



# Predicting preschool children's eating in the absence of hunger from maternal pressure to eat: A longitudinal study of low-income, Latina mothers



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## ABSTRACT

Early work by Klesges et al. (1983, 1986) suggested that mothers who frequently prompt their children to eat have children at greater risk for obesity. This is consistent with the hypothesis that controlling feeding practices override children's responsiveness to their internal fullness cues, increasing the risk of overeating and obesity (e.g., Johnson & Birch, 1994). Subsequent cross-sectional research on pressure to eat, however, has been inconsistent. Most studies have shown that maternal self-reports of pressure to eat are *negatively* associated with childhood obesity, and observational studies showed inconsistent relationships with child weight status. In the present study we examined the association between low-income, Latina mothers' pressure to eat and their preschool children's eating in the absence of hunger using both self-report and observational measures of feeding practices. A longitudinal design examined eating in the absence of hunger over 18 months; children's BMI at the initial timepoint was statistically controlled to address the tendency of mothers of underweight children to pressure their children to eat. At each timepoint, mothers completed the Child Feeding Questionnaire (Birch et al., 2001) and were observed feeding their child a meal in a laboratory setting. Eating in the absence of hunger (Fisher & Birch, 1999) was assessed at both timepoints as well. A cross-lagged panel model showed that observed maternal prompts to eat a different food at time one predicted kcal consumed in the absence of hunger at time two (controlling for kcal consumed in the absence of hunger at first timepoint:  $\beta = 0.20$ ,  $p < 0.05$ ). Results suggest that pressure to eat alone may not be what contributes to eating in the absence of hunger, but that the *nature* of that pressure may be more important.

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## 1. Introduction

The prevalence of childhood obesity amongst children in the United States has increased significantly since the 1980s (Ogden, Carroll, Kit, & Flegal, 2014). Within the last 30 years, health consequences ranging from physical to social and emotional complications have become a concern (Han, Lawlor, & Kimm, 2010). Obese children are prone to endure bullying, marginalization and low self-esteem as they grow up (McNeeley & Crosnoe, 2008). They are

also at risk for future health complications such as type 2 diabetes, asthma, and heart disease (Han et al., 2010).

Various risk factors increase the likelihood of childhood obesity, including both internal and external contextual factors and the interaction between the child's biology and their culture (Harrison et al., 2011). Obesity rates are particularly high for children from low-income minority backgrounds. Among preschool children, Latino children are at the greatest risk of childhood obesity (Ogden et al., 2014).

Families play a major role in the development of children's eating behavior and obesity risk—especially for infants, toddlers, and preschool children (Pinard et al., 2011). For young children, parents are primarily responsible for the amount and types of food offered in the home and for opportunities for physical activity and

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sedentary behavior. Parents also serve as role models for children's eating and engage in a wide range of parenting practices to encourage and restrict the consumption of certain foods (Pinard et al., 2011).

Child factors contribute to childhood obesity as well. One such factor is eating self-regulation, the ability to regulate the amount of food the child consumes (Frankel et al., 2012). Numerous studies (mostly cross-sectional, but some longitudinal) have shown that children who demonstrate poor self-regulation of eating are at risk for becoming obese (French, Epstein, Jeffery, Blundell, & Wardle, 2012).

Eating the optimal amount of food becomes a difficult task for children to manage if their caregiver frequently pressures them to eat during meals (Gregory, Paxton, & Brozovic, 2010). Gregory et al. (2010) found that mothers who were concerned that their child was underweight were more likely to pressure their children to eat. Such practices, however, may increase the likelihood of childhood obesity in the long run because pressuring the child to eat may override young children's responsiveness to their fullness cues causing them to overeat (Johnson & Birch, 1994).

Consistent with Gregory et al. (2010) findings, cross-sectional studies using maternal reports of feeding practices (usually the Child Feeding Questionnaire, Birch et al., 2001) have shown that self-reported pressure to eat is negatively associated with child weight status (see Shloim, Edelson, Martin, & Hetherington, 2015 for a review). Observational studies of pressure to eat, however, are mixed: three studies showed a positive association between maternal prompts to eat and child weight status (Farrow, Blissett, & Haycraft, 2011; Klesges et al., 1983; Klesges, Malott, Boschee, & Weber, 1986), four studies showed no relationship (i.e., Birch, Wolfe Marlin, Kramer, & Peyer, 1981; Haycraft & Blissett, 2008; Koivisto, Fellenius, & Sjoeden, 1994; Lumeng et al., 2012), and two studies by Lumeng and colleagues (Lumeng & Burke, 2006; Lumeng et al., 2012) showed that the nature of the eating prompts was important. Specifically, Lumeng and Burke (2006) found that for obese mothers, maternal prompts for the child to eat novel foods were positively associated with child weight status, whereas prompts to eat familiar foods were negatively associated. Lumeng et al. (2012) found that the assertiveness and intrusiveness of eating prompts were positively associated with child weight status.

Studies predicting young children's eating behaviors (rather than children's weight status) from maternal reports of pressure to eat are more consistent with some of the observational studies, showing a positive association between pressure to eat and child consumption. Campbell, Crawford, and Ball (2006), for example, found that maternal self-reported pressure to eat was positively associated with total energy intake during the day and Harris, Mallan, Nambiar, and Daniels (2014) found that for preschool boys, maternal self-reports of pressure to eat were positively associated with kcal consumed in the absence of hunger. Finally, Carper, Fisher, and Birch (2000) found that five-year-olds who reported that their mothers pressured them to eat were more likely to report engaging in emotionally disinhibited eating.

Given the inconsistencies in the literature, the purpose of the present study was to examine the association between low-income Latina mothers' pressuring their children to eat during meals and children's eating in the absence of hunger using both self-report and observational measures of feeding practices. We focused on predicting individual differences in eating in the absence of hunger because this is an early risk factor for the development of childhood obesity (French et al., 2012). A longitudinal design was employed to predict kcal consumed in the absence of hunger at the second timepoint, controlling for both kcal consumed at the first timepoint, as well as controlling for children's BMI at the initial

timepoint (to control for the tendency of mothers of underweight children to pressure their children to eat). By using a cross-lagged, panel design (assessing maternal feeding practices and child eating behavior at two timepoints) we could examine the direction of effects (whether maternal feeding practices predicted child eating behavior over time or vice versa). We focused on child eating behavior rather than child weight status because we did not expect major changes in child weight status over the short period of time that we followed our participants (i.e., 18 months). Low-income, Latina mothers of preschool children were studied—a population at high risk for childhood obesity. It was predicted that caregivers who pressured their children to eat at the first time point would have children who ate more in the absence of hunger 18 months later (controlling for children's BMI and their initial level of eating in the absence of hunger at the first timepoint).

## 2. Methods

### 2.1. Participants

Participants were drawn from a larger study of 187 low-income, Latina mothers and their 4- to 5-year-olds (Hughes, Power, Fisher, O'Connor & Fisher, 2015). One hundred and thirty-eight of these mothers and their children (74%) were available for a follow-up assessment 18 months after their initial participation. All except two of the caregivers were mothers—two were grandmothers. Participants were recruited from Head Start centers in a large urban area in the South through a variety of strategies including meeting with potential participants at preschool registration, at monthly parent meetings, and at child drop off and pick up times. Of the mothers participating in the 18-month follow-up, 17% were born in the United States, 66% in Mexico, 16% in Central American, and 1% in Cuba. As shown in Table 1, about 40% had less than a high school education and for 24%, their highest level of education was a high school diploma or GED. The average age of the mother was 31.9 years; average child age at the first timepoint was 56 months. Slightly more than half of the children were boys and 97% percent of the children were born in the United States. Over half of the children were overweight or obese.

Comparison of mothers in the original sample with those who

**Table 1**  
Summary of mother and child characteristics (n = 138).

	Percentage
<i>Mother and child characteristics</i>	
Parent gender- Female	100
Child gender- Female	46.4
Child gender- Male	53.6
Child age, mean in months (SD)	56.8 (5.4)
Mother age, mean in years (SD)	31.9 (6.0)
<i>Highest level of maternal education</i>	
Sixth grade or less	12.3
Eighth grade or less	17.4
Attended some High School	9.4
High school graduate or GED	23.9
Completed Technical School	15.9
Attended some college	16.7
College graduate	4.3
<i>Marital status</i>	
Married	57.2
Never married	13.0
Widowed, separated, divorced, other	29.7
<i>Employment status, currently employed</i>	22.5
<i>Child BMI categories</i>	
Normal (<85th percentile)	48.6
Overweight (85th to <95th percentile)	22.5
Obese (≥95th percentile)	29.0

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