behavior. The Journal of Law, Medicine & Ethics: A Journal of the American Society of Law, Medicine & Ethics. 2007; 35(1):22–34. https://doi.org/10.1111/j.1748-720X.2007.00111.x.

Shloim N, Edelson LR, Martin N, Hetherington MM. Parenting styles, feeding styles, feeding practices, and weight status in 4–12 year-old children: a systematic review of the literature. Frontiers in Psychology. 2015; 6 https://doi.org/10.3389/fpsyg.2015.01849.

Shriver LH, Buehler C. Promoting fruit vegetables in young children: what advice can pediatricians give to parents? Clinical Pediatrics. 2016; 55(3):209–213. https://doi.org/10.1177/0009922815600441. [PubMed: 26260399]

Taylor BA, Behnke A. Fathering across the border: Latino fathers in Mexico and the U.S. Fathering. 2005; 3(2):99.

Tschann JM, Gregorich SE, Penilla C, Pasch LA, de Groat CL, Flores E, Butte NF. Parental feeding practices in Mexican American families: initial test of an expanded measure. The International Journal of Behavioral Nutrition and Physical. Activity. 2013; 10:6. https://doi.org/10.1186/1479-5868-10-6.

Tschann JM, Martinez SM, Penilla C, Gregorich SE, Pasch LA, de Groat CL, Butte NF. Parental feeding practices and child weight status in Mexican American families: a longitudinal analysis.The International Journal of Behavioral. Nutrition and Physical Activity. 2015; 12:66. https://doi.org/10.1186/s12966-015-0224-2.

Vollmer RL, Adamsons K, Foster JS, Mobley AR. Association of fathers' feeding practices and feeding style on preschool age children's diet quality, eating behavior and body mass index. Appetite. 2015; 89:274–281. https://doi.org/10.1016/j.appet.2015.02.021. [PubMed: 25700629]

Webber L, Cooke L, Hill C, Wardle J. Child adiposity and maternal feeding practices: a longitudinal analysis. The American Journal of Clinical Nutrition. 2010; 92(6):1423–1428. https://doi.org/10.3945/ajcn.2010.30112. [PubMed: 20881070]

Wehrly SE, Bonilla C, Perez M, Liew J. Controlling parental feeding practices and child body composition in ethnically and economically diverse preschool children. Appetite. 2014; 73:163–171. https://doi.org/10.1016/j.appet.2013.11.009. [PubMed: 24269508]

White RMB, Zeiders KH, Gonzales NA, Tein J-Y, Roosa MW. Cultural values, U.S. neighborhood danger, and Mexican American parents' parenting. Journal of Family Psychology: JFP: Journal of the Division of Family Psychology of the American Psychological Association (Division 43). 2013; 27(3):365–375. https://doi.org/10.1037/a0032888.

Zhang L, McIntosh WA. Children's weight status and maternal and paternal feeding practices. Journal of Child Health Care: For Professionals Working with Children in the Hospital and Community. 2011; 15(4):389–400. https://doi.org/10.1177/1367493511414448. [PubMed: 22199174]

Table 1

Means, standard deviations or percentages for demographic characteristics of 174 Mexican American mothers, fathers and children.

Demographic characteristics	Mothers Mean (SD) or %	Fathers Mean (SD) or %
Born in Mexico	74%	74%
Born in U.S.		
Mexican origin	100%	85%
Other Latino origin	-	12%
Other/mixed race origin	-	3%
Biological parent	100%	93%
Age	37.48 (6.25)	39.75 (6.83)
BMI	29.47 (5.73)	29.87 (4.31)
Education years	11.45 (3.62)	10.94 (3.72)
Spanish-language acculturation	4.09 (1.30)	4.01 (1.10)
English-language acculturation	2.82 (1.30)	2.95 (1.12)
Occupational status	3.51 (2.20)	3.72 (1.85)
	Children Mean (SD)	
Age	9.24 (.89)	
BMI z-score	0.95 (1.02)	

Table 2

Correlations between parental feeding practices for 174 Mexican American mothers and fathers (mothers below the diagonal; fathers above the diagonal; correlations between mothers and fathers on the diagonal).

Correlations	**(1)**	**(2)**	**(3)**	**(4)**
(1) Positive involvement in child eating [a]	**.24** **	.24 **	.14	.00
(2) Pressure to eat	.18 *	**.51** ***	.28 ***	.03
(3) Use of food to control behavior	.07	.23 **	**.20** **	−.02
(4) Restriction of food	.03	−.12	−.10	**.33** ***
Mothers: Mean (SD)	3.41 (.62)	2.30 (.83)	1.52 (.47)	2.32 (.45)
Fathers: Mean (SD)	3.12 (.70)	2.45 (.85)	1.61 (.50)	2.30 (.47)

[a] * p < = .05;

** p < = .01;

*** p < = .001

Table 3

Correlations between demographic characteristics and child BMI z-score for 174 Mexican American mothers, fathers and children.

Demographic characteristics		Child BMI z-score r
Mothers [a]	Age	−.05
	BMI	.33***
	Education years	−.07
	Spanish-language acculturation	.20**
	English-language acculturation	−.07
	Occupational status	−.26***
Fathers	Age	−.06
	BMI	.28***
	Education years	−.09
	Spanish-language acculturation	.21**
	English-language acculturation	−.14
	Occupational status	−.15
Children	Age	.06
	Gender	−.03

[a] * p < = .05;

** p < = .01;

*** p < = .001

Table 4

Results of three regression models for parental feeding practices predicting child BMI z-score for 174 Mexican American mothers, fathers and children [a].

Predictor variables	Model 1 Child BMI z-score *Coef., (CI)*	R^2	Model 2 Child BMI z-score *Coef., (CI)*	R^2	Model 3 Child BMI z-score *Coef., (CI)*	R^2
Positive involvement in child eating		.26		.26		.26
Mothers' BMI [b]	.05, (.03, .08)***		.05, (.03, .08)***		.05, (.02, .09)***	
Fathers' BMI	.06, (.02, .09)***		.06, (.02, .09)**		.06, (.02, .09)**	
Mothers' Spanish language acculturation	.16, (−.01, .34)		.17, (−.01, .35)		.17, (−.01, .35)	
Fathers' Spanish language acculturation	−.00, (−.18, .18)		−.01, (−.19, .17)		−.02, (−.20, .17)	
Mothers' occupational status	−.07, (−.15, .02)		−.07, (−.15, .01)		−.07, (−.15, .01)	
Fathers' occupational status	−.02, (−.11, .07)		−.02, (−.11, 07)		−.02, (−.11, .07)	
Mothers' feeding practice			−.11, (−.36, .13)		−.13, (−.38, .13)	
Fathers' feeding practice					.05, (−.17, .27)	
Pressure to eat		.26		.36		.38
Mothers' BMI	.05, (.03, .08)***		.05, (.02, .08)***		.05, (.02, .07)***	
Fathers' BMI	.06, (.02, .09)***		.06, (.02,.09)***		.05, (.02, .09)***	
Mothers' Spanish language acculturation	.16, (−.01, .34)		.20, (.04, .37)*		.21, (.05, .37)**	
Fathers' Spanish language acculturation	−.00, (−.18, .18)		−.05, (−.22, .12)		−.04, (−.21, .13)	
Mothers' occupational status	−.07, (−.15, .02)		−.07, (−.15, .00)		−.06, (−.14, .01)	
Fathers' occupational status	−.02, (−.11, .07)		−.04, (−.12, .05)		−.03, (−.12, .05)	
Mothers' feeding practice			−.40, (−.57, −.24)***		−.30, (−.49, −.11)**	
Fathers' feeding practice					−.20, (−.39, −.01)*	
Use of food to control behavior		.26		.27		.37
Mothers' BMI	.05, (.03, .08)***		.05, (.02, .08)***		.06, (.04, .09)***	
Fathers' BMI	.06, (.02, .09)***		.06, (.03, .10)***		.08, (.04, .11)***	
Mothers' Spanish language acculturation	.16, (−.01, .34)		.16, (−.02, .33)		.11, (−.05, .28)	
Fathers' Spanish language acculturation	−.00, (−.18, .18)		−.03, (−.21, .16)		.02, (−.16, .20)	

Predictor variables	Model 1 Child BMI z-score *Coef., (CI)*	R^2	Model 2 Child BMI z-score *Coef., (CI)*	R^2	Model 3 Child BMI z-score *Coef., (CI)*	R^2
Mothers' occupational status	−.07, (−.15, .02)		−.08, (−.16, .00)		−.08, (−.15, .00)	
Fathers' occupational status	−.02, (−.11, .07)		−.02, (−.11, .06)		.01, (−.08, .09)	
Mothers' feeding practice			−.31, (−.63, .01)		−.19, (−.50, .12)	
Fathers' feeding practice					.36, (−.65, −.07) *	
Restriction of amount of food		.26		.39		.45
Mothers' BMI	.05, (.03, .08) ***		.05, (.02, .07) ***		.04, (.02, .07) ***	
Fathers' BMI	.06, (.02, .09) ***		.06, (.02, .09) ***		.05, (.02, .08) ***	
Mothers' Spanish language acculturation	.16, (−.01, .34)		.12, (−.04, .28)		.08, (−.07, .24)	
Fathers' Spanish language acculturation	−.00, (−.18, .18)		.01, (−.15, .18)		−.02, (−.18, .14)	
Mothers' occupational status	−.07, (−.15, .02)		−.06, (−.14, .01)		−.06, (−.13, .01)	
Fathers' occupational status	−.02, (−.11, .07)		.01, (−.07, .09)		−.01, (−.08, .07)	
Mothers' feeding practice			.90, (.59, 1.21) ***		.73, (.42, 1.04) ***	
Fathers ' feeding practice					.56, (.27, .84) ***	

[a]Three regression models were fit for each parental feeding practices variable to calculate unstandardized regression coefficients: (Model 1) a model including all mother and father demographic covariates; (Model 2) Model 1 plus the mothers' feeding practices variable; and (Model 3) Model 2 plus the corresponding fathers' feeding practices variable.

[b] * p < = .05;

** p < = .01;

*** p < = .001