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ORIGINAL ARTICLE

Firm maternal parenting associated with decreased risk of excessive snacking in overweight children

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Abstract
Objective To examine the relationship between parent feeding practices (restriction, monitoring, pressure to eat), general parenting behaviors (acceptance, psychological control, firm control), and aberrant child eating behaviors (emotional eating and excessive snacking) among overweight and normal weight children.
Methods Overweight and normal weight children between 8 and 12 years old and their mothers ($n = 79$, parent–child dyads) participated in this study. Mothers completed surveys on parent feeding practices (Child Feeding Questionnaire) and child eating behaviors (Family Eating and Activity Habits Questionnaire). Children reported on their mothers' general parenting behaviors (Child Report of Parent Behavior Inventory). Parent and child height and weight were measured and demographic characteristics assessed. Logistic regression models, stratified by child weight status and adjusting for parent BMI, were used to determine which parenting dimensions and feeding practices were associated with child emotional eating and snacking behavior.
Results Overweight children displayed significantly more emotional eating and excessive snacking behavior than normal weight children. Mothers of overweight children used more restrictive feeding practices and psychological control. Restrictive feeding practices were associated with emotional eating in the overweight group (OR = 1.26, 95 % CI, 1.02, 1.56) and excessive snacking behavior in the normal weight group (OR = 1.13, 95 % CI, 1.01, 1.26). When examining general parenting, firm control was associated with decreased odds of excessive snacking in the overweight group (OR = 0.51, 95 % CI, 0.28, 0.93).
Conclusion Restrictive feeding practices were associated with aberrant child eating behaviors in both normal weight and overweight children. Firm general parenting however, was associated with decreased snacking behavior among overweight children. Longitudinal studies following children from infancy are needed to better understand the direction of these relationships.

Keywords Parenting style · General parenting · Parent feeding practices · Emotional eating · Snacking · Child eating behaviors · Childhood obesity

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Introduction

A third of children 6–19 years old in the US are overweight or obese [1], contributing to increased rates of diabetes, cardiovascular disease [2], adult obesity [3], and health care utilization [4]. While general overconsumption of food can tip the energy balance towards increased weight gain, certain eating behaviors, like emotional eating, eating out of boredom, and late night eating, constitute particularly aberrant eating behaviors and often result in excessive calorie consumption [5]. In children, emotional eating, or eating in response to negative emotions, emotional arousal, and boredom, has been associated with overeating [6] and eating foods high in energy density [7]. Emotional eating is also more common in overweight children [8, 9]. In addition to emotional eating, snacking has been associated with higher weight status in children [10]. Snacking can lead to increased caloric intake of non-nutritive foods [11], and is also more prevalent among those children who report emotional eating [12]. Determining factors that can prevent the development of these potentially aberrant eating behaviors may have implications in the treatment of obesity.

Parents have a strong influence on the development of child eating behaviors via general parenting behaviors and specific feeding practices [13, 14]. Specific feeding practices, like pressuring a child to eat or using food, typically dessert, as a reward, are techniques parents use to directly influence their child's intake. To date, much research has focused on the impact of specific feeding practices like restriction [15, 16], pressure to eat [17, 18], and instrumental and emotional feeding [19, 20] on the caloric consumption of children from preschool to adolescence. Restriction and emotional feeding (defined as using food to regulate or soothe a child's negative affect [21]) has been associated with greater emotional eating behaviors and overeating in 2–10-year-old children [20, 22]. In addition, emotional feeding, instrumental feeding (using food as a reward) [23], and pressure to eat [24, 25] have been associated with greater snacking behavior, particularly the consumption of energy-dense snack foods, among children ranging from 4 to 8 years old.

In addition to specific feeding practices, it is important to consider general parenting behaviors or parenting style in this relationship. Parenting style is often thought of as the general pattern of parenting that provides the social and emotional context to child rearing [26]. Not only does it influence child dietary behaviors directly [27, 28], but it has been shown to moderate the impact of specific feeding behaviors on child consumption of food [15, 25]. In the literature, parenting style has been operationalized into two dimensions: warmth/support and behavioral control/expectations for self-control. A parent who is high in warmth and support often expresses an attachment and responsiveness to the child that is supportive in nature. Parents high in behavioral control demonstrate firm and consistent discipline so that their behavioral expectations are clearly understood by the child. Combining these dimensions results in the four classic parenting styles described by Maccoby and Martin [29] (authoritative—high in warmth and behavioral control; authoritarian—low in warmth, high in behavioral control; permissive—high in warmth, low in behavioral control; neglectful—low in warmth and behavioral control). While these categorizations are often used in this literature, it is also common for researchers to report on individual parenting dimensions, e.g., warmth or acceptance, lax control, firm control. This allows one to determine which aspects of general parenting are specifically related to the outcome of interest. Over the past several decades, another parenting dimension identified as psychological control has also been garnering more interest [30]. This type of control is viewed as more coercive and manipulative; parents use guilt or withdraw affection and attention from the child in order to shape behaviors. In previous literature, it was recognized as a component of authoritarian parenting [31], and has since been independently related to increased weight and depression [30, 32].

When examining the relationship between general parenting styles/dimensions and eating behaviors, general parenting defined by greater warmth and behavioral control has been associated with greater consumption of fruits and vegetables in both cross-sectional [27, 28, 33] and longitudinal studies [34]. At this time, few studies have examined the relationship between general parenting and aberrant eating behaviors. Parenting characterized by low support and affection, low behavioral control, and high psychological control have been associated with emotional eating [35, 36]. High levels of psychological control have also been associated with higher levels of energy-dense snack consumption [19]. On the other hand, studies have demonstrated that high levels of behavioral control are associated with decreased risk of dieting [37], snacking [38], and sugar-sweetened beverage intake [19]. Most of these studies have been conducted using a general population of American or European children and adolescents. It is unknown whether these relationships hold true in treatment seeking populations where child weight status and eating behavior are more severe. Understanding this relationship may allow us to better identify potential targets for intervention.

The aim of this study was to further explore the relationship between specific feeding practices, general parenting, and aberrant eating behaviors, specifically emotional eating and excessive snacking (which we defined as eating between meals and at night) in a sample

that includes overweight treatment seeking families. To date, there is little research examining the role of parents, particularly general parenting behaviors, and the associations with such eating behaviors. Since there is a potential negative impact of these eating behaviors on later child growth and health, it is imperative to develop a better understanding of the factors that can influence these behaviors. Given that these aberrant eating behaviors are more common in overweight children, and that parenting practices can differ by child weight status [39, 40], an a priori decision was made to examine these relationships separately among normal weight and overweight treatment seeking children. At the general parenting level, we hypothesized that higher levels of warmth and behavioral control would be associated with a lower likelihood of emotional eating and excessive snacking in both the overweight and normal weight groups. However, since psychological control has primarily been associated with higher weight status [32] and aberrant eating behaviors [19], we hypothesized that this type of parenting would be associated with a higher likelihood of emotional eating and excessive snacking among the overweight group, but not the normal weight group. With regard to specific parent feeding practices, we hypothesized that restrictive feeding practices would be associated with a greater likelihood of emotional eating in the overweight group and excessive snacking behaviors in both the overweight and normal weight group. We also hypothesized that pressure to eat would not be associated with emotional eating in either group, but that it would be associated with a higher likelihood of excessive snacking in the normal weight group.

Materials and methods

Subjects

Children between the ages of 8 and 12 years and their parents were recruited from 2009 to 2011 to participate in a study examining the general parenting and feeding behaviors of parents of overweight (BMI $\geq$85th percentile) and normal weight (BMI <85th percentile and >5th percentile) children. Families were recruited from pediatric practices, schools, and direct mailing in Providence, RI and San Diego, CA. A total of 44 families with overweight children entering a family-based weight loss treatment and 42 families with normal weight children participated in this study. Children and their parents completed several measures of parenting and feeding behaviors as part of this study. Children were asked to report on their mother's and father's parenting behaviors separately. Since 10 % of children did not report on father's behaviors, and mother's and father's parenting behaviors may have different effects on child outcomes [41, 42], only mothers' report of feeding behaviors were used. The final sample size included 79 mother–child dyads [41 reports (93 %) from parents of overweight children and 38 reports (90 %) from parents of normal weight children]. This final sample did not differ from the larger sample on race/ethnicity, education, marital status, parent age or BMI. This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving human subjects/patients were approved by the Institutional Review Boards of the Miriam Hospital and the University of California, San Diego. Written informed consent and child assent was obtained from all subjects. Families received a $25 gift card after completion of the assessments.

Measures

Primary outcome variables

Child eating behaviors Mothers reported on child eating behaviors using the Family Eating and Activity Habits Questionnaire [43]. This questionnaire was designed to assess the overall obesogenic environment and parent behaviors related to weight control. Its subscales assess leisure time activity, eating habits and style, response to internal hunger and satiety cues, and stimulus exposure and control. Items from the 'eating habits and style' subscale were used in this analysis. In this subscale, parents reported how frequently children: (1) ate when bored, (2) ate when angry or in other negative mood states, (3) ate in a disorderly way between meals, and (4) ate late in the evening or at night. Responses were provided on a 5-point Likert scale ranging from 'never' to 'always'. Since questions 1 and 2 tapped into the concept of emotional eating (i.e., eating in response to negative emotions, emotional arousal, and boredom), these responses were combined to create an "emotional eating" variable. Because this set of questions was prefaced with "Frequently, we just grab something to eat or eat under certain conditions or moods", and were not specifically referring to mealtime behaviors as the previous questions had done, the responses to questions 3 and 4 were combined to create an "excessive snacking behavior" variable. Responses for each new variable, our primary outcomes, were dichotomized at the median to create two groups: those who never or almost never endorsed both items versus those who endorsed either of those items sometimes, frequently, or always.

Primary independent variables

Parent feeding practices The Child Feeding Questionnaire [44] is a widely used instrument to assess parent feeding practices among children between the ages of 2 and

11 years. The subscales of restriction (restricting the child's overall food and snack intake), monitoring (keeping track of the child's food intake), and pressure to eat were used in these analyses. Items were scored using a 5-point Likert scale. Scores for each subscale ranged 8–40 (restriction), 3–15 (monitoring), and 4–20 (pressure). Previous literature has demonstrated that this instrument has good validity and reliability [45, 46]. Mothers completed this measure as it pertained to how they fed the index child.

General parenting dimensions The Child's Report of Parental Behavior Inventory (CRPBI) [47] is a commonly used scale to assess general parenting behaviors. It has been used to examine parent involvement and strictness in relation to weight loss [48] and dietary behavior [27, 28], and in children as young as 8 years old [49]. The 30-item version [50] was completed by the child and assesses three dimensions of parenting: Acceptance versus rejection, psychological control versus autonomy, and firm versus lax control. Acceptance versus rejection assesses the emotional aspects of parenting, i.e., displays of warmth and support. Firm versus lax control assesses the behavioral control used by parents. Psychological control versus autonomy assesses the other aspect of behavioral control that is characterized by more coercive behaviors. Previously reported alpha values for acceptance, psychological control, and firm control were 0.75–0.73, 0.72–0.63, and 0.65–0.63, respectively, and test–retest correlations ranged 0.79–0.89 [50]. Children rated each item on a 3-point Likert scale: the reported behavior was "like", "somewhat like", or "not like" their parent's behavior. This inventory has been successfully used among children to determine parenting behavior [51] and has strong discriminative validity [52].

Covariates

Sociodemographic variables were self-reported by the parent and included parent and child age and gender, parent race/ethnicity, marital status, and educational level. In this sample, the primary racial/ethnic groups were white, Hispanic, and other. Maternal education was dichotomized at the median into "some college or less" and "college degree or higher". Marital status was dichotomized into "married or living with significant other" and "widowed, divorced, separated or never married".

Parent and child weight was measured in kilograms to the nearest 0.1 kg on a Tanita digital scale (model WB-110A). Weight was measured twice and the average of the values was used for analysis. Height was measured using a portable Tanita stadiometer (Schorr Inc, Olney, MD). Height was recorded to the nearest 0.1 cm for both trials, and the average of the two values used for analysis. Body mass index [BMI = (kg/m^2)] was calculated for parents and children. Child BMI was translated for age and sex percentile scores using the United States Centers for Disease Control and Prevention (CDC) growth charts [53] to standardized BMI *z*-scores (BMI-Z) [54].

Analysis

T tests and Chi square statistics were used to compare sample characteristics between the overweight and normal weight groups. Two-sided tests of significance were used. Separate logistic regression models were used to determine whether each parenting dimension or feeding behavior was associated with child emotional eating or snacking behavior. Correlations between demographic characteristics and the independent and dependent variables were examined and only parent BMI was significantly correlated with both [correlation coefficients between parent BMI and emotional eating (0.41, $p < 0.001$), snacking behavior (0.33, $p < 0.01$), restriction (0.37, $p < 0.001$), psychological control (0.20, $p = 0.07$)]. As a result, parent BMI was entered into all the models. Given the fact that the frequency of eating behaviors, parent feeding practices and general parenting varied between the normal weight and overweight groups, and there was a significant interaction between general parenting and child BMI *z*-score ($p = 0.02$), models were conducted separately for each weight category. Statistics were conducted in Statistical Analysis Systems statistical software package version 9.2 (SAS Institute, Cary, NC, USA).

Results

The mean age of normal weight children was 9.7 years (SD 1.4) and 10 years (SD 1.3) for overweight children. More than 50 % of children were female (Table 1). Parent characteristics between the normal weight and overweight group were similar except that parents of normal weight children were more likely to have a college degree or higher ($p = 0.03$) and have a lower BMI ($p < 0.001$).

With regard to eating behaviors, 83.8 % of overweight children (versus 36.6 % of normal weight children) were reported by mothers to engage in emotional eating ($p < 0.001$) (Table 1). Similarly, 89.2 % of overweight children (versus 59.5 % of normal weight children) were reported to engage in excessive snacking behaviors ($p < 0.01$). Parents of overweight children were more frequently reported to display psychological controlling behaviors ($p = 0.03$) and restrictive feeding behaviors ($p < 0.001$).

In the logistic regression models, controlling for parent BMI, restrictive feeding behavior in the overweight group was associated with increased odds of emotional eating

Table 1 Child and parent characteristics

Variable	Normal weight group ($n = 38$)	Overweight/obese group ($n = 41$)	p value
Child characteristics			
Sex (%)			
Male	47 %	34 %	0.23
Female	53 %	66 %	
Age (years) (mean, SD)	9.7 (1.4)	10.0 (1.3)	0.36
BMI percentile (mean, SD)	46.8 (23.9)	98.2 (1.4)	<0.01
BMI z-score (mean, SD)	−0.1 (0.7)	2.2 (0.3)	<0.01
Emotional eating[a] (%)	36.6 %	83.8 %	<0.001
Excessive snacking behavior[b] (%)	59.5 %	89.2 %	<0.01
Mother characteristics			
Race/ethnicity (%)			
White	70 %	51 %	0.17
Hispanic	27 %	37 %	
Other	3 %	12 %	
Education (%)			
Some college or less	24 %	48 %	0.03
College degree or higher	76 %	52 %	
Marital status (%)			
Married/living with significant other	89 %	76 %	0.11
Widowed/divorced/separated/never married	11 %	24 %	
Age (years) (mean, SD)	40.5 (6.5)	41.4 (7.1)	0.58
BMI (kg/m^2) (mean, SD)	23.5 (2.9)	30.0 (5.9)	<0.001
Parenting style dimensions (mean, SD)			
Acceptance	26.5 (3.8)	26.3 (3.9)	0.87
Psychological control	16.3 (3.2)	18.1 (4.4)	0.03
Firm control	21.5 (2.8)	20.5 (3.3)	0.15
Specific parent feeding practices (mean, SD)			
Restriction	21.9 (6.8)	30.9 (5.4)	<0.001
Monitoring	11.2 (3.3)	11.6 (2.4)	0.56
Pressure to eat	8.7 (3.4)	7.2 (3.5)	0.05

Mean (SD) are shown for the continuous variables (age, BMI percentile, BMI z-score, and BMI). Scores for each parenting style dimension range 10–30. Scores for each parent feeding behavior range from: restriction, 8–40; monitoring, 3–15; and pressure to eat, 4–20

[a] Emotional eating includes the constructs of eating when bored and eating when angry or in other negative mood states

[b] Excessive snacking includes the constructs of eating late in the evening/night and eating in a disorderly way between meals

(OR = 1.26, 95 % CI, 1.02, 1.56) (Table 2), but not excessive snacking. In the normal weight group, restrictive feeding was associated with higher odds of excessive snacking behaviors (OR = 1.13, 95 % CI, 1.01, 1.26) (Table 3). There was no relationship between pressure to eat and emotional eating or excessive snacking behavior in either weight group. With regard to general parenting behaviors, firm control was associated with lower odds of excessive snacking in the overweight group (OR = 0.51, 95 % CI, 0.28, 0.93) (Table 3). However, it was not related to excessive snacking in the normal weight group, or emotional eating in either weight group. Psychological control and acceptance were also not associated with emotional eating or excessive snacking in either weight group.

Discussion

Several parenting behaviors were associated with aberrant child eating behaviors, and the relationship differed by child weight status. As predicted, restrictive parent feeding practices were associated with excessive snacking among normal weight children. While restriction also appeared to be positively associated with emotional eating in the normal weight group, the results only approached significance ($p = 0.07$). These findings support the results of previous studies conducted among a general pediatric population [16, 20]. However, among overweight children, restrictive feeding practices were only associated with emotional eating, not excessive snacking, revealing a different relationship between parent feeding practices and child eating behaviors than in the normal weight group. In our sample of treatment seeking families, overweight children displayed high levels of both snacking and emotional eating. However, emotional eating may have been viewed as the more aberrant eating behavior, causing more alarm for these parents and resulting in more frequent restriction. Due to the cross-sectional nature of our study however, it is difficult to surmise the direction of this relationship. While recent studies have demonstrated that restrictive feeding may be a response to a child's behaviors and weight status [46, 55], lab studies have suggested that parent feeding practices result in abnormal child eating behaviors [45, 56, 57]. Similarly, one prospective study demonstrated that parent behaviors like emotional feeding, overt control, and fat restriction were associated with child tendency to overeat 1 year later [20]. So it may be that parental restriction of food resulted in psychological or emotional stress for children, particularly overweight children, and led to greater emotional eating in this group. At this time, it is unclear whether this relationship starts with the parent or the child, but it is likely that both child eating behaviors and parent feeding practices interact to influence child weight and weight-related behaviors. Given the uncertainties in the direction of this relationship, additional studies using a prospective design are needed to allow one

Table 2 Logistic regression models evaluating the relationship between emotional eating and general parenting behaviors and specific feeding behaviors, among normal weight and overweight children, controlling for parent BMI

	Normal weight group ($n = 38$)		Overweight group ($n = 41$)	
	OR (95 % CI)	p value	OR (95 % CI)	p value
Parenting style dimensions				
Acceptance	1.10 (0.91, 1.34)	0.33	0.90 (0.66, 1.23)	0.50
Psychological control	1.15 (0.93, 1.41)	0.20	0.95 (0.77, 1.17)	0.62
Firm control	0.93 (0.73, 1.17)	0.52	0.93 (0.69, 1.24)	0.61
Specific parent feeding behaviors				
Restriction	1.12 (0.99, 1.25)	0.07	**1.26 (1.02, 1.56)**	**0.03**
Monitoring	1.05 (0.85, 1.29)	0.67	0.97 (0.65, 1.44)	0.87
Pressure to eat	1.11 (0.92, 1.35)	0.29	0.88 (0.70, 1.10)	0.26

Odds ratios and 95 % confidence intervals are shown. Separate models were conducted for normal weight and overweight groups. Data from the normal weight cohort were collected at a one-time visit in the lab, and data from the overweight group were collected at baseline prior to the start of the family-based weight loss treatment program

Odds ratios and p values in bold indicate significance at $p < 0.05$ level

Table 3 Logistic regression models evaluating the relationship between excessive snacking behaviors at night and between meals, and general parenting behaviors and specific feeding behaviors, among normal weight and overweight children, controlling for parent BMI

	Normal weight group ($n = 38$)		Overweight group ($n = 41$)	
	OR (95 % CI)	p value	OR (95 % CI)	p value
Parenting style dimensions				
Acceptance	0.99 (0.84, 1.17)	0.92	1.16 (0.88, 1.54)	0.29
Psychological control	1.21 (0.97, 1.50)	0.09	0.93 (0.72, 1.20)	0.57
Firm control	1.16 (0.91, 1.48)	0.23	**0.51 (0.28, 0.93)**	**0.03**
Specific parent feeding behaviors				
Restriction	**1.13 (1.01, 1.26)**	**0.04**	1.15 (0.93, 1.43)	0.19
Monitoring	0.97 (0.80, 1.19)	0.80	0.88 (0.54, 1.43)	0.60
Pressure to eat	1.04 (0.86, 1.25)	0.70	1.07 (0.77, 1.49)	0.70

Odds ratios and 95 % confidence intervals are shown. Separate models were conducted for normal weight and overweight groups. Data from the normal weight cohort were collected at a one-time visit in the lab, and data from the overweight group were collected at baseline prior to the start of the family-based weight loss treatment program

Odds ratios and p values in bold indicate significance at $p < 0.05$ level

to truly ascertain the relationship between restriction and child eating behaviors and whether child outcomes differ by weight status.

When examining general parenting behaviors, firm behavioral control was associated with decreased odds of excessive snacking among overweight children, which is similar to what has been found in other studies [19, 38]. However, this relationship was not found among normal weight children. A relationship between warm parenting was also not found among any aberrant eating behavior in either weight group. Finally, there was a trend towards an association between psychological control and excessive snacking in the normal weight group, but not in the overweight group as was hypothesized. However, this relationship did not reach statistical significance in this small sample of children from the United States as it had in a larger sample of children from The Netherlands [19]. There was also no association between psychological control and emotional eating in the overweight group. Overall, this may reflect cultural differences in general parenting behaviors between these countries, with differing effects on children.

While both restriction and firm control appear to be similar in that they provide limits and structure in the home to reduce access to snack foods, our results suggest that their relationship with child eating behaviors are not the same; firm control was associated with lower risk of snacking behavior among overweight children while restriction was associated with higher risk of snacking behavior in the normal weight group. This variation in the direction of the relationship may be due to fundamental differences regarding the nature of these parenting

constructs. General parenting behaviors have been conceptualized as a higher-order construct that provides the context for specific parent feeding practices [13]. They have also been conceptualized as a stable characteristic of parents that represent their overall approach to parenting and their socialization goals for the child [26, 58]. As a result, they are not thought to vary in response to child behaviors and characteristics. Considering this perspective, parents who display firm control may have a history of defining rules ahead of time and clearly laying out expectations for their child. Therefore, firm control may have preceded the development of snacking behaviors and possibly prevented or tempered excessive snacking among overweight children.

While general parenting behaviors may be directly influencing child outcomes, it may also be affecting outcomes by moderating the impact of specific feeding practices. For example, in one study, restricting access to sugar-sweetened beverages in the context of a general parenting style characterized by moderate levels of strictness (firm control) and high levels of involvement had the greatest impact on limiting child intake of these drinks [15]. However, restrictive feeding behaviors in the context of high levels of strictness (firm control) and low levels of involvement resulted in high caloric intake [59]. In these studies, we can see that while the specific feeding practice of restriction was used in both groups, the higher-order parenting dimensions of firm control and involvement/warmth were able to moderate the impact of these specific behaviors. These studies lend further evidence that specific feeding practices (like restriction) and general parenting behaviors (like firm control) are two different constructs that have different effects on children even though both are defined by limiting child behaviors. As a result, more studies should explore these different parenting dimensions and work towards determining the best combination of parent behaviors to promote healthy child dietary behaviors.

There were several limitations to this analysis that should be considered. First, reports of child eating behaviors were obtained from parents who may not have been aware of their child's abnormal eating behaviors. Furthermore, both parent and child reports of parent feeding practices and general parenting, respectively, were likely subjective, such that negative practices and behaviors were infrequently reported and positive behaviors more frequently reported. However, the subjective nature of child reports of general parenting are thought to be acceptable since it is the child's perception and interpretation of his/her parent's behaviors that reflect the reality of what he/she is experiencing and gives us a more accurate picture of how parent behaviors are influencing child developmental outcomes [60, 61]. Second, our sample included treatment seeking obese children and parents who were entering a weight control program. This may have limited the generalizability of our results regarding the overweight population. In addition, the sample was relatively small and we were unable to conduct more complex moderator analyses to determine if general parenting behaviors moderated the effect of specific feeding practices. We were also unable to examine the relationship between father's parenting behaviors and child eating behaviors, which have been shown in the past to have a different impact on child outcomes than mother's behaviors [41, 42]. Finally, this was a cross-sectional study and we cannot determine whether these parenting behaviors influenced the development of aberrant eating behaviors or vice versa. Replication of these results in a large prospective sample would allow us to examine the influence of both fathers and mothers on child eating behaviors and examine the causal relationship between general parenting behaviors, parent feeding practices, and aberrant child eating behaviors.

Conclusion

To our knowledge, very few studies have explored the relationship between general parenting, specific feeding practices and aberrant child eating behaviors. We found that restrictive feeding practices were significantly associated with snacking behaviors in normal weight children and emotional eating in the overweight group. In this sample, firm control was also associated with decreased risk for excessive snacking in overweight children. Given the impact of these eating behaviors on future weight and health, it is important to understand what factors may be related to the development or curtailment of such eating behaviors. Since general parenting behaviors are thought to be stable over time and not a response to certain eating behaviors [26, 58], training parents to engage in firm parenting behaviors may be important in obesity prevention efforts. Longitudinal studies that follow children from birth need to be conducted to further expand on this relationship and truly understand the factors that affect the development of aberrant eating behaviors.

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Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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