

Uninvolved Maternal Feeding Style Moderates the Association of Emotional Overeating to Preschoolers' Body Mass Index z-Scores

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ABSTRACT

Objective: To examine the relation between preschoolers' eating behaviors and body mass index (BMI) z-scores (BMIz) and the moderating role of permissive parent feeding styles in these associations.

Design: Cross-sectional study involving mothers' report of food-related parenting styles and child eating behaviors.

Setting: Small city in southern Mississippi.

Participants: Mother–preschooler dyads (n = 104).

Main Outcome Measure: Child body BMIz.

Analysis: Moderated multiple regression.

Results: An uninvolved feeding style moderated the relationship between emotional eating and BMIz such that children with higher emotional overeating scores had higher a BMIz in the presence of an uninvolved feeding style (B = 2.16; P = .01).

Conclusions and Implications: An uninvolved feeding style may be a risk factor for higher BMIz in preschoolers who tend to overeat to cope with negative emotions. For other children in this population, self-regulatory aspects of eating may be more important than mothers' feeding style in the maintenance of healthy weight.

Key Words: eating behavior, feeding styles, child, body mass index, overeating (*J Nutr Educ Behav.* 2016;48:530-537.)

Accepted June 13, 2016. Published online July 19, 2016.

INTRODUCTION

Maintaining a healthy weight during the first years of life is paramount for obesity prevention during early childhood and beyond.^{1,2} Individual variations in stylistic aspects of children's eating behaviors can be observed in early childhood and are linked to children's weight outcomes.³ For example, compared with their healthy-weight peers, obese children have been found to be less effective at regulating their food consumption, to demonstrate lower responsiveness to internal cues

of hunger and fullness and higher responsiveness to external food cues,^{4,6} and to be more likely to overeat in response to negative emotions.^{7,8}

Little research has tested moderating variables in the association of children's eating behaviors such as satiety responsiveness, food responsiveness, and emotional eating to weight-related outcomes. One potential moderator is parent feeding style, or the feeding-related attitudes and approaches that characterize how parents generally interact with their child regarding food and eating.⁹ Similar to Baumrind's^{10,11}

original conceptualization of general parenting style,¹² parent feeding style was assessed using levels of demand-ingness and responsiveness within the food environment to categorize parents as having an authoritative, authoritarian, indulgent, or uninvolved feeding style.⁹ The authoritative feeding style was characterized by parental involvement, nurturance, reasoning, and structure. The authoritarian style included high levels of restrictive, punitive, rejecting, and power-assertive behaviors in the feeding environment. The indulgent style was characterized by warmth and acceptance of child food preferences in conjunction with low levels of monitoring the child's eating behaviors and making few demands. Finally, the uninvolved style involved both low levels of control or involvement and low levels of warmth and acceptance of the child in the food environment.

There is some evidence that parent feeding style plays a role in children's weight outcomes. Both the indulgent

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Conflict of Interest Disclosure: The authors' conflict of interest disclosures can be found online with this article on www.jneb.org.

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<http://dx.doi.org/10.1016/j.jneb.2016.06.006>

and uninvolved styles were associated with higher child body mass index (BMI) z-scores,^{9,13-17} and indulgent feeding was found to predict an increased risk of children becoming overweight (ie, having an age- and sex-specific BMI between the 85th and 94th percentiles).¹⁸ Children of parents with an uninvolved feeding style were also found to have the most energy-dense diets compared with children of parents with other feeding styles, and to consume lower levels of fruits, vegetables, and dairy products.¹⁷ These findings suggested that parental permissiveness in the feeding context, characterized by low levels of parental control and low involvement in children's eating, may be a risk factor for childhood obesity when demonstrated consistently across time and situation.

This study addressed a research gap by examining whether permissive parent feeding styles (ie, indulgent and uninvolved) interact with child eating behaviors to predict preschoolers' BMI z-scores. Conceptually, children with a reduced capacity for self-regulation in eating or a tendency to overeat in response to negative emotions may have a higher BMI z-score when parents allow them to determine the types and amounts of foods consumed (ie, permissive feeding style) than when parents provide an appropriate structure to help children to regulate their food intake (ie, authoritative feeding style). It was hypothesized that lower child satiety responsiveness and higher food responsiveness, food enjoyment, and emotional overeating would predict higher BMI z-scores; however, these associations were predicted to be stronger among children whose parents were characterized as having an indulgent or uninvolved feeding style compared with an authoritative feeding style.

METHODS

Participants and Procedures

Participants included 104 mothers and their 3- to 5-year-old children residing in and around a small city in south Mississippi (population of 50,000). Participants were recruited using study advertisements distributed through 8 local preschool programs and posted in the community. Eligibility criteria specified that participants were at least

aged 18 years and were the parent and primary caregiver of a child aged 3–5 years. No exclusions were made based on race or ethnicity, pregnancy status, number of children in the family, or parental status (ie, adoptive vs biological mother or father). If a participant had more than 1 child within the targeted age range, he or she was asked to report on the child whose birthday came first in the calendar year. Participants recruited from preschools attended a data collection session at the child's preschool, where they completed study questionnaires and trained research assistants obtained height and weight measurements. Participants who contacted the researchers after seeing a posted advertisement completed the study in a campus research laboratory. In appreciation for their time, participants received a gift card valued at \$20.00. This study was reviewed and approved by the Institutional Review Board at the University of Southern Mississippi, where the research was conducted. Informed consent was obtained from all parents before data were collected.

Measures

Feeding styles. The Caregiver's Feeding Styles Questionnaire is a 19-item measure used to determine parent feeding style.⁹ A 5-point Likert scale ranging from never to always measures the extent to which parents use certain strategies with their child (eg, begging their child to eat or allowing their child to choose their own foods) in the context of feeding. The measure yields scores on 2 dimensions: demandingness and responsiveness. A cross-classification of scores using median splits on these 2 dimensions categorizes parents into 1 of 4 feeding categories: authoritative, authoritarian, indulgent, or uninvolved. Previous research using the Caregiver's Feeding Styles Questionnaire provides evidence of test–retest reliability, internal consistency, convergent validity, and predictive validity.^{9,13,14}

Child eating behaviors. The Child Eating Behavior Questionnaire (CEBQ) is a multidimensional parent-report questionnaire measuring eating behaviors in children aged 2–7 years.¹⁹ The CEBQ is composed of 35 items assessing 8 aspects of eating behavior. Subscales included in the current study

were food responsiveness (eg, frequently asking for food, eating in the absence of hunger; 5 items), enjoyment of food (ie, interest in food and overall positive reactions to food; 4 items), satiety responsiveness (ie, the degree to which a child refrains from eating based on perceived fullness; 9 items), and emotional overeating (eg, eating more when feeling worried; 4 items). For each item, a Likert scale is used to rate the frequency of various behaviors (ranging from never to always). The CEBQ shows adequate test–retest reliability and has acceptable internal reliability, with Cronbach α for scales ranging from .74 to .91.¹⁹

Anthropometrics. Height and weight measurements for mothers and children (when present) were obtained to the first decimal place using a Detecto SlimPRO low-profile health care scale (Webb City, Missouri) and a Seca 213 stadiometer (Hamburg, Germany). Participants were measured in their street clothes after removing their shoes and bulky clothing. A continuous BMI variable was calculated as kilograms per square meter. In some cases, the preschooler could not be present during data collection ($n = 26$; 25% of the total sample). In these cases, child BMI was based on weight and height provided by mothers, who were asked before data collection to weigh and measure the child at home. This strategy has been shown to improve the validity of parent-reported estimates of children's height and weight.²⁰ Child BMI z-scores were determined using the Centers for Disease Control and Prevention's SAS macro (Atlanta, GA) with the 2000 age- and sex-specific child growth charts using the child's height, weight, gender, and age in months.²¹

Data Analysis

SAS (version 9.3) was used to conduct all statistical analyses. An a priori statistical power analysis was performed for sample size estimation using GPower3.1.²² With $\alpha = .05$ and power = 0.80, the projected sample size needed to detect a medium effect size of .30 for a linear multiple regression test with 9 predictors was $N = 98$. Preliminary analyses included data

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