

# 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:** A total of 237 mother–child dyads (mean child age, 70.9 months) participated in a video-recorded, laboratory-standardized eating protocol with 2 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  $.0004$ , respectively).

**Conclusions and Implications:** Mothers of obese children may be using more direct imperatives to restrict eating so as to achieve behavioral compliance to decrease their child’s food intake. Future work should consider the effects direct imperatives have on children’s short- and long-term eating behaviors and weight gain trajectories.

**Key Words:** body mass index, eating, maternal language, mother–child interaction, obesity (*J Nutr Educ Behav.* 2018;50:403–407.)

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## INTRODUCTION

Parent–child feeding interactions have been identified as a target for childhood obesity prevention and intervention efforts.<sup>1</sup> Guidelines<sup>2–4</sup> recommend that parents support their children’s healthy eating through role modeling and by providing a variety of healthy foods for the child to choose. Parents are advised not to

restrict or limit their child’s eating directly.<sup>2</sup> Rather, parents are encouraged to draw from a constructivist<sup>5</sup> or nondirective feeding approach, use scaffolding, learning through teachable moments, and influence eating indirectly by providing a healthy food environment without unhealthy foods so that the child will not be tempted to overeat.<sup>6</sup> These recommendations stem from the theory

that direct restriction can lead to overeating caused by interference with internal hunger and satiety cues<sup>7</sup> or to disordered eating behaviors in adolescence.<sup>8</sup>

Whereas the constructivist or nondirective approach has been linked with positive outcomes,<sup>9</sup> 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<sup>10,11</sup> and is encouraged in evidenced-based parenting interventions.<sup>10,12–14</sup> Direct imperatives are thought to result in improved child behavior because they are easier for children to interpret.<sup>15,16</sup> The use of directive imperatives is associated with better health outcomes for children with chronic health conditions.<sup>17,18</sup> However, no studies to date have examined parental use of direct imperatives in the context of restricting a child’s intake of unhealthy food.

Therefore, this study 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

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eating. This hypothesis was informed by Social Learning Theory,<sup>19,20</sup> which states that to increase a desired behavior, clear expectations must be set and enforced; it was also informed by findings in the general parenting literature<sup>21</sup> showing that parents of children with more challenging behaviors use more direct imperatives. This work was conducted in a low-income sample, given that children in low-income families are disproportionately affected by obesity.<sup>22</sup> In addition, prior work has shown that mothers of different socioeconomic backgrounds think about child feeding and obesity in different abstract ways,<sup>23,24</sup> 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 referred to in this article as mothers (95% were biological mothers, the remainder were grandmothers, stepmothers, etc). Exclusion criteria for the child included gestational age <35 weeks, significant neonatal complications, serious medical problems that may have affected 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 had no food allergies or intolerances. The study was approved by the University of Michigan Institutional Review Board. Mothers provided written informed consent, children provided assent, and dyads were compensated \$60 for 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.<sup>25</sup> Body mass index (BMI) was calculated. Children were categorized as being obese (BMI  $\geq$  95th percentile for age and sex) or not based

on the US Center for Disease Control and Prevention growth charts.<sup>26</sup>

The researchers measured maternal restriction of child food intake in a standardized laboratory-structured eating protocol, (additional details on methods can be found in the [Supplementary Data](#)). 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  $\pm$  0.5 g, 340 kcal, 42 g sugar], because prior work<sup>27</sup> indicated that this palatable, less-healthy food elicited restrictive feeding behaviors from the mothers, whereas the other foods rarely did so. The laboratory eating protocol demonstrated good test-retest reliability across approximately 2.5 years, with correlations for maternal discouragements to eat desserts ( $r = .28$ ) and maternal encouragements to eat vegetables ( $r = .33$ ), amount of dessert ( $r = .24$ ) and vegetables ( $r = .20$ ) eaten by the child ( $P < .05$  for all statistics reported) (data not shown, available from first author upon request).

A coding scheme was developed to reliably code maternal direct imperatives to restrict eating. Direct imperatives to restrict eating were defined as direct commands from the mother, directed toward the child with the intent of limiting the child's intake of the cupcake. These statements often included use of the second person singular (*you*); however, these statements could also be direct commands or imperatives (eg, *Don't eat that*, or use of the child's name in a way to regulate behavior as long as it was directed at the child: for instance, *Jaden! Stop eating!*). Coders were trained to reliability; then, 2 coders independently coded 20% of the video segments (Cohen's kappa<sup>28</sup> = 0.94, indicating almost perfect agreement between raters) and the remaining videos were coded by a single coder.

Statistical analyses were conducted using SAS software (version 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

[Table 1](#) presents characteristics of the sample. Children with obesity ate (mean  $\pm$  SD) 50.1  $\pm$  31.4 g of cupcakes and children without obesity ate 42.9  $\pm$  26.2 g. Mothers with obesity ate 38.4  $\pm$  28.0 g of cupcakes and mothers without obesity ate 27.8  $\pm$  20.1 g. Mothers made 2.27  $\pm$  2.21 statements to restrict eating (range, 0–11), of which 1.37  $\pm$  1.83 (range 0–11) were direct imperatives to restrict eating. [Table 2](#) presents examples of direct imperatives to restrict eating. As shown in [Table 3](#), mothers of children with obesity used 97% more direct imperatives to restrict eating (relative ratio = 1.97; 95% confidence interval, 1.54–2.51;  $P < .001$ ) compared with mothers of nonobese children. Non-Hispanic white mothers used 67% more direct imperatives to restrict eating (relative ratio = 1.67; 95% confidence interval, 1.25–2.22;  $P = .001$ ) compared with mothers of other racial/ethnic groups.

## DISCUSSION

To the best of the authors' knowledge, this study is the first to describe direct imperatives regarding 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 were supported by prior work using maternal self-report measures about their own feeding behaviors, which found heavier child weight<sup>1,29,30</sup> 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 used more direct imperatives to restrict their children's intake compared with mothers of

**Table 1.** Characteristics of Children and Mothers Who Participated in the Standardized Laboratory Eating Protocol (n = 237)

Participant Characteristics	n (%) or Mean (±SD)
Child age, mo	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 or less	114 (48.1)
Some college but no degree	94 (39.7)
2-y college degree	29 (12.2)
Maternal body mass index	33.0 (9.39)

**Table 2.** Examples of Maternal Direct Imperatives to Restrict Eating

<i>Only eat one ... One's enough</i> —Mother of an obese boy
<i>Don't eat it all. You haven't had dinner. Don't eat it all, I said. Come on.</i> —Mother of a normal-weight boy
<i>You're eating both of those? No! Don't! Oh my gosh.</i> —Mother of an overweight girl
<i>Don't eat them all. You are not going to stuff down 2 of them. Quit, quit.</i> —Mother of an obese boy
<i>Hold on, [child's name]. [Child's name]. Stop eating.</i> —Mother of a normal-weight girl
<i>Don't eat the other one because it's going to be ... make you stuffed!</i> —Mother of a normal-weight girl
<i>No. Don't eat that cupcake! No, eat yours. [As child reaches for mother's cupcake.] You're not allowed to have 3 of them. It's bad enough you already want 2.</i> —Mother of an overweight girl
<i>Put that down. Quit eating any more.</i> —Mother of an obese boy

nonobese children may be important in several ways. Prior studies<sup>30,31</sup> framed maternal restriction of child food intake as authoritarian and maladaptive, potentially causing the child's obesity.<sup>1</sup> The authors propose an alternative theoretical model.

Parents of children with chronic health conditions such as cystic

fibrosis<sup>32</sup> or autism spectrum disorder<sup>17</sup> use more direct commands about eating compared with 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 or her health and

well-being. For example, in general parenting, parents are encouraged to deliver direct imperatives in situations critical to child safety (eg, *Do not run in the street*). Among children with chronic health conditions, parents are instructed to communicate clearly with directive imperatives (eg, *You need to take your insulin now*), as opposed to vaguer statements aligned with a constructivist approach (eg, *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 in which 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<sup>33</sup> 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 the child's health and well-being.

It is interesting to consider this study in terms of the iconic work of Hart and Risely,<sup>34</sup> which describes the differences in child-directed parental language between families of different socioeconomic status (SES) backgrounds, and how these differences may affect a child's language and cognitive development. Hart and Risely noted greater use of prohibitive statements (ie, *Stop! Don't do that!*), in lower-SES families and found 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 was similar to the conceptualization of direct imperatives in this study. It is possible that the use of direct imperatives regarding restriction may differ by SES as well as child weight status. It may

**Table 3.** Poisson Regression Models Testing Associations Between Participant Characteristics and Counts of Maternal Direct Imperatives to Restrict Eating (n = 237)

Participant Characteristics	Direct Imperatives to Restrict Eating
Child age, mo	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 (high school diploma or less vs more than high school diploma)	1.10 (0.88–1.38)
Maternal body mass index	1.00 (0.997–1.01)

\* $P < .001$ .

Note: Data are presented as relative ratios and confidence intervals.

be that, consistent with the hypothesis of Hart and Risely, upper-SES families may use richer and nondirective language regarding restriction. This will be an important line of future research given the known differential use of child-directed language<sup>34</sup> and beliefs about child feeding<sup>23</sup> in these populations. Although the observations of Hart and Risely were not limited to context, the current study was limited to a specific behavioral context, which limited child intake of unhealthy foods. The authors posit that in parenting there is likely a need for both approaches: the nondirective, language-rich approach to everyday interactions and the directive or imperative approach when behavioral compliance is necessary.

This study was limited because results may not be generalizable to other populations and the laboratory setting 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 about limiting food intake.

Whereas some<sup>2-4,35</sup> may recommend a nondirective approach, parents still need guidance about how best to 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; they deserve careful consideration in future work.

There are several avenues of potential future work to understand better the differential effects of restriction statements on children's outcomes. Although 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,<sup>36,37</sup> 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 (ie, food intake) of different restriction statement types.

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## SUPPLEMENTARY DATA

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.jneb.2017.10.010>.

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## **CONFLICT OF INTEREST**

The authors have not stated any conflicts of interest.