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Caregiver Perceptions of Childhood Weight: Demographic Moderators and Correlates

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Abstract

Background—To examine whether ethnicity moderates the association between caregiver characteristics and perceptions of childhood weight and whether these perceptions are associated with their child's obesity.

Methods—Caregivers recruited from pediatricians' offices ($N=453$) completed a survey about childhood health; nurses weighed and measured the children. Caregivers reported their own weight and height, demographic information about their family, and made ratings of healthy weight for children in general and for their own child in particular.

Results—African American caregivers were more likely to view heavier girls as healthier, but this association held only for lower income families or caregivers with higher body mass index (BMI). Hispanic caregivers were more likely to misperceive their own child's weight if either the caregiver or the child had a higher BMI. Parents who perceived heavier weight as healthier or misperceived their own child's weight were more likely to have a child with obesity. This latter association held regardless of ethnicity.

Conclusion—The association between ethnicity and perceptions of healthy childhood weight are complex. The relation between caregivers' perceptions of healthy weight and their own child's obesity status, however, was similar regardless of ethnicity.

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Conflict of Interest

The authors have no conflicts of interest to report.

Keywords

Childhood BMI; Healthy Weight; Misperceptions; Ethnicity; Perceptions

Introduction

Individuals vary in what they perceive is a healthy weight. Such perceptions may contribute to how individuals manage their weight. Those who perceive heavier weight as healthier, for example, may not engage in weight management because they already think of themselves as healthy (Duncan *et al.* 2011). Parents' perceptions of child weight are particularly important because weight in childhood sets the foundation for healthy weight into adulthood (McTigue *et al.* 2002). Although medical organizations and government agencies set guidelines for healthy childhood weight (e.g., Kuczmarski *et al.* 2000), caregivers vary considerably in what they personally consider healthy and often hold inaccurate perceptions of their own child's weight (Lundahl *et al.* 2014). These misperceptions tend to vary by ethnicity, with some ethnic minority populations misperceiving their children as lighter than measured more than others (Hernandez *et al.* 2015). Despite consistent evidence that caregivers misperceive their children's weight, less is known about how characteristics of both caregivers and children are associated with perceptions of healthy childhood weight in general, and misperceptions of their own child's weight in particular. To that end, we address three questions about weight perceptions with a diverse community-dwelling sample drawn from two pediatricians' offices: (1) Are caregiver characteristics (age, sex, ethnicity, income, and body mass index) associated with perception of healthy weight of children in general? (2) Are such characteristics associated with misperception of their own child's weight? (3) Are these caregiver perceptions associated with their child's obesity status? Given the racial and ethnic disparities associated with weight, we examine whether these associations vary by ethnicity.

Methods

Participants and procedure

Caregivers were recruited from two pediatricians' offices in Orlando, FL. These two offices serve a diverse population, with a high proportion of Hispanic patients (see Table 1). Caregivers were asked to participate in a research study on perceptions of child health. Of the 531 caregivers who completed the survey, 453 provided the necessary information to be included in the analysis (Table 1). A nurse weighed and measured the target child and recorded that information on the survey.

Measures

Body Mass Index (BMI)—Child BMI was derived as kg/m^2 from nurses' measurements. The child was measured once as part of a routine visit at the pediatrician's office. Specifically, children were measured in light clothing with their shoes removed using standard medical equipment in a pediatrician's office. BMI was converted to BMI-for-age percentile based on the Center for Disease Control and Prevention (CDC) growth charts (Kuczmarski *et al.* 2000). All analyses on measured BMI used BMI-for-age because of the

range of child ages in the study. For simplicity, in the Method and Results, we refer to BMI-for-age as BMI. For some analyses, BMI-for-age percentile was dichotomized into 95% percentile (obesity) and <95% percentile. The 95% percentile is the standard cutoff for childhood obesity (CDC 2013). Caregiver BMI was derived as kg/m² from self-reported weight and height reported on the questionnaire.

Weight Perception—Caregivers rated their perception of healthy child weight in general (i.e., not specific to their child) for both girls and boys, based on the child version of the Contour Drawing Rating Scale (Wertheim *et al.* 2004, Lawler and Nixon 2011, Collins 1991, Vander Wal and Thelen 2000). From seven drawings of girls (boys) that ranged from underweight to obese, caregivers were asked to, “circle the girl (boy) that you think looks the healthiest.” Ratings ranged from 1 (sketch of child who looked very underweight) to 7 (sketch of child who looked very overweight). After making these two general ratings, parents were asked, “of the above pictures, which one do you think your child most looks like?” Parents rated their child on the same rating scale (i.e., 1–7). Misperception was calculated by regressing BMI-for-age percentile out of caregivers’ perception of their child’s weight. Higher values indicated a great discrepancy between caregiver’s perception and child’s actual BMI-for-age percentile.

Statistical Overview

To examine correlates of weight perceptions, we regressed these perceptions (separately for boys and girls) and misperception of caregiver’s own child on caregiver and child age, caregiver and child sex, ethnicity, family income, and caregiver and child BMI. We used logistic regression to predict child’s obesity status from the same predictors and the three perception ratings. For both sets of regressions, we tested whether these effects were moderated by ethnicity.

Results

Perception of healthy child weight

On average, parents rated the child in the middle of the scale as the healthiest for both girls and boys (Table 1). African American caregivers perceived heavier girls as healthier; ethnicity was unrelated to perception of healthy weight for boys (Table 2). Family income and both parent and child BMI had consistent and independent associations with perceptions: Caregivers with lower income, caregivers with higher BMI, or caregivers with a target child (target child refers to the child in the study that participants [i.e., parents] rated and nurses measured) with higher BMI perceived heavier children as healthier.

Ethnicity moderated the association between income and caregiver BMI and weight perceptions. For girls in general, African Americans with lower incomes perceived heavier girls as healthier, whereas African Americans with higher incomes perceived girls similarly to white caregivers (i.e., thinner as healthier; $\beta_{\text{ethnicity} \times \text{income}} = -.15, p < .05$). Likewise, African American caregivers with higher BMI perceived both girls and boys who were heavier as healthier, whereas caregiver BMI was unrelated to weight perceptions at lower

BMI's ($\beta_{\text{ethnicity} \times \text{ParentBMI}} = .12, p < .05$). Caregiver BMI was unrelated to perceptions of healthy weight among white and Hispanic participants.

Perception of own child's weight

Similar to perceptions of children in general, caregivers rated their own child as looking like the child in the middle of the scale (Table 1). There was only a relatively modest correspondence between the rated picture and child's measured BMI percentile ($r = .59, p < .01$). Of the characteristics of interest, only child age was associated with misperception (Table 2): caregivers tended to misperceive older children's weight more than younger children's weight. Although there were no main effects, the association between both parent and child BMI and misperception was moderated by Hispanic ethnicity: Among Hispanic participants, higher BMI of either the caregiver or the target child was associated with greater misperception of that target child's weight ($\beta_{\text{ethnicity} \times \text{ParentBMI}} = .19, p < .05$; $\beta_{\text{ethnicity} \times \text{ChildBMI}} = .19, p < .05$); child and caregiver BMI were unrelated to misperception among African American and white participants.

Caregiver perceptions and child obesity

Controlling for demographic factors, caregiver perception of healthy childhood weight was associated with their own child's obesity status (Table 3): caregivers who perceived heavier children as healthier had a child who was more likely to be obese. Caregiver misperception of their child's weight was also associated with obesity status: children who were misperceived to be leaner than their measured weight were more likely to be obese. None of these associations was moderated by ethnicity, which indicated that the associations were similar across ethnic groups. Of note, the associations between perceptions and child obesity were somewhat stronger than that associated with every standard deviation increase in caregiver BMI.

Discussion

The present study used a diverse sample of families recruited from a primary care setting to examine how caregivers perceive child healthy weight in general and their own child's weight in particular. Caregivers who perceive overweight as healthy may be less likely to engage in lifestyle changes (e.g., physical activity, healthier diet) to address their child's weight (Manios *et al.* 2009, Mathieu *et al.* 2010), although there is also evidence that misperception can be protective (Gerards *et al.* 2014). Previous research has indicated that (mis)perceptions of body size vary by ethnicity (Gluck and Geliebter 2002), an association that starts during childhood (Thompson *et al.* 1997). Our findings are consistent with this research, but also suggest that the association between ethnicity and weight perception depends on other demographic factors: perceptions and misperceptions vary by both income and BMI status of either the parent or child. African American caregivers tend to view heavier girls as healthier, but this association only holds for African American caregivers with lower income or higher BMI. It is possible that caregivers with higher BMI judge healthy weight, in part, through perceptions of their own weight. Of note, African American caregivers were not more likely to misperceive their own child's weight, perhaps because they viewed their child's weight as healthy. A different pattern emerged for Hispanic

caregivers. For these caregivers, at higher BMIs, there was a greater discrepancy between caregiver perception and the child's measured weight status. Finally, although we found that parents were more likely to misperceive the weight of older children, this finding was modest and inconsistent with the broader literature (Doolen *et al.* 2009). As such, it should be interpreted with caution.

There is a consistent positive association between caregiver and child BMI: Children who are obese tend to have parents who are obese (Liu *et al.* 2013). Thus, it was not a surprise that parent BMI was associated with the child's obesity status. More surprising was that caregivers' perceptions of healthy weight in general and misperception of their child's weight in particular had stronger associations with the child's obesity status than caregivers' BMI and that these associations did not vary by ethnicity. The child's obesity status likely shapes how caregivers evaluate healthy weight. Recent evidence, however, suggests that perceptions are also associated with the development of obesity. For example, adolescents of normal weight who misperceive themselves as overweight or have a drive for thinness are at increased risk of obesity by early adulthood (Sutin and Terracciano in press, Field *et al.* 2014). Similar processes may play out across generations, such that parents' perception of their child as overweight may contribute to an increased risk of obesity. There are likely reciprocal relations between caregiver perceptions and childhood weight; longitudinal data are needed to address such relations.

The present study had a number of strengths, including a relatively large sample from a primary care setting and measured weight/height of the child. The limitations include the cross-sectional design, the use of a contour rating scale that was not ethnicity-specific, and self-reported height and weight of the caregivers. Despite these limitations, this study suggests that the association between ethnicity and perceptions of childhood weight are complex, but that caregiver perceptions are associated with their own child's obesity, regardless of ethnicity.

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Key Messages

- Individuals differ in what they believe is a healthy weight for children in general and how they perceive their own child's weight in particular
- This study found that African American caregivers (particularly at lower income and higher BMI) perceive heavier girls as healthier in general but are not more likely to misperceive their own child's weight
- Hispanic caregivers are more likely to misperceive their child's weight if either they or their child is overweight
- Characteristics of caregivers and their children contribute to how child body weight is evaluated

Table 1

Descriptive Statistics for the Analyzed Sample

Characteristic	Statistic
Parent Age (years)	39.59 (9.40)
Parent Sex (female)	87%
Child Age (years)	10.19 (4.47)
Child Sex (female)	51%
Ethnicity (White)	39%
Ethnicity (Black)	14%
Ethnicity (Hispanic)	42%
Ethnicity (Other)	5%
Family income (median)	<\$35,000
Parent BMI kg/m ²	27.75 (6.23)
Child BMI-for-age ^a	19.98 (4.93)
Child obesity ^b	17%
Perception of Weight ^c	
Healthy Girl	4.28 (.57)
Healthy Boy	4.21 (.57)
Perception of own child ^c	4.24 (.82)

Note. *N*=453. Values are percentages or means (standard deviations), except for family income, which is the median (range <\$35,000 – >\$100,000). BMI=Body Mass Index.

^aBased on Centers for Disease Control and Prevention (CDC) growth charts.

^bBMI-for-age percentile 95% percentile.

^cPerception is based on ratings from the Contour Drawing Rating Scale that ranged from 1 (sketch of child who was underweight) to 7 (sketch of child who was obese).

Table 2

Regression Analyses Predicting Weight Perceptions From Parent and Child Characteristics

	<u>Perception of Healthy Weight</u>		<u>Misperception</u>
	<u>Girl</u>	<u>Boy</u>	
Parent Age	-.02	.04	.08
Parent Sex (male)	Reference	Reference	Reference
Parent Sex (female)	.00	.05	.08
Child Age	-.01	-.03	.11 *
Child Sex (male)	Reference	Reference	Reference
Child Sex (female)	-.02	-.03	.05
Ethnicity (White)	Reference	Reference	Reference
Ethnicity (Black)	.22 **	.03	-.03
Ethnicity (Hispanic)	-.05	-.09	.00
Ethnicity (Other)	.07	.05	-.01
Family income	-.16 **	-.18 **	-.06
Parent BMI	.09 *	.10 *	.06
Child BMI-for-age	.15 **	.17 **	-.04

Note. $N=453$. Values are standardized beta coefficients from linear regression. BMI=Body Mass Index.

*
 $p < .05$.

**
 $p < .01$.

Table 3

Logistic Regression Predicting Child's Obesity Status from Parent Characteristics and Weight Perceptions

Predictor	Child Obesity
Parent Age	.98 (.95–1.01)
Parent Sex (female)	1.72 (.68–3.46)
Child Age	1.01 (.95–1.08)
Child Sex (female)	.76 (.46–1.27)
Ethnicity (Black)	.55 (.22–1.32)
Ethnicity (Hispanic)	1.32 (.76–2.29)
Ethnicity (Other)	.00 (.99–.00)
Family income	.81 (.63–1.04)
Parent BMI ^a	1.50 (1.19–1.90) **
Perception of healthy girl	1.67 (1.04–2.69) *
Perception of healthy boy	1.79 (1.14–2.80) *
Misperception of own child	1.76 (1.32–2.34) **

Note. $N=453$. Values are odds ratios (95% confidence intervals) from logistic regression. BMI = Body Mass Index.

^aParent BMI is scaled per standard deviation increase.

*
 $p<.05$.

**
 $p<.01$.