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Feeding Practices of Mothers from Varied Income and Racial/Ethnic Groups

Dr John Worobey, PhD,

Rutgers University, Nutritional Sciences, Davison Hall, 26 Nichol Avenue, New Brunswick, 08901 United States worobey@rci.rutgers.edu

Ms Amanda Borrelli,

Rutgers University, Biological Sciences, New Brunswick, 08901 United States aborrell@eden.rutgers.edu

Ms Carolina Espinosa, and

Rutgers University, Nutritional Sciences, New Brunswick, 08901 United States carespin@rci.rutgers.edu

Mrs Harriet S. Worobey

Rutgers University, Nutritional Sciences, New Brunswick, 08901 United States harrietw@rci.rutgers.edu

Abstract

OBJECTIVE—Relatively few investigators have explored the role of maternal control in describing the feeding behavior of nonwhite parents of preschool-age children. The present study was conducted to examine if controlling feeding behaviors (i.e., restriction and pressuring) varied by income (middle vs. low) and race/ethnicity (white vs. Hispanic), and if they were associated with the BMI of their 4-year-old offspring.

METHOD—Responses to the “restriction” and “pressure to eat” variables of the *Child Feeding Questionnaire* were compared between 51 white middle-income mothers and 49 Hispanic low-income mothers.

RESULTS—Mothers from both groups gave predominantly “neutral” ratings in their self-reports of feeding practices. However, relative to the Hispanic mothers, white mothers indicated significantly less restriction and pressure to eat. Higher child BMI was predicted by male gender and being Hispanic.

CONCLUSION—The utility of maternal feeding practices in predicting child overweight is discussed, and the significant association between the conceptually different constructs of restriction and pressure to eat is examined.

Keywords

feeding practices; minority mothers; child weight

Numerous factors are acknowledged as contributing to the current child obesity epidemic, with the prevalence of child overweight viewed as a harbinger of what may be the public health problem of the 21st century. Among behavioral scientists, the role of parenting style has recently come under scrutiny as researchers have begun to apply concepts such as control and permissiveness to the context of feeding. Indeed, over 25 years ago Costanzo

and Woody (1985) proposed a model in which parents would exert more control over their child's eating if the child was perceived to be at risk for overweight, or if physical appearance was particularly valued by the parent. However, their work was largely ignored until Birch and Fisher (2000) suggested that stringent feeding controls placed on daughters might lead to their excess weight gain due to a reduced ability to self-regulate their own energy intake.

Since this formulation of a parental control–and–overweight connection was hypothesized, an increasing number of investigators have sought to examine the manner by which control of feeding exerts its influence on child food intake, especially in children age 6 and younger. Despite the intuitive connection between parental feeding and children's weight outcomes, in reviewing 22 published research articles Faith and colleagues (Faith & Kerns, 2005; Faith et al., 2004) concluded that most aspects of parental feeding did not show significant associations with either child eating or their weight status. The noteworthy exception was parental feeding *restriction*, which over the bulk of studies showed the most associations with higher child weight status. While some work since their reviews has also verified this relationship (Joyce & Zimmer-Gembeck, 2009; Lewis & Worobey, 2011), a number of other studies have not (Blissett & Haycraft, 2008; Gregory, Paxton & Brozovic, 2010; Kröller & Warschburger, 2008; Montgomery et al., 2006).

Along with the concept of restriction, the practice referred to as *pressure to eat* has been subject to nearly as much research, likely due in part to its inclusion in the *Child Feeding Questionnaire* (Birch et al., 2001)—a widely used tool for measuring parental feeding practices. While the Faith et al. (2004) review did not conclude that pressure to eat was consistently predictive of children eating more or higher child weight status, recent reports suggest that the opposite may be true, namely, that parental pressure to eat scores are lower if their children are heavier (Brann & Skinner, 2005; Lewis & Worobey, 2011). Indeed, in a recent systematic review of responsive feeding, Hurley, Cross and Hughes (2011) identified six studies using the *CFQ* that showed higher pressure to eat scores by mothers were associated with lower child weight, BMI (Body Mass Index), or BMI z-scores. Interestingly, Hughes and colleagues (2005) found that authoritarian parenting, emblematic of higher control and characterized by both pressure to eat *and* restriction, was associated with a lower BMI in children. It is therefore unclear whether these parental feeding practices serve to modify their children's weight, whether they are a response to their children's weight, or whether other factors mediate any associations between parent practices and children's weight (Ventura & Birch, 2008).

Despite the growing body of research on parental feeding practices, relatively few investigators have explored the utility of these constructs in describing the behavior of nonwhite parents. Although control as an aspect of the authoritarian feeding style has been assessed somewhat with minority samples (Hughes et al, 2006; Rhee et al., 2009; Ventura, Gromis & Lohse, 2010), only three studies to our knowledge have examined restriction and pressure to eat specifically as practiced by nonwhite mothers. Spruijt-Metz and colleagues (2002) reported that African-American mothers scored higher than white mothers on both restriction and pressure to eat, with the latter practice negatively related to total fat mass in their sample of 7–14-year-old children. Keller and colleagues (2006), with a sample of mostly black and Hispanic subjects, reported that parents more frequently used pressure to eat with lower weight children ages 3–7 (and tended to use restriction with their heavier siblings). Finally, Powers and colleagues (2006) studied low-income African-American mother-child dyads and found that higher maternal pressure to eat was associated with lower BMI in their 2–5-year-old children. Greater maternal restriction was associated with higher child BMI, but only if the mothers were themselves obese. No comparison racial/ethnic group was included.

Given the somewhat inconsistent nature of this growing literature on feeding practices, and the paucity of data on minority mothers and their children—particularly Hispanic families, the present study was conducted to examine restriction and pressure to eat as reported by mothers of two markedly divergent groups. Specifically, the responses of middle-income white mothers of 4-year-olds were compared to low-income black and Hispanic mothers of children the same age. Children's BMI was also calculated, to determine if maternal feeding practices across groups were differentially associated with children's weight status.

Methods

All procedures, including recruitment of participants, were approved by the university's Institutional Review Board. Descriptive statistics for the sample were computed, with Pearson correlations for exploratory purposes, and linear regression analysis used to predict BMI percentiles. All analyses were conducted using SPSS Version 19.0.

Participants

Mother-child dyads were solicited via two different venues. Fifty-one mothers of White 4-year-old children who attended a university laboratory preschool three half-days per week comprised the Middle-Income group (W-MI). Middle-income status was inferred via family residence, parental occupation, and the fact that tuition was charged for child enrollment in this part-time program. In addition, 49 mothers of Hispanic 4-year-old children who were enrolled in a separate study on nutrition and growth comprised the Low-Income group (H-LI). As part of a longitudinal investigation, the mothers were seen via home visits at yearly intervals. The low-income designation was determined by the mothers having been recruited and still enrolled at the local Women, Infants and Children (WIC) supplemental nutrition program through the time of the survey. WIC guidelines require a gross family income of 185% or below the poverty line for eligibility (New Jersey Department of Health, 2012). All of the families resided in the vicinity of the university.

Measures

Mothers in both groups were asked for permission to have their child weighed and measured, and responded to a brief survey that included questions on their feeding practices, namely restriction and pressure to eat. Specifically, the eight items that measured restriction on the *Child Feeding Questionnaire* (Birch et al., 2001), as well as the four items that measured pressure to eat were included. Item responses are structured in a Likert-type format, with the endpoints of 1 and 5 labeled “disagree” and “agree,” respectively, and the midpoint of 3 labeled “neutral.” A sample restriction item is, “I intentionally keep some foods out of my child's reach.” An example of pressure to eat is, “I have to be especially careful to make sure my child eats enough.”

Mothers whose children attended the preschool were sent home the questions in paper form to complete and return; mothers who were enrolled in the nutrition and growth study were asked the questions in Spanish in the context of a home visit. The W-MI group of children were weighed and measured at preschool using an eye-level physician scale with height rod (Detecto Model D438, Cardinal Scale Manufacturing, Webb City, MO). The H-LI children were weighed at their homes using a portable home scale (Detecto Model D1130, Cardinal Scale Manufacturing, Webb City, MO) and their height determined with a tape measure fastened to a wall. For both subsamples, children removed their shoes while being measured, and each measurement was taken twice.

Results

Using the measures of weight and height, each child's Body Mass Index (BMI=weight/height²) and BMI percentile-for-age-and-sex were first computed. As the initial step in examining associations between maternal feeding practices and child weight outcomes, a linear regression analysis was run for the full sample of mother-child pairs (N=100). Specifically, child age and gender, maternal restriction and pressure to eat, and race/ethnicity/income status were entered as predictors of child BMI percentile. A negative *Beta* coefficient (-.223) for gender indicated that being male predicted a higher BMI percentile ($t = -2.197, p < .03$). However, race/ethnicity/income was more strongly predictive, with membership in the H-LI group predicting a higher BMI percentile ($Beta = -.435, t = -3.725, p < .0001$). Neither maternal food restriction nor pressure to eat was predictive of BMI percentile scores.

As the regression analysis confirmed the possibility of there being race/ethnicity/income differences between these groups, the sample was then split with respect to this variable. Descriptive statistics for the two subsamples of children appear in Table 1. Children in the H-LI group were higher in their average BMI, and as a group were two deciles higher than their W-MI peers in terms of percentile scores.

As shown in Table 1, the restriction and pressure to eat scores generally hovered around the two subscales' mid-points of 3, but for both variables the scores for the W-MI mothers were significantly lower than for the H-LI mothers. Separate Pearson correlation analyses were next run for the two groups to determine if there were any associations between the maternal feeding practice scores and the child BMI-related variables. Aside from the expected associations of BMI with BMI percentile scores, no correlations reached significance between the BMI percentile scores and feeding practice scores for either group.

Discussion

Recent efforts to better elucidate the factors that contribute to child obesity have addressed the role of maternal feeding style as possibly affecting children's energy intake, and ultimately their weight. At the same time it is recognized that displaying a particular feeding practice such as restricting food or pressuring to eat may be the caregiver's reaction to the weight status of child. This study was conducted primarily to determine if the maternal feeding practices of restriction and pressure to eat differed between mothers that represented two markedly divergent groups, that is, middle-income white mothers versus low-income Hispanic mothers of children of the same age. In turn, the relationship of feeding practices to their children's BMI was also addressed.

The primary finding of this study is that race/ethnicity/income may exert a sizable influence on how mothers feed their children, or at least their self perception of their feeding practices. Low-income Hispanic mothers (H-LI), relative to the middle-income white mothers (W-MI), scored higher on both restriction and pressure to eat as measured with the *CFQ*, two constructs that imply a greater use of control in the child feeding context.

Before addressing the implications of this result, some mention of the magnitude of the feeding practice scores should be made. To begin with, the averaged scores for both restriction and pressuring by the two groups of mothers hovered around "3"—the exception being the notably lower mean score of 2.3 for pressure by the W-MI mothers. But even a score of 2 denotes only slight disagreement with the elements of pressuring, suggesting that apart from being forced to think about their feeding behaviors, possibly for the first time when answering the questions on the survey, neither group of mothers could be said to

strongly adhere to a particular practice. That is, the average mother was neither high nor low in restriction or pressuring to eat; although the W-MI mothers might be characterized as exerting somewhat less pressure. With their children exhibiting a higher BMI on average, it is mildly surprising that the H-LI mothers were not the ones that pressured less, in order to “correct” their children's tendency toward becoming overweight. In the only published study we are aware of that used the *CFQ* with a sample that included Hispanic preschool-age children (Keller et al., 2006), the multiracial group of mothers reported less pressure toward heavier than thinner children

The mid-point ratings on pressure to eat by the H-LI mothers likely served to negate an association with their children's BMI, and is worth a comment given that their children appeared near the 79th BMI percentile for age and sex. A recent study (Lewis & Worobey, 2011) reported an inverse correlation between maternal pressure and toddler BMI, in a sample where the 2-year-olds were at approximately the 65th percentile and the mean maternal pressure score was 2.18, clearly indicating an absence of pressure if the toddler was overweight. For infants at least, it seems unlikely that low pressure would have led to above-average weight so early in development, so it is somewhat surprising that such a pattern was not found in the present study. Still, a longitudinal assessment of early and subsequent feeding practices and BMI would be necessary to better attribute causality. In this regard, recent findings by Rhee and colleagues (2009) are instructive. Although maternal controlling feeding practices were measured with one question, increases in reported control over ages 4–7 years were not associated with increases in child BMI z-scores from 7–9 years. However, increases in girls' BMI z-scores from ages 4–7 years *were* associated with increases in control from 7–9 years—suggesting that mothers become more controlling as a result of their children's excess weight gain, and not incidentally, are more concerned for their daughters than their sons.

Differences between mothers in their feeding practices are one thing, their relevance to child weight or BMI is another. In the present study, neither the W-MI nor H-LI subsamples showed an association between maternal feeding practices and child weight outcomes, despite marked differences between the two subsamples in BMI percentile scores. However, this lack of an association should be considered in the context of previous research. Of the 12 studies employing the *CFQ* with mothers and preschool-age children that Hurley and colleagues (2011) reviewed, five failed to show an association between maternal restriction or pressure with child weight outcomes. And of the remainder, only one showed both restriction and pressure to relate as predicted, with an all white sample of mothers and daughters (Francis, Hofer & Birch, 2001). Therefore, the present results are not without precedent.

As race/ethnicity differentiated the two groups as much as their attributed income status, it would be important to know which of these demographic characteristics had more relevance to our results. A major limitation of our findings is clearly the confounding of income with race/ethnicity. At one level it may be immaterial, as children of both groups were above the median percentile for normal BMI, and mothers for the most part gave about average scores for their feeding practices. At a second level, however, the finding that the H-LI mothers did not seem as attuned to their children's higher weight status, warrants further research in light of previous studies that did show less pressuring with heavier preschool-age children by Hispanic (Keller et al, 2006) and low-income African-American mothers (Power et al., 2006). That the girls were thinner than the boys in this study may account for some of the mothers' complacency, but regardless, studies with minority samples are rare and the present results may be of some use in attempting to fill that void.

One final observation should be made. Although not using the *CFQ*, the aforementioned study by Hughes and colleagues (2005) reported that authoritarian parenting, comprising both pressure to eat *and* restriction, was associated with lower BMI in their sample, suggesting some harmony between the constructs. In the present study, for that matter, their correlation was .22 ($p < .05$). In fact, a scanning of published studies that used the *CFQ* revealed a number in which restriction and pressure to eat positively correlated, though perhaps understandably, without commentary (Gregory et al, 2010; Lewis & Worobey, 2011; Spruijt-Metz et al., 2002). Indeed, the *CFQ* validation study itself (Birch et al., 2001) displayed a significant correlation of .34 between restriction and pressure to eat.

The contradictory nature of this association may be partly due to the qualitative difference in the sets of questions that tap the two practices. The pressure to eat questions do not name particular categories of food, rather, the emphasis is simply on eating—“much less,” “enough,” or “all.” In contrast, the restriction items query the mothers’ attempts to restrict intake of particular foods, namely “sweets, high fat-, junk-“, or “favorite” foods. It would thus seem logical that a mother who harbored concerns about her child's dietary intake would try to restrict her child's intake of empty calories, but also pressure her child to eat enough to thrive. Musher-Eizenman and Holub (2007) provide some disambiguation for restriction at least, in distinguishing between *restriction for weight* and *restriction for health*. Future efforts might do well to also explore the pressure to eat construct, by developing specific questions that address “getting my child to eat fresh fruit” or “making sure my child has vegetables each day,” for example, instead of merely pressuring to eat more to ensure adequate growth.

In sum, the present study showed that relative to factors like income/minority status or gender, maternal feeding practices may have marginal utility in predicting a child's risk for overweight. Investigations in which pressure or restriction are experimentally manipulated would be ideal (Fisher & Birch, 2002; Galloway et al., 2006), but at a minimum the area would be well-served with longitudinal designs where feeding practices can be assessed prior to weight becoming worrisome. In either case, further refinement of the instruments and questions used to assess feeding practices themselves is worth pursuing.

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Key messages

- Numerous factors are contributing to the child obesity epidemic
- Maternal control in the feeding context has recently been examined
- Food restriction and pressure eat have been associated with child BMI
- Little is know about feeding practices of low-income minority mothers
- This study showed differences in feeding practices across ethnic/income groups but no associations with child BMI

Table 1

Descriptive statistics for and low- and middle-income subsamples

| | H-LI (N=49) | W-MI (N=51) |
|----------------------------------|--------------------|--------------------|
| | Mean (SD) | Mean (SD) |
| Child age in months | 48.3 (1.8) | 49.4 (5.9) |
| Number of girls, boys | 21, 28 | 33, 18 |
| Child BMI | 16.88 (1.67) | 16.06 (1.60) * |
| Child BMI percentile for age/sex | 78.90 (20.43) | 58.78 (31.36) *** |
| Restriction | 3.22 (.75) | 2.84 (.80) ** |
| Pressure to eat | 3.11 (.72) | 2.32 (.93) *** |

H-LI: Hispanic low-income; W-MI: White, middle-income

SD = Standard deviation

*
p < .02**
p < .05***
p < .0001