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# Parenting Behaviors of African American and Caucasian Families: Parent and Child Perceptions, Associations with Child Weight, and Ability to Identify Abnormal Weight Status

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## Abstract

This study examined the agreement between parent and child perceptions of parenting behaviors, the relationship of the behaviors with the child's weight status, and the ability of the parent to correctly identify weight status in 176 parent–child dyads (89 Caucasian and 87 African American). Correlational and regression analyses were used. Findings included moderate to weak correlations in child and parent assessments of parenting behaviors. Caucasian dyads had higher correlations than African

American dyads. Most parents correctly identified their own and their child's weight status. Parents of overweight children used increased controlling behaviors, but the number of controlling behaviors decreased when the parent expressed concern with their child's weight.

## Keywords

Pediatric obesity, Weight, Parent perceptions, Parenting behaviors, Obesity, Families, African American, Caucasian

CHILD AND PARENT agreement or disagreement on perceptions of various parental behaviors or child psychosocial outcomes has been examined across multiple domains. As children gain independence, they also begin to form their own opinions. This translates to an individual perception that may differ from the parent's perception. Although this may be an expected change, it can create difficulty when trying to assess or document a problem or to initiate an intervention. This is especially evident when attempting to address pediatric obesity.

## Background

The prevalence of pediatric obesity has been referred to as a public health crisis (Wang & Beydoun, 2007). Based on the 2007–2008 National Health and Nutrition Examination Survey, 31.7% of children and adolescents between 2 and 19 years of age were classified as overweight or obese for age and gender (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). When broken down by ethnicity, 29.3% of Caucasian children and 35.9% of African American children between 2 and 19 years of age were considered overweight or obese. *Overweight* is defined as having a body mass index (BMI) between the 85th and the 95th percentiles for age and gender, and *obesity* as having a BMI at or above the 95th percentile (Ogden et al., 2010).

As obesity rates have climbed, so has the diagnosis of the associated medical comorbidities associated with excess body weight, such as type 2 diabetes, obstructive sleep apnea, liver disease, cardiovascular disease, and psychological concerns (Davison and Birch, 2001, Dietz and Robinson, 2005, Huang et al., 2007, O'Brien et al., 2007). The attempts to treat pediatric obesity are complicated by the fact that it is a multifactorial problem that stems from a combination of genetic and environmental factors (O'Brien et al., 2007). Acknowledging that the child's environment is modifiable, with the child's family being at the center, interventions are often focused on the family (Golan, Kaufman, & Shahar, 2006).

When addressing obesity, it is critical to obtain accurate information regarding the individual's health behaviors. When working with pediatric obesity, the differing of perceptions between the child and the parent and/or the individual wanting to provide the socially desirable response can hinder the accuracy of information provided (Haines, Neumark-Sztainer, Hannan, & Robinson-O'Brien, 2008). Keery et al., 2006 underscored the need to include the child's perception when studying weight-related attitudes and behaviors when she suggested that the child's perception of their parent's attitude or behavior was more relevant than the actual attitude or behavior.

## Parenting

Parents are the primary caregivers, disciplinarians, and moderators of a child's day-to-day life. Parents control the family's home environment and can promote, support, and role model healthier lifestyle

changes (Golan and Weizman, 2001, Stein et al., 2005). At the same time, it should be noted that the opposite can occur and parents can impede the child's success regarding weight loss (Golan et al., 2006, Golan et al., 1998). Acknowledging the importance of the parent's role, parents have been specifically named as targets of certain intervention programs when treating pediatric obesity (Decaluwe et al., 2006, Golan and Weizman, 2001, Kitzmann and Beech, 2006). Specific interest has been given to addressing how the parent parents or which parenting style or behaviors they use.

In the psychology literature, parenting styles have been extensively studied and have evolved in how they have been conceptualized throughout the years. Authoritative parenting has consistently been recognized as the superior parenting style across multiple domains (Baumrind, 1966, Dornbusch et al., 1987). An authoritative parent provides clear and firm direction to the child, and when disciplining, will moderate it with warmth, reasoning, and flexibility (Baumrind, 1966, Golan and Crow, 2004). In comparison, an authoritarian parent is very strict with the child and has high expectations that rules are followed without discussion or negotiation (Baumrind, 1966, Luther, 2007). The authoritative parenting style has been associated with a host of positive adjustment outcomes among children and adolescents, including school involvement and achievement (Radziszewska et al., 1996, Steinberg et al., 1992). In an effort to better understand what the impact of specific aspects of parenting is on youths' adjustment, researchers have begun to deconstruct these parenting styles and to examine the individual behaviors that define authoritative parenting: levels of behavioral control, psychological control, and acceptance (Barber, Stolz, & Olsen, 2005).

Breaking down parenting styles to the level of control or acceptance has also been done when assessing feeding practices. Controlling feeding practices such as restriction of food intake, monitoring of food, and pressuring the child to eat have been extensively studied (Birch et al., 2001, Blissett and Haycraft, 2008, Fisher and Birch, 1999). Most studies have focused on preschool-aged children. Restrictive feeding practices tend to be associated with overeating and poorer self-regulation (Savage, Fisher, & Birch, 2007). Similar to general parenting, the authoritative parent who places high expectations on his or her child while eating, but also is highly responsive to the child's eating cues and behaviors, appears to promote optimal nutritional intake and growth (Savage et al., 2007).

Most parenting or feeding style studies related to pediatric obesity focus on Caucasian subjects (Blissett and Haycraft, 2008, Brann and Skinner, 2005, Moens et al., 2007, Stein et al., 2005, Wake et al., 2007). Authoritative parenting has increased prevalence within European American and middle class families where the positive behaviors are echoed in the child's neighborhoods and social networks (Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994). In previous studies examining parenting or feeding styles with diverse samples, African Americans were found to be more neglectful (Hughes, Power, Orlet Fisher, Mueller, & Nicklas, 2005) or to use an authoritarian parenting style (Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006).

### Parent Perception of Child's Weight and Nutrition

To successfully address childhood obesity, parents must recognize that there is a problem. When studies have investigated parental perceptions of their child's weight, most of the studies have found that parents underestimated their child's weight, thus failing to identify the overweight or obese child (Baughcum et al., 2000, Doolen et al., 2009, Eckstein et al., 2006, Maynard et al., 2003, Towns and D'Auria, 2009). When examining the African American caregiver's perception of the child's weight

status and related health risks, parental perception was inaccurate with decreased identification of overweight status (Young-Hyman, Herman, Scott, & Schlundt, 2000). It has been proposed that culture and acceptance of larger body sizes may play a role (Doolen et al., 2009, Towns and D'Auria, 2009, Young-Hyman et al., 2000). Additional findings include that misperception of the child's weight status occurred more often with less educated parents (Baughcum et al., 2000, Doolen et al., 2009), parents who were overweight themselves (Baughcum et al., 2000, Maynard et al., 2003), or with sons versus daughters (Boutelle et al., 2004, Maynard et al., 2003). When examining if the age of the child affects the parents' perceptions of their child's weight status, there have been mixed findings. In an integrative review of the literature assessing parental perceptions of the child's weight, four of nine studies found that parents were less likely to label younger children as overweight versus older children (Towns & D'Auria, 2009).

Regarding agreement in child and parent perceptions of parental feeding practices, one recent study found considerable disagreement between parent and child reports of direct and indirect weight-related behaviors, such as commenting to the child about weight or encouragement of child to diet (Haines et al., 2008). Other discrepancies between parent and child report have been documented when assessing consumption of fruit and vegetables, family food rules, and dietary intake (Tak et al., 2006, Van Assema et al., 2007).

### Self-Report Instruments

Further concerns arise from the fact that many of the instruments that address feeding behaviors or parenting are self-reported by the parent. Parent self-report has been criticized as unreliable (Paulson and Spota, 1996, Steinberg et al., 1992). Previous research has shown that the child may be a better rater of parenting than the parent (Keery et al., 2006, Schwarz et al., 1985). When parents are assessing their own parenting, there tends to be a bias toward presenting a favorable image of their parenting behaviors (Schwarz et al., 1985). In early research, it was stated that "a child's perception of his parent's behavior may be more related to his adjustment than is the actual behavior of his parents" (Schaefer, 1965). In additional studies, findings have shown that as children age or as the child's BMI increases, so does inaccurate reporting (Singh et al., 2009). Most studies do not incorporate both parent and child findings.

### Theoretical Framework

Bronfenbrenner's Ecological System's Theory emphasized that the child or the developing person is imbedded in a series of systems that interact with one another and with the individual in influencing the child's development. In this theory, five systems are included, ranging from direct interactions with social agents to broad-based cultural interactions (Bronfenbrenner, 1986, Huitt, 2003).

Systems include the microsystem, which for purposes of this study included their family. Microsystems exert the most proximal influences on child adjustment according to Bronfenbrenner (1986). The mesosystem includes the relationship between each microsystem component. An example would be assessing the relationships among family members. An example of the fourth component, the macrosystem, would be the culture to which the child belongs. The fifth system is the chronosystem, which includes changes in the individual or environment over time (Bronfenbrenner, 1986; Figure 1).

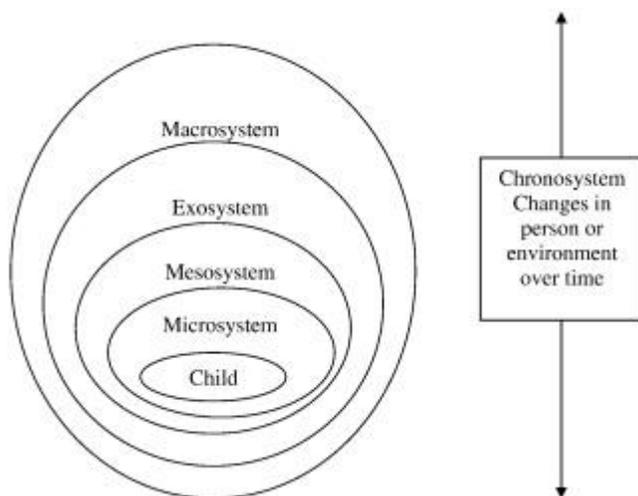


Figure 1. Ecological systems theory.

When examining pediatric obesity, the ecological systems theory is easily adapted. Each system plays a part within the socialization of the child and will have an effect on a child's weight. The microsystem and the mesosystem incorporate the immediate environment and interactions of the individuals (parents and siblings), including food options, safety or opportunities to be physically active, and parent's role modeling of behaviors. Although the microsystem and the mesosystem are the most commonly studied, the exosystem, the macrosystem, and the chronosystem will also impact the child's weight. The ecological systems theory supports the assumption that daily behaviors and the environment in which the child lives play a critical role in the development of pediatric obesity.

## Conceptual Framework

The conceptual framework for this study was that parents will report a level of acceptance/rejection, psychological control/psychological autonomy, and firm/lax control, which is an aspect of their general parenting style but may be exaggerated when the parent has an increased concern about their child's weight (Costanzo & Woody, 1985). These parenting behaviors will translate to the feeding behaviors used by the parent. Children who are parented with higher levels of acceptance, psychological autonomy, and firm control will have improved weight control and a healthier BMI. Children who are parented with higher levels of rejection, psychological control, and lax control will experience poor weight control and have an unhealthy BMI.

Prior to concern for obesity being present, there needs to be an accurate recognition of obesity in an individual. As pediatric obesity has increased in the United States, individuals may accept a larger body size as being normal and not recognize an abnormal weight status in themselves or their children. Parent and child perceptions of parenting and feeding behaviors may affect the child's BMI, as may parental concern (Polfuss & Frenn, 2011). Parenting and feeding behaviors, parental accuracy, and concern about child weight status may vary between African Americans and Caucasians.

## Purpose

Purposes of this study were to (a) examine the relationship between a child and parent perception of parenting behaviors; (b) assess the ability for parents to correctly identify their own weight status; (c)

assess the parent's ability to correctly identify their child's weight status and whether this relationship is influenced by the parent's education level, parent weight status, age of the child, or the child's gender; (d) examine how the parent and child's assessment of the parenting behaviors are related to the child's weight status; and (e) identify what parenting or feeding behaviors a parent demonstrates when their child is overweight. These research questions were examined for the study sample as a whole, as well as examined for possible differences between the Caucasian and African American participants. This study was part of a larger study performed that focused on parenting and feeding behaviors of parents and how these behaviors related to a child's weight status (Polfuss & Frenn, 2011).

## Methods

### Study Design and Population

A cross-sectional design was used with a convenience sample of 176 parent child dyads, 89 Caucasian (50.6%) and 87 African American (49.4%), from a Midwestern state. Dyads with children between 9 and 15 years old (mean age = 11.6 years) were recruited from a variety of locations, including a private pediatric clinic, two Boys and Girls Clubs, an inner city nurse practitioner-ran clinic, a pediatric specialty clinic, and an inner city university-based dental clinic. The parents' ages ranged from 23 to 59 years ( $M = 38.2$ ,  $SD = 7$ ). All parents identified themselves as the biological parent of the child included in the study. See further demographic information in Table 1.

Table 1. Descriptive Characteristics of the Study

<b>Demographic Data</b>	<b><i>n</i></b>	<b>%</b>
Parents completing the study		
Mother	148	84.1
Fathers	28	15.9
Ethnicity of participants		
Caucasian	89	50.6
African American	87	49.4
Gender of child in study		
Male	92	52.3
Female	84	47.7
Work status of parent		
Full-time	93	52.8
Part-time (20 hours or less)	37	21.0
Not working	34	19.3
Disabled	6	3.4
Highest grade completed by parent		
9th	4	2.3
10th	0	0.0
11th	9	5.1
12th	72	40.9
Additional schooling past high school	89	50.6
Annual family income		

0–\$25,000	71	40.3
\$26,000–\$50,000	56	31.8
\$51,000–\$75,000	24	13.6
\$76,000–\$100,000	16	9.1
>\$100,000	9	5.1
Qualifies for free or reduced lunch		
Yes	106	60.2
No	69	39.2

Written consent and assent were obtained from both the parent and the child prior to participating in the study. Approval for the study was granted through the Human Research Review Boards of a Midwestern children's hospital and university. A \$10 gift certificate to a local department store was provided to the child and the parent (total of \$20) upon completion of participation as reimbursement for their time.

## Constructs Measured and Questionnaires

### Parenting Style—Child and Parent Perspectives

The 30-item Parent (PRPBI) and Child (CRPBI) Report of Parenting Behavior Inventories were completed by the parent and the child (Schaefer, 1965, Schludermann and Schludermann, 1970). The child was offered assistance by having the research assistant read the survey to them. The CRPBI and PRPBI are both 30-item surveys that assess three dimensions: acceptance versus rejection (e.g., “cheers me up when I am sad”; CRPBI  $\alpha = .90$ , PRPBI  $\alpha = .75$ ), psychological control versus psychological autonomy (e.g., “tells child off of the things I have done for him/her”; CRPBI  $\alpha = .80$ , PRPBI  $\alpha = .72$ ), and firm control versus lax control (e.g., “is very strict with my child”; CRPBI  $\alpha = .74$ , PRPBI  $\alpha = .63$ ; E. Schludermann, personal communication, December 9, 2008; Butler, Skinner, Gelfand, Berg, & Wiebe, 2007). Participants responded to questions by choosing if they or their parent was *like*, *somewhat like*, or *not like* each of the items listed. Answers were provided a score of 1 (*not like*), 2 (*somewhat like*) and 3 (*like*). The acceptance and psychological control scale summed the scores of their subscale, whereas the firmness scale used a specific calculation to determine the final score of the subscale (E. Schludermann, personal communication, December 9, 2008). The PRPBI was created through minor changes to the stem and adjustment of the questions of the CRPBI (E. Schludermann, personal communication, December 9, 2008). Higher scores reflected greater amounts of acceptance, psychological control, and firmness. See Table 2 for instrument subscales internal consistency ratings, means, and standard deviations for current study.

Table 2. Instrument Internal Consistency

Instrument Subscale	Item Count	Range of Scores	Cronbach's $\alpha$	<i>M</i>	<i>SD</i>
PRPBI acceptance vs. rejection	10	10–30	.81	27.5	2.78
PRPBI psychological control vs. autonomy	10	10–30	.82	16.0	4.38
PRPBI firm vs. lax control	10	10–30	.67	16.62	4.42
CRPBI acceptance vs. rejection	10	10–30	.87	26.01	4.01

CRPBI psychological control vs. autonomy	10	10–30	.82	19.47	4.75
CRPBI firm vs. lax control	10	10–30	.63	18.94	3.15
CFQ restriction	8	8–40	.86	25.21	7.97
CFQ monitoring	3	3–15	.90	10.55	3.20
CFQ pressure to eat	4	4–20	.76	10.08	4.38
CFQ concern about child's weight	3	3–15	.88	10.55	3.20
CFQ perceived child's weight	7	7–35	.77	21.39	2.2
CFQ perceived self weight of the parent	4	4–20	.66	13.09	1.9

### Parent's Feeding Behaviors and Perception of Child Weight Status

The Child Feeding Questionnaire (CFQ) has a total of 32 items, which are answered by the parent on a 5-point Likert scale (Birch et al., 2001). A total of seven subscales are measured, including the parents' responsibility for feeding the child (e.g., “How often are you responsible for deciding what your child's portions sizes are?”), with possible responses of *never*, *seldom*, *half the time*, *most of the time*, and *always*; monitoring of the child's nutritional intake (e.g., “How much do you keep track of the snack food [potato chips, Doritos, and cheese puffs] that your child eats?”), with possible responses of *never*, *rarely*, *sometimes*, *mostly*, and *always*; restricting the nutritional intake (e.g., “I intentionally keep some foods out of my child's reach.”), with possible responses of *disagree*, *slightly disagree*, *neutral*, *slightly agree*, and *agree*; pressuring the child to eat (e.g., “My child should always eat all of the food on her plate.”), with possible responses of *disagree*, *slightly disagree*, *neutral*, *slightly agree*, and *agree*; perceived child weight (e.g., response options: “markedly underweight, underweight, average, overweight, markedly overweight”); perceived parent self-weight (e.g., response options: “markedly underweight, underweight, average, overweight, markedly overweight”); and parent's concern about his or her child's weight (e.g., “How concerned are you about your child having to diet to maintain a desirable weight?”), with possible responses of *unconcerned*, *slightly unconcerned*, *neutral*, *slightly concerned*, and *concerned* (Birch et al., 2001, Kaur et al., 2006). Internal consistency with a Cronbach's alpha was acceptable (.70 to .92; Birch et al., 2001). For this study, the subscale that measured the parent's responsibility for feeding the child was not used because it did not relate to the research questions.

Scoring of the CFQ is performed separately for each subscale assessed. The 5-point Likert scale is summed, and the mean of the items becomes the score. The higher the score equates with a higher level of the construct being measured (L. Birch, personal communication, June 4, 2009). See Table 2 for instrument subscales internal consistency ratings, means, and standard deviations for this study.

### Anthropometrics

Weight status was documented by a trained health professional who performed height and weight assessment on the adults and the children with their shoes removed. Seca 869 portable medical grade scale and Seca 214 portable stadiometer were used for nonmedical sites. Calibrated medical grade Seca digital scale and wall-mounted stadiometer were used for medical sites. Height and weight measurements were converted to a BMI for adults and a BMI z score for the children. BMI z scores standardized for age and gender according to the national norms were obtained from the USDA/ARS

Children's Nutrition Research Center at Baylor College of Medicine's Web site  
<http://www.bcm.edu/cnrc/bodycomp/bmiz2.html>.

Of the 176 parents in the sample, 140 (80%) were overweight with a BMI greater than or equal to 25. Of the 140 overweight parents, 65 (46.4%) were Caucasian and 75 (53.6%) were African American. Of the 148 mothers participating in the study, 30 (20.3%) were considered normal weight, 30 were considered overweight (20.3%), and 88 (59.5%) were considered obese based on the Centers for Disease Control (2011) guidelines. Of the 28 fathers, 1 (3.6%) was considered underweight, 5 were considered normal weight (17.9%), 11 were considered overweight (39.3%), and 11 (39.3%) were considered obese. Of the 176 children in the sample, 89 (51%) were considered overweight with a BMI greater than or equal to the 85% for age and gender. Of the 89 with an abnormal weight status, 40 (44.9%) were Caucasian and 49 (55.1%) were African American. See Table 3 for additional anthropometric data of study participants.

Table 3. Descriptive Statistics-Anthropometrics

	<i>n</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
Parent BMI	176	17.60	58.30	32.15	8.12
• Caucasian mothers	70	18.70	51.70	31.62	7.96
• African American mothers	78	17.60	58.30	33.55	8.83
• Caucasian fathers	19	21.10	41.50	28.05	5.33
• African American fathers	9	26.50	38.50	32.77	4.25
Child BMI	176	13.30	50.60	23.21	7.53
• 9- to 10-year-old boys	21	14.50	33.50	19.26	4.63
• 9- to 10-year-old girls	37	14.60	48.20	22.68	6.51
• 11- to 12-year-old boys	41	15.40	36.30	22.17	5.26
• 11- to 12-year-old girls	17	16.60	37.90	23.05	6.33
• 13- to 15-year-old boys	28	13.30	46.80	23.95	9.06
• 13- to 15-year-old girls	30	16.00	50.60	26.77	9.85
Caucasian child BMI	87	13.30	50.6	22.74	7.80
African American child BMI	89	15.1	48.2	23.7	7.27
Child BMI z score	176	-4.16	3.02	0.98	1.19

## Data Analysis

With the use of SPSS version 18.0, Pearson's product-moment correlation coefficients and multiple and logistic regression analyses were performed to examine the relationship among the variables. Analyses were performed on the sample as a whole, and then the sample was split to assess differences between the Caucasian and African American participants. To compare Caucasian and African American scores for statistically significant differences between the correlation coefficients, the *r* values were converted into a *z* value. For the logistic regression, the dependent variable, parental rating of the child as being under or normal weight, was coded as 0, with their rating of overweight or obese coded as 1. The regression sample included only those children who were overweight or obese, so that parental education and BMI and child age and gender could be examined as independent

variables predicting parental accuracy. All analyses were two-tailed, with  $p < .05$  considered statistically significant.

## Results

### Examining the Relationship Between Child and Parent Perceptions of Parenting Behaviors

#### Entire Group

There was a moderate positive relationship between the parent and child assessment of the level of acceptance versus rejection ( $r = .42, p = .000$ ), indicating a shared variance of 17.6%; small positive relationship for the level of psychological control versus psychological autonomy ( $r = .30, p = .000$ ), indicating a shared variance of 8.9%; and small positive relationship for the level of firm control versus lax control ( $r = .29, p = .000$ ), indicating a shared variance of 8.5%.

#### Split Group

For the Caucasian sample, there was a large positive relationship between the parent and child assessment of the level of acceptance versus rejection ( $r = .63, p = .000$ ), indicating a shared variance of 40%, and a medium positive relationship for the level of firm control versus lax control ( $r = .37, p = .000$ ), indicating a shared variance of 13.5%. Parent and child reports on the subscale for psychological control versus psychological autonomy were not significantly associated.

For the African American sample, there was a small positive relationship between the parent and child assessment of psychological control versus psychological autonomy ( $r = .23, p = .04$ ), indicating a shared variance of 5.1%. Parent and child reports on subscales for acceptance versus rejection and firm control versus lax control were not significantly associated.

There was a statistically significant difference between the African American ( $r = .18$ ) and Caucasian ( $r = .63$ ) acceptance versus rejection subscales, with a  $z$  value of 3.6.

### Parents' Ability to Correctly Identify Their Own Weight Status

#### Entire Group

When examining the parents' perception of their own weight status and their actual BMI, there was a positive large relationship ( $r = .61, N = 176, p = .000$ ).

#### Split Group

Caucasian and African American parents both had a large positive relationship between their perceived weight status and their actual BMI ( $r = .67, p = .000$ ;  $r = .57, p = .000$ , respectively). The difference between the two ethnic groups was not statistically significant.

### Parents' Ability to Correctly Identify Their Child's Weight Status and Determine Whether This Relationship is Influenced by the Parent's Education Level, Age of the Child, Parent Weight Status, or the Child's Gender

#### Entire Group

The parents' perception of their child's weight status and their BMI  $z$  score had a positive large relationship ( $r = .52, p = .000$ ). Variables added simultaneously to the logistic regression analysis

included parent educational level, parent BMI, age of the child, and child's gender. A test of the full model versus a model with intercept only was not statistically significant,  $\chi^2(4, N = 90) = 8.13, p < .09$ . Parent BMI was the only significant predictor ( $p = .02$ ) with an odds ratio of 1.07 (95% confidence interval [CI] = 1.01–1.14).

### **Split Group**

Caucasian parents had a large positive relationship and African American parents had a medium positive relationship between their perception of their child's weight status and their child's BMI z score ( $r = .59, p = .000; r = .40, p = .000$ , respectively). No significant difference was found between the two ethnic groups regarding these associations.

When examining what factors influenced the parents' ability to correctly identify their child's weight, the test of the full model versus a model with intercept only was not statistically significant for Caucasians,  $\chi^2(4, N = 41) = 7.19, p = .13$ . None of the added variables (parent educational level, parent BMI, age of the child, and child's gender) were significant for the Caucasian sample, although the parent education level approached significance ( $p = .06$ ).

For the African American sample, a test of the full model versus a model with intercept only was not statistically significant,  $\chi^2(4, n = 49) = 7.70, p < .10$ . Parent BMI was the only significant predictor ( $p = .04$ ) with an odds ratio of 1.10 (95% CI = 1.01–1.20).

## **Associations Between Parent and Child Assessment of Parenting Behaviors and Child Weight Status**

### **Entire Group**

When assessing the relationship between the CRPBI subscales of acceptance, psychological control, firmness, and the child's BMI z score, only the acceptance scale was significant, demonstrating a negative small relationship ( $r = -.16, p = .02$ ). When assessing the PRPBI subscales, the acceptance scale had a negative small relationship ( $r = -.22, p = .003$ ), and the psychological control scale had a positive small relationship ( $r = .16, p = .03$ ). Neither parent nor child reports on the firmness scale were significantly associated with child BMI z score.

### **Split Group**

For the Caucasian sample, the parent report on the acceptance scale ( $r = -.22, p = .42$ ) and the parent report on the psychological control scale ( $r = .22, p = .04$ ) each showed a significant small relationship to the child's BMI z score. The child report on the acceptance scale had a negative medium relationship ( $r = -.30, p = .04$ ). None of the parenting behavior subscales (neither parent or child reports) were significantly associated with child BMI z scores in the African American sample. There were no statistically significant differences between the two populations.

## **Parenting or Feeding Behaviors Displayed When Their Child was Overweight With Additional Consideration of Parental Concern About Child Overweight**

### **Entire Group**

When assessing the feeding behaviors (restriction of nutritional intake, monitoring of food intake, and pressuring child to eat) and parenting behaviors (acceptance vs. rejection, psychological control vs. psychological autonomy, and firmness vs. laxness) that were used by the parent when the child was

overweight, demonstrated by the child having a BMI 85% or greater, the multiple regression analysis showed that 18% of the child's weight was accounted for by the behaviors of acceptance versus rejection, firmness versus laxness, psychological control versus autonomy, restriction of food, monitoring of food, and pressuring the child to eat. All behaviors were added to the regression analysis simultaneously. The parenting behaviors of increased psychological control and firmness along with the feeding behavior of pressuring the child to eat were significant predictors.

A second regression analysis was performed to address what behaviors were displayed when a parent expressed concern with his or her child's weight. This analysis included the same three feeding (restriction of nutritional intake, monitoring of food intake, and pressuring child to eat) and three parenting behaviors (acceptance vs. rejection, psychological control vs. psychological autonomy, and firmness vs. laxness) along with the variable of parent having concern with child's weight were placed simultaneously in a regression analysis. When adding parental concern about the child's weight status, the model then explained 31.3% of the variance. The parenting behavior of firmness and the parent's concern for the child's weight status were the only significant predictors. Psychological control and pressuring the child to eat lost their significance when the parent's concern for the child's weight was added. See Table 4 for additional information.

Table 4. Parenting or Feeding Behaviors Displayed When Child has a BMI Greater Than 85%: A Comparison of Behaviors Used With and Without Parental Concern of Child's Weight ( $N = 176$ )

Variable	<i>B</i>		95% CI
Parenting or feeding behaviors displayed when child has a BMI <85%			
Constant	1.34		-0.111 to 2.79
Acceptance vs. rejection	-0.03		-0.07 to 0.00
Psychological control vs. autonomy	0.03*		0.00 to 0.06
Firmness vs. laxness	0.05*		0.01 to 0.09
Restriction of food	0.12		-0.03 to 0.27
Pressure to eat	-0.15*		-0.27 to -0.03
Monitoring of food	-0.06		-0.21 to 0.08
$R^2$		.18	
$F$		4.15**	
Parenting or feeding behaviors displayed when child has a BMI <85% and parent expresses concern with child's weight			
Constant	0.57		-0.80 to 1.9
Acceptance vs. rejection	-0.02		-0.05 to 0.01
Psychological control vs. autonomy	0.03		0.00 to 0.05
Firmness vs. laxness	0.06*		0.02 to 0.09
Restriction of food	0.00		-0.14 to 0.15
Pressure to eat	-0.10		-0.21 to 0.00
Monitoring of food	-0.10		0.23 to 0.03
Concern with child's weight	0.21**		0.11 to 0.31
$R^2$		.31	
$F$		6.74**	

Note: Dependent variable: child BMI z score.

\*  $p < .05$ . \*\*  $p < .01$ .

### Split Group

When split by ethnicity, the model (without the parent's concern for the child's weight) was not significant for the Caucasian sample but did explain 21% of the variance for the African American sample,  $R^2 = .21$ ,  $F(6, 42) = 3.12$ ,  $p = .01$ . Within the African American sample, only the act of firm parenting was significant ( $p = .04$ ). When the parent's concern for the child's weight was included, the model again was not significant for the Caucasian sample but explained 49% of the variance for the African American sample,  $R^2 = .49$ ,  $F(7, 41) = 7.48$ ,  $p = .00$ . Firm parenting ( $p = .006$ ) and the concern for the child's weight were significant ( $p = .00$ ) with the concern accounting for 36% of the variance.

### Discussion

Research has demonstrated that self-report measures may yield different results depending on who is doing the reporting (i.e., child vs. parent; Keery et al., 2006, Schwarz et al., 1985). This study supports the previous research by demonstrating inconsistencies between the parent's and the child's assessment of the parenting behaviors (Paulson and Sputa, 1996, Steinberg et al., 1992). At best, there was only a small to moderate agreement between the parent and the child when assessing the level of acceptance, psychological control, and level of firmness.

When splitting the sample by ethnicity, the acceptance level and level of firmness remained significant and the relationship strengthened for the Caucasian sample, demonstrating a high level of agreement between the parent and the child. For the African American sample, the level of acceptance and firmness were not significant, and the level of psychological control only showed a small amount of agreement between parent and child. The differences between the two ethnic samples proved to be statistically significant with decreased agreement between the African American parents and children when compared with the Caucasian parent-child dyads.

The parent's assessment of certain parenting behaviors (e.g., acceptance, psychological control) was correlated with the child's weight status, whereas only the acceptance subscale was correlated for the child's assessment. This supports previous research that states there are differences found depending on who is doing the reporting, especially in the weight context (Haines et al., 2008, Van Assema et al., 2007). In this instance, the parent showed a better capability of assessing parenting behaviors.

Ethnic differences were documented with a significant relationship between Caucasian parent and child reports for the acceptance and psychological control scales, whereas none of the scales were significantly related for African American parents and children. The Caucasian children's assessment of their parents' behaviors exhibited a significant relationship between the acceptance scale and their weight. With higher acceptance levels on behalf of the parents, there was a decreased BMI z score, whereas a higher level of psychological control was related to a higher BMI.

Supporting previous research, the current findings demonstrated that parents with overweight children increased their controlling parenting behaviors as a function of increases in child BMI. Specifically, psychological control and firmness were used along with an increased pressure on the child to eat (Blissett and Haycraft, 2008, Savage et al., 2007). When splitting the sample, the African

American group continued to use firmness. This lends support to prior literature that has demonstrated increased use of authoritarian behaviors being used by African Americans (Rhee et al., 2006, Steinberg et al., 1994). For both ethnic groups, it was found that when there was increased concern on the parent's part regarding the child's weight, the use of psychological control and pressuring the child to eat were not significant and only firm parenting remained significant. When splitting the sample, the use of firmness was not significant for the Caucasian group but remained significant for the African American group, once again providing evidence that authoritarian parenting behaviors are used in this culture (Rhee et al., 2006, Steinberg et al., 1994).

Contrary to many published studies, the parents within this sample were accurately able to identify their weight status and their child's weight status (Baughcum et al., 2000, Doolen et al., 2009, Eckstein et al., 2006, Maynard et al., 2003). This was similar for both Caucasian and African American sample groups, contrary to previous findings that African American caregivers did not correctly identify their overweight child (Young-Hyman et al., 2000).

Findings of this study differ from prior studies in that the ability to identify the child's weight was not influenced by the gender of the child nor the parent's education level (Baughcum et al., 2000, Boutelle et al., 2004, Doolen et al., 2009, Maynard et al., 2003). In prior studies, higher parental BMI was a significant predictor of the parent inaccurately identifying the child's weight (Baughcum et al., 2000, Doolen et al., 2009). In this study, the parents' BMI remained a predictor for the African American participants but not for the Caucasian sample when the sample was split. Interestingly, parents in prior studies who reported that they were overweight or obese underestimated their child's weight. Differences from prior reports may result from parental weight being measured in this study rather than being based on self-report.

Adding to the mixed findings documented in the integrative review performed by Towns & D'Auria (2009), the child's age was not found to be a significant predictor of the parent correctly identifying the child's weight. What can be considered is that the African American parents' BMI did play a role as a significant predictor in the parent correctly identifying a child's weight status. Parents who may have been told about their own abnormal weight status may be more alert or able to identify their child's abnormal weight status. However, parental accuracy could also be the result of increased attention being placed on childhood obesity in the media or hearing information about their child's weight through their child's health care providers, which increases the parent's ability to correctly identify child's weight status. Future studies should continue to include measured parent BMI rather than self-report and could include questioning of parents if they have previously been talked to about their child's weight status.

## Conclusion

This study has shown, as in past studies, that parent and child reports of parenting behaviors will differ. Understanding why there is less agreement between children and parent dyads of different ethnicities is an interesting question that would benefit from further studies. Future work should concentrate on including diverse populations because parenting and feeding behaviors and the level of concern about a child's weight status vary. Reliability and validity of instruments also need to be examined within various ethnic groups.

Caucasian parents' assessment of their own parenting behaviors was more strongly related to their child's weight status than the child's assessment of the parenting behaviors or the African American parents' assessment of their parenting behaviors and their child's weight. Similar to previous studies, this study does support that higher levels of acceptance are related to a decreased BMI and that increasing control behaviors may counteract healthy habits and be related to increased BMI. This was specific to the Caucasian sample, and similar results were not evident among the African American population.

These findings show that parents are able to correctly identify their own and their child's weight status. This was seen for both ethnic groups studied. When the child was overweight, there were increased controlling behaviors used on behalf of the parents. When the parent exhibited a concern for his or her child's weight, there was a decrease in the negative controlling behaviors used by the parent for the overweight child. These findings are important on multiple levels. If the parent is able to correctly identify their child's abnormal weight status, then they may be more apt to want to make changes or to request assistance with their child's weight management. Similarly, if they understand that their child is overweight and they exhibit increased concern regarding the child's weight, they may decrease the use of some of the negative controlling behaviors previously used.

### Clinical Recommendations

The fact that parents are able to correctly identify weight status may be a testament to the increased media and health care coverage of pediatric obesity or the ability of the parent to recognize abnormal weight status as the child ages. Continued education and open discussion should be a priority with all families and their children to assess their understanding and level of concern that the parent has regarding their child's weight status. An increased level of concern noted by the parent may provide an opportunity to engage the family in making changes and improving health behaviors.

Acknowledging that there are differences between parent and child perceptions, both perspectives should be assessed, especially when working with the African American population. In addition, it should be recognized that an individual's culture influences the ideal of a child's appropriate weight or what is considered healthy. Treating each family individually while incorporating the parent's and the child's perspectives as well as the family's culture will be beneficial to health promotion.

### Limitations

Because of the cross-sectional design, causality is unable to be determined. Additional studies need to be performed that examine how African American parenting styles affect weight and feeding practices and the increased difference in perception of the parenting behaviors between the child and the parent. This study was performed based on one meeting with the families. A longitudinal design would be required to determine whether the development of increased concern reduces ineffective parenting and feeding behaviors or the level of concern and effective parenting co-occur. Future studies should be expanded to include larger age ranges and additional minority groups. Additional consideration of using a mixed-methods design to incorporate a qualitative aspect to better understand the perception of the individuals would potentially increase the understanding of this complex topic.

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## References

- Barber et al., 2005. B. Barber, H. Stolz, J. Olsen. **Parental support, psychological control and behavioral control: Assessing relevance across time, method and culture.** Monographs of the Society for Research in Child Development, 70 (2005), pp. 1-136
- Baughcum et al., 2000. A. Baughcum, L. Chamberlin, C. Deeks, S. Powers, R. Whitaker. **Maternal perceptions of overweight children.** Pediatrics, 106 (2000), pp. 1380-1386
- Baumrind, 1966. D. Baumrind. **Effects of authoritative parental control on child behavior.** Child Development, 37 (1966), pp. 886-907
- Birch et al., 2001. L. Birch, J. Fisher, K. Grimm-Thomas, C. Markey, R. Sawyer, S. Johnson. **Confirmatory factor analysis of the child-feeding questionnaire: A measure of parental attitudes, beliefs and practices about child feeding and obesity proneness.** Appetite, 36 (2001), pp. 201-210
- Blissett and Haycraft, 2008. J. Blissett, E. Haycraft. **Are parenting style and controlling feeding practices related?** Appetite, 50 (2008), pp. 477-485
- Boutelle et al., 2004. K. Boutelle, J. Fulkerson, D. Neumark-Sztainer, M. Story. **Mothers' perceptions of their adolescents' weight status: Are they accurate?** Obesity Research, 12 (2004), pp. 1754-1757
- Brann and Skinner, 2005. L. Brann, J. Skinner. **More controlling child-feeding practices are found among parents of boys with an average body mass index compared with parents of boys with a high body mass index.** Journal of the American Dietetic Association, 105 (2005), pp. 1411-1416
- Bronfenbrenner, 1986. U. Bronfenbrenner. **Ecology of the family as a context for human development: Research perspectives.** Developmental Psychology, 22 (1986), pp. 723-742
- Butler et al., 2007. J. Butler, M. Skinner, D. Gelfand, C. Berg, D. Wiebe. **Maternal parenting style and adjustment in adolescents with type I diabetes.** Journal of Pediatric Psychology, 32 (2007), pp. 1227-1237
- Centers for Disease Control and Prevention, 2011. Centers for Disease Control and Prevention (2011). Healthy weight—It's not a diet, it's a lifestyle. Retrieved from [http://www.cdc.gov/healthyweight/assessing/bmi/adult\\_bmi/index.html](http://www.cdc.gov/healthyweight/assessing/bmi/adult_bmi/index.html).
- Costanzo and Woody, 1985. P. Costanzo, E. Woody. **Domain-specific parenting styles and their impact on the child's development of particular deviance: The example of obesity proneness.** Journal of Social and Clinical Psychology, 3 (1985), pp. 425-445
- Davison and Birch, 2001. K. Davison, L. Birch. **Childhood overweight: A contextual model and recommendations for future research.** Obesity Reviews, 2 (2001), pp. 159-171
- Decaluwe et al., 2006. V. Decaluwe, C. Braet, E. Moens, L. Van Vlierberghe. **The association of parental characteristics and psychological problems in obese youngsters.** International Journal of Obesity, 30 (2006), pp. 1766-1774
- Dietz and Robinson, 2005. W. Dietz, T. Robinson. **Overweight children and adolescents.** The New England Journal of Medicine, 352 (2005), pp. 2100-2109

- Doolen et al., 2009. J. Doolen, P. Alpert, S. Miller. **Parental disconnect between perceived and actual weight status of children: A metasynthesis of the current literature.** Journal of the American Academy of Nurse Practitioners, 21 (2009), pp. 160-166
- Dornbusch et al., 1987. S. Dornbusch, P. Ritter, P. Leiderman, D. Roberts, M. Fraleigh. **The relation of parenting style to adolescent school performance.** Child Development, 58 (1987), p. 1244
- Eckstein et al., 2006. K. Eckstein, L. Mikhail, A. Ariza, S. Thomson, S. Millard, H. Binns. **Parents' perceptions of their child's weight and health.** Pediatrics, 117 (2006), pp. 681-690
- Fisher and Birch, 1999. J. Fisher, L. Birch. **Restricting access to palatable foods affects children's behavioral response, food selection and intake.** American Journal of Clinical Nutrition, 69 (1999), pp. 1264-1272
- Golan and Crow, 2004. M. Golan, S. Crow. **Nutrition grand rounds. Parents are key players in the prevention and treatment of weight-related problems.** Nutrition Reviews, 62 (2004), pp. 39-50
- Golan et al., 2006. M. Golan, V. Kaufman, D. Shahar. **Childhood obesity treatment: Targeting parents exclusively v. parents and children.** British Journal of Nutrition, 95 (2006), pp. 1008-1015
- Golan and Weizman, 2001. M. Golan, A. Weizman. **Familial approach to the treatment of childhood obesity: Conceptual model.** Society For Nutrition Education, 33 (2001), pp. 102-107
- Golan et al., 1998. M. Golan, A. Weizman, A. Apter, M. Fainaru. **Parents as the exclusive agents of change in the treatment of childhood obesity.** American Journal of Clinical Nutrition, 67 (1998), pp. 1130-1135
- Haines et al., 2008 .J. Haines, D. Neumark-Sztainer, P. Hannan, R. Robinson-O'Brien. **Child versus parent report of parental influences on children's weight-related attitudes and behaviors.** Journal of Pediatric Psychology, 33 (2008), pp. 783-788
- Huang et al., 2007. J. Huang, K. Becerra, T. Oda, E. Walker, R. Xu, M. Donohue, *et al.* **Parental ability to discriminate the weight status of children: Results of a survey.** Pediatrics, 120 (2007), pp. e112-e119
- Huitt, 2003. Huitt W. (2003). A systems model of human behavior. Educational Psychology Interactive. Retrieved April 2, 2009, from <http://chiron.valdosta.edu/whuitt/materials/sysmdlo.html>.
- Hughes et al., 2005. S. Hughes, T. Power, J. Orlet Fisher, S. Mueller, T. Nicklas. **Revisiting a neglected construct: Parenting styles in a child-feeding context.** Appetite, 44 (2005), pp. 83-92
- Kaur et al., 2006. H. Kaur, C. Li, N. Nazir, W. Choi, K. Resnicow, L. Birch, *et al.* **Confirmatory factor analysis of the child-feeding questionnaire among parents of adolescents.** Appetite, 47 (2006), pp. 36-45
- Keery et al., 2006. H. Keery, M. Eisenberg, K. Boutelle, D. Neumark-Sztainer, M. Story. **Relationships between maternal and adolescent weight-related behaviors and concerns: The role of perception.** Journal of Psychosomatic Research, 61 (2006), pp. 105-111
- Kitzmann and Beech, 2006. K. Kitzmann, B. Beech. **Family-based interventions for pediatric obesity: Methodological and conceptual challenges from family psychology.** Journal of Family Psychology, 20 (2006), pp. 175-189
- Luther, 2007. B. Luther. **Looking at childhood obesity through the lens of Baumrind's parenting typologies.** Orthopaedic Nursing, 26 (2007), pp. 270-278
- Maynard et al., 2003. L. Maynard, D. Galuska, H. Blanck, M. Serdula. **Maternal perceptions of weight status of children.** Pediatrics, 111 (2003), pp. 1226-1231
- Moens et al., 2007. E. Moens, C. Braet, B. Soetens. **Observation of family functioning at mealtime: A comparison between families of children with and without overweight.** Journal of Pediatric Psychology, 32 (2007), pp. 52-63

- O'Brien et al., 2007. M. O'Brien, P. Nader, R. Houts, R. Bradley, S. Friedman, J. Belsky, *et al.* **The ecology of childhood overweight: A 12-year longitudinal analysis.** *International Journal of Obesity*, 31 (2007), pp. 1469-1478
- Ogden et al., 2010. C. Ogden, M. Carroll, L. Curtin, M. Lamb, K. Flegal **Prevalence of high body mass index in US children and adolescents, 2007–2008.** *JAMA*, 303 (2010), pp. 242-249
- Paulson and Sputa, 1996. S. Paulson, C. Sputa. **Patterns of parenting during adolescence: Perceptions of adolescents and parents.** *Adolescence*, 31 (1996), pp. 369-381
- Polfuss and Frenn, 2011. M. Polfuss, M. Frenn. **Parenting and feeding behaviors associated with school-aged African American and Caucasian children.** *Western Journal of Nursing Research* (2011) [Epub ahead of print]
- Radziszewska et al., 1996. B. Radziszewska, J. Richardson, C. Dent, B. Flay. **Parenting style and adolescent depressive symptoms, smoking, and academic achievement: Ethnic, gender, and SES differences.** *Journal of Behavioral Medicine*, 19 (1996), pp. 289-305
- Rhee et al., 2006. K. Rhee, J. Lumeng, D. Appugliese, N. Kaciroti, R. Bradley. **Parenting styles and overweight status in first grade.** *Pediatrics*, 117 (2006), pp. 2047-2054
- Savage et al., 2007. J. Savage, J. Fisher, L. Birch. **Parental influence on eating behavior: Conception to adolescence.** *Journal of Law, Medicine, & Ethics*, Spring (2007), pp. 22-34
- Schaefer, 1965. E. Schaefer. **Children's report on parental behavior: An inventory.** *Child Development*, 36 (1965), pp. 413-424
- Schludermann and Schludermann, 1970. E. Schludermann, S. Schludermann. **Replicability of factors in children's report of parent behavior (CRPBI).** *Journal of Psychology*, 76 (1970), pp. 239-249
- Schwarz et al., 1985. J. Schwarz, M. Barton-Henry, T. Pruzinsky. **Assessing child-rearing behaviors: A comparison of ratings made by mother, father, child, and sibling on the CRPBI.** *Child Development*, 56 (1985), p. 462
- Singh et al., 2009. R. Singh, B. Martin, Y. Hickey, D. Teegarden, W. Campbell, B. Craig, *et al.* **Comparison of self-reported and measured metabolizable energy intake with total energy expenditure in overweight teens.** *American Journal of Clinical Nutrition*, 89 (2009), pp. 1744-1750
- Stein et al., 2005. R. Stein, L. Epstein, H. Raynor, C. Kilanowski, R. Paluch. **The influence of parenting change on pediatric weight control.** *Obesity Research*, 13 (2005), pp. 1749-1755
- Steinberg et al., 1994. L. Steinberg, S. Lamborn, N. Darling, N. Mounts, S. Dornbusch. **Over time changes in adjustment and competence among adolescents from authoritative, indulgent, and neglectful families.** *Child Development*, 65 (1994), pp. 754-770
- Steinberg et al., 1992. L. Steinberg, S. Lamborn, S. Dornbusch, N. Darling. **Impact of parenting practices on adolescent achievement: Authoritative parenting, school involvement, and encouragement to succeed.** *Child Development*, 63 (1992), pp. 1266-1281
- Tak et al., 2006. N. Tak, S. Te Velde, J. De Vries, J. Brug. **Parent and child reports of fruit and vegetable intakes and related family environmental factors show low levels of agreement.** *Journal of Human Nutrition and Dietetics*, 19 (2006), pp. 275-285
- Towns and D'Auria, 2009. N. Towns, J. D'Auria. **Parental perceptions of their child's overweight: An integrative review of the literature.** *Journal of Pediatric Nursing*, 24 (2009), pp. 115-130
- Van Assema et al., 2007. P. Van Assema, K. Glanz, M. Martens, J. Brug. **Differences between parents' and adolescents' perceptions of family food rules and availability.** *Society For Nutrition Education*, 39 (2007), pp. 84-89
- Wake et al., 2007. M. Wake, J. Nicholson, P. Hardy, K. Smith. **Preschooler obesity and parenting styles of mothers and fathers: Australian national population study.** *Pediatrics*, 120 (2007), pp. e1520-e1527

- Wang and Beydoun, 2007. Y. Wang, M. Beydoun. **The obesity epidemic in the United States—Gender, age, socioeconomic, racial/ethnic and geographic characteristics: A systematic review and meta-regression analysis.** *Epidemiologic Reviews*, 29 (2007), pp. 6-28
- Young-Hyman et al., 2000. D. Young-Hyman, L. Herman, D. Scott, D. Schlundt. **Care giver perception of children's obesity-related health risk: A study of African American families.** *Obesity Research*, 8 (2000), pp. 241-248