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Mothers of Obese Children Use More Direct Imperatives to Restrict Eating

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Abstract

Objective—To examine the association of mother and child characteristics with use of direct imperatives to restrict eating.

Methods—237 mother-child dyads ($M = 70.9$ mo), participated in a video recorded laboratory standardized eating protocol with two large portions of cupcakes. Videos were reliably coded for counts of maternal direct imperatives to restrict children's eating. Anthropometrics were measured. Regression models tested the association of participant characteristics with counts of direct imperatives.

Results—Child obese weight status and maternal white non-Hispanic race/ethnicity were associated with greater levels of direct imperatives to restrict eating ($p < .0001$ and $\leq .0004$, respectively).

Conclusions and Implications—Mothers of obese children may be using more direct imperatives to restrict eating to achieve behavioral compliance to decrease their child's food

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intake. Future work should consider the effects direct imperatives on children's short and long term eating behaviors and weight gain trajectories. (138)

Keywords

body mass index; maternal language; eating; obesity; mother-child interaction; mother

INTRODUCTION

Parent-child feeding interactions have been identified as a target for childhood obesity prevention and intervention efforts.¹ Guidelines^{2–4} recommend that parents support their children's healthy eating through role modeling, and providing a variety of healthy foods for the child from which to choose. Parents are advised not to directly restrict or limit their child's eating.² Rather, parents are encouraged to instead draw from a constructivist⁵ or non-directive feeding approach, scaffolding learning through teachable moments and indirectly influencing eating by providing a healthy food environment without unhealthy foods so that the child will not be tempted to overeat.⁶ These recommendations stem from the theory that direct restriction can lead to overeating caused by interference with internal hunger and satiety cues⁷ or to disordered eating behaviors in adolescence.⁸

While the constructivist or non-directive approach has been linked with positive outcomes,⁹ employing more direct imperatives is also linked with positive outcomes in some situations and for some children. The use of clear, direct imperatives results in improved child compliance and behaviors^{10,11} and is encouraged in evidenced-based parenting interventions.^{10,12–14} Direct imperatives are thought to result in improved child behavior because they are easier for children to interpret.^{15,16} The use of directive imperatives is associated with better health outcomes for children with chronic health conditions.^{17,18} However, no studies to date have examined parental use of direct imperatives in the context of restricting a child's intake of unhealthy food.

This study therefore sought to examine parental use of direct imperatives to restrict children's intake of a dessert. It was hypothesized that mothers of obese children would use more direct imperatives to restrict eating. This hypothesis was informed by social learning theory,^{19,20} which states that in order to increase a desired behavior, clear expectations must be set and enforced, and was also informed by findings in the general parenting literature,²¹ that parents of children with more challenging behaviors use more direct imperatives. This work was conducted in a low-income sample, given that low-income children are disproportionately affected by obesity.²² In addition, prior work has shown that mothers of different socioeconomic backgrounds think about child feeding and obesity in different abstract ways,^{23,24} and therefore interventions may need to be specifically tailored to this population.

METHODS

The sample consisted of 237 low-income female primary caregiver-child dyads (mean child age = 70.9 months, range 48.3–96.8 months) from Michigan enrolled in a longitudinal study examining contributors to children's obesity risk. Dyads were invited to participate in a

study seeking to “understand how mothers feed their children.” Participants are henceforth referred to as “mothers” (5% were grandmothers, stepmothers, etc.). Exclusion criteria for the child included a gestational age < 35 weeks, significant neonatal complications, serious medical problems that may affect eating or growth, food allergies, or foster care. Eligible mothers were able to participate in English, had less than a 4 year college degree and no food allergies or intolerances. The study was approved by the Institutional Review Board (HUM00049008). Mothers provided written informed consent, children provided assent and dyads were compensated \$60 for their participation.

Mothers reported the child’s birth date, child’s sex, maternal race/ethnicity and maternal highest level of education achieved. Heights and weights of children and mothers were measured according to standardized procedures.²⁵ Body mass index (BMI) was calculated. Children were categorized as being obese (BMI ≥ 95th percentile for age and sex) or not based on the United States Center for Disease Control and Prevention growth charts.²⁶

Maternal restriction of child food intake was measured in a standardized laboratory structured eating protocol, [additional details on methods can be found in the ancillary materials as Structured Eating Protocol]. In this videotaped protocol, the child and mother were seated at a table alone in a quiet room, and were sequentially presented with 4 different foods (chocolate cupcakes (familiar dessert), green beans (familiar vegetable), halva (unfamiliar dessert) and artichoke (unfamiliar vegetable)). This analysis focused only on the 4 minute videotaped segment of the protocol during which the child and mother were presented with identical portions of 2 cupcakes (Hostess Chocolate Cupcakes, 104.96 ± 0.5 grams, 340 kilocalories, 42 grams of sugar), as prior work²⁷ indicated that this palatable “junk food” elicited restrictive feeding behaviors from the mothers, while the other foods rarely did so. The laboratory eating protocol has demonstrated good test-retest reliability across approximately 2.5 years, with correlations for maternal discouragements to eat desserts ($r=.28$), maternal encouragements to eat vegetables ($r=.33$), amount of dessert ($r=.24$), and vegetables ($r=.20$) eaten by the child (p-values for all statistics reported <.05) (data not shown, available from first author upon request).

A coding scheme (available from authors upon request) was developed to reliably code maternal direct imperatives to restrict eating (see coding scheme in ancillary materials). Direct imperatives to restrict eating were defined as direct commands from the mother, directed toward the child with the intent to limit the child’s intake of the cupcake. These statements included use of the second person singular (“you”), however these statements could also be direct commands or imperatives (e.g., “don’t eat that,” or use of the child’s name in a way to regulate behavior, for instance “Jaden! Stop eating!”), as long as they were directed at the child). Coders were trained to reliability, then 2 coders independently coded 20% of the video segments (Cohen’s kappa²⁸ = 0.94, indicating almost perfect agreement between raters), and the remaining videos were coded by a single coder.

Statistical analyses were conducted using SAS 9.3 (SAS Institute Inc., Cary, NC). Child age, sex, and weight status and maternal race/ethnicity, education, and BMI were entered simultaneously into a Poisson regression model predicting direct imperatives to restrict eating.

RESULTS

Characteristics of the sample are presented in Table 1. Children with obesity ate $M= 50.1$ g ($SD\pm 31.4$) and children without obesity ate $M= 42.9$ g ($SD\pm 26.2$) of cupcakes. Mothers with obesity ate $M= 38.4$ g ($SD\pm 28.0$), and mothers without obesity ate $M=27.8$ g ($SD\pm 20.1$) of cupcakes. Mothers made $M= 2.27$ statements to restrict eating ($SD\pm 2.21$, range 0–11), of which 1.37 ($SD\pm 1.83$, range 0–11) were direct imperatives to restrict eating. Examples of direct imperatives to restrict eating are presented in Table 2. As shown in Table 3, mothers of obese children used 97% more direct imperatives to restrict eating ($RR=1.97$, 95% CI 1.54–2.51, $p<.0001$) as compared to mothers of non-obese children. Non-Hispanic white mothers used 67% more direct imperatives to restrict eating ($RR=1.67$, 95% CI 1.25–2.22, $p=0.0004$) as compared to mothers of other racial/ethnic groups.

DISCUSSION

This study is the first to describe direct imperatives around restriction of child food intake by mothers of young children. Direct imperatives to restrict eating were relatively common, and were used more frequently by mothers of obese children and non-Hispanic white mothers. These findings are supported by prior work using maternal self-report measures about their own feeding behaviors, which have found heavier child weight^{29–31} to be associated with higher levels of maternal restriction in general. Strengths of this study include the observational nature of data collection.

The observation that mothers of obese children use more direct imperatives to restrict their children's intake as compared to mothers of non-obese children may be important in several ways. Prior studies^{31,32} have framed maternal restriction of child food intake as authoritarian and maladaptive, potentially having caused the child's obesity.²⁹ The authors propose an alternative theoretical model.

Parents of children with chronic health conditions such as cystic fibrosis³³ or autism spectrum disorder¹⁷ use more direct commands about eating compared to parents of children without a chronic health condition and these direct commands lead to better health outcomes. A parent's decision to use a direct imperative likely depends on how important the child's compliance is to his health and well-being. For example, in general parenting, parents are encouraged to deliver direct imperatives in situations critical to child safety (e.g., "Do not run in the street"). Among children with chronic health conditions, parents are instructed to clearly communicate with directive imperatives (e.g. "You need to take your insulin now"), as opposed to vaguer statements aligned with a constructivist approach (e.g., "It is time to take your insulin. It will prevent your body from becoming sick and making you feel tired. When you are tired or sick, you do not feel like playing with friends. Would you like to take the medicine in the kitchen or sitting on your bed?"). It is hypothesized that parents of obese children may view restricting their child's intake of high-calorie and unhealthy foods as critical to the child's current and long-term health and well-being. These parents may be using directive imperatives in the same way that the parent of a child with cystic fibrosis or diabetes uses direct imperatives. With this framing of the parenting behavior, this approach may be adaptive and appropriate.

Prior work,³⁴ has found that heavier children exhibit more food responsiveness. If these children are more focused on and responsive to food cues, just like a child with a difficult temperament or oppositional behaviors, their parents may have to use more direct imperatives to achieve optimal long term outcomes for that child's health and well-being.

It is interesting to consider this study in terms of the iconic work of Hart and Risely³⁵ which describes the differences in child-directed parental language between families of different socio-economic status (SES) backgrounds, and how these differences may impact a child's language and cognitive development. Hart and Risely, noted greater use of prohibitive statements i.e., "Stop!", "Don't do that!"), in lower SES families, and found that greater use of these statements to be correlated with overall lower quantity and quality of spoken language in the home. Their conceptualization of prohibitive statements is similar to the conceptualization of direct imperatives in this study. It is possible that the use of direct imperatives around restriction may differ by SES as well as child weight status. It may be that, consistent with Hart and Risely, upper SES families may use more rich and non-directive language around restriction. This will be an important line of future research given the known differential use of child-directed language³⁵ and beliefs about child feeding²³ in these populations. While Hart and Risely's observations were not limited to context, the current study was limited to a very specific behavioral context, limiting child intake of unhealthy foods. The authors posit that in parenting there is likely need for both approaches: the non-directive language-rich approach to every-day interactions, and the directive or imperative approach in when behavioral compliance is necessary.

Limitations of this study include that results may not be generalizable to other populations and the laboratory setting that provides experimental control but reduces ecological validity. In addition, mothers' behavior may have been influenced by knowledge that they were participating in a study about feeding behaviors.

IMPLICATIONS FOR RESEARCH AND PRACTICE

The finding that mothers of children with obesity used more direct imperatives to restrict eating may have important implications for practice guidelines and future research. Current child obesity guidelines remain silent on how parents should talk to their children around limiting food intake. While some,^{2-4,36} may recommend a non-directive approach, parents still need guidance about how to best help their child negotiate a situation when presented with a large portion of palatable foods. Direct imperatives may have a healthy, adaptive role in approaches to feeding to prevent childhood obesity and deserve careful consideration in future work.

There are several avenues of potential future work, to better understand the differential effects of restriction statements on children's outcomes. While this study examined the *quantity* of direct imperatives, there may be additional *qualities* of direct imperatives to restrict eating, such as a mother's affect,^{37,38} which may be important and should be considered in future work combined with directness. Future work should include longitudinal studies to understand the temporal relationships between child weight gain and use of direct imperatives to restrict eating, as well as studies to examine the immediate child

behavioral antecedents and consequences (i.e. food intake) of different restriction statement types.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Characteristics of Children and Mothers who Participated in the Standardized Laboratory Eating Protocol (N = 237)

	N (%) or mean ($\pm$ SD)
Child age (months)	70.9 (8.4)
Child sex (male)	119 (50.2)
Child weight status	
Obese	48 (20.3)
Overweight	49 (20.7)
Normal or underweight	140 (59.1)
Mother race/ethnicity	
White non-Hispanic	174 (73.4)
Black non-Hispanic	30 (12.7)
Hispanic, any race	17 (7.2)
Other	16 (6.8)
Mother's highest level of education achieved	
high school diploma	114 (48.1)
some college but no degree	94 (39.7)
2-year college degree	29 (12.2)
Maternal BMI	33.0 (9.39)

Table 2

Examples of Maternal Direct Imperatives to Restrict Eating

“Only eat one ... One’s enough” – Mother of an obese boy
“Don’t eat it all. You haven’t had dinner. Don’t eat it all I said. Come on.” – Mother of a normal weight boy
“You’re eating both of those? No! Don’t! Oh my gosh.” – Mother of an overweight girl
“Don’t eat them all. You are <u>not</u> going to stuff down two of them. Quit, quit.” – Mother of an obese boy
“Hold on [child’s name]. [Child’s name]. Stop eating.” – Mother of a normal weight girl
“Don’t eat the other one because it’s going to be... make you stuffed!” – Mother of a normal weight girl
“No. Don’t eat that cupcake! No eat yours. (As child reaches for mother’s cupcake) You’re not allowed to have three of them. It’s bad enough you already want two.” – Mother of an overweight girl
“Put that down. Quit eating anymore. “ – Mother of an obese boy

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Table 3

Poisson Regression Models Testing Associations between Participant Characteristics and Counts of Maternal Direct Imperatives to Restrict Eating (N = 237)

	Direct imperatives to restrict eating
	RR (95% CI)
Child age (months)	1.01 (0.999–1.02)
Child sex (female vs male)	1.08 (0.87–1.35)
Child obese (vs. not)	1.97 (1.54–2.51) **
Maternal race/ethnicity (white non-Hispanic vs. not)	1.67 (1.25–2.22) **
Maternal education (< HS diploma vs > HS diploma)	1.10 (0.88–1.38)
Maternal BMI	1.00 (0.997–1.01)

RR denotes relative rate, CI denotes confidence interval, HS denotes high school, BMI denotes body mass index.

*
p <0.05

**
p <0.001