Brief Report: Parenting Styles and Obesity in Mexican American Children: A Longitudinal Study

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Objective To assess longitudinally the relations between four parenting styles (authoritative, authoritarian, uninvolved, and indulgent) and child weight status in Mexican American families. **Methods** Sixty-nine low-income Mexican American mothers and their 4- to 8-year-old children participated in a 4-year longitudinal study. Mothers completed demographic and parenting measures. Children's body weight and height were assessed annually. Body mass index was calculated to determine weight status. **Results** At baseline, 65% of children were found to be normal weight, 14% were overweight, and 21% were obese. Analyses examined how parenting styles at baseline predicted child's weight status 3 years later, controlling for initial weight status. Children of indulgent mothers were more likely to become overweight 3 years later than children of authoritative or authoritarian mothers. **Conclusions** This study provides longitudinal evidence for the role of indulgent parenting in predicting overweight in Mexican American children. Possible mediating factors that may account for this relationship (e.g., dietary patterns, physical activity patterns, and children's self-regulation) are considered.

Key words child obesity; Mexican Americans; parenting.

Childhood obesity is a significant and growing health problem associated with multiple health disorders including metabolic syndrome, type 2 diabetes, sleep apnea, diseases of the bones and joints, as well as psychosocial dysfunction (Barlow, 2007). Childhood obesity rates are particularly high in low-income minority populations, including low-income Mexican Americans (Ogden et al., 2006). The increasing rates of childhood obesity appear to be the consequence of a range of factors involving families (e.g., sedentary lifestyles; high caloric meals and snacks; soft drink consumption; extensive TV and computer use; eating out; insufficient sleep), neighborhoods (e.g., limited safe places to play outdoors; pedestrian unfriendly neighborhoods), schools (e.g., high caloric school meals; reduced time in recess and physical education classes), the food industry (e.g., high caloric, prepackaged foods; larger individual portion sizes; high fruit and vegetable prices), and the larger culture (e.g., dieting and eating disorders resulting from attempts to achieve an unattainable ''thinness ideal'') (Gorin & Crane, 2008; Hawkins & Law, 2006).

Because parents have a significant impact on the food consumption, physical activity, and sedentary behavior of their young children, researchers have examined how general parenting styles may be associated with child obesity. Using the parenting styles first identified by Baumrind (1966), and elaborated on by Maccoby and Martin (1983), researchers have found that the authoritative parenting (high nurturance and high control) is associated with higher levels of fruit consumption (Kremers, Brug, de Vries, & Engels, 2003), physical activity (Schmitz et al., 2002), and the *lowest* risk for child obesity (Rhee, Lumeng, Appugliese, Kaciroti, & Bradley, 2006; Wake, Nicholson, Hardy, & Smith, 2007). These findings extend the results of numerous studies confirming the relation between authoritative parenting and positive child outcomes (see Maccoby & Martin, 1983; Mandara, 2003 for reviews). Studies differ, however, on the parenting styles associated

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with the *highest* obesity risk. Rhee and colleagues (2006) found that children of authoritarian parents (low nurturance and high control) were at the greatest risk. In contrast, Wake and colleagues (2007) found that children of indulgent (high nurturance and low control) and uninvolved (low nurturance and low control) parents showed the greatest risk. Because parents' attitudes toward child rearing are influenced by cultural norms and contextual factors, the effects of different parenting styles often vary across ethnic groups (Roche, Ensminger, & Cherlin, 2007; Steinberg, Dornbusch, & Brown, 1992). Few studies have examined parenting styles in Latino parents, particularly related to child weight (Ward, 2008). Most studies of general parenting practices in Latino parents have focused on individual parenting dimensions (not styles) and have usually characterized them as showing high levels of parental control (Cardona, Nicholson, & Fox, 2000; Chao & Kanatsu, 2008; Hill, Bush, & Roosa, 2003; MacPhee, Fritz, & Miller-Heyl, 1996; Varela et al., 2004). Such findings are interpreted to reflect the importance of respect for authority in Latino cultures (Knight, Virdin, & Roosa, 1994). Consistent with this interpretation, Mogro-Wilson (2008) found that for Latino parents, in contrast to other populations, high levels of parental control were associated with low levels of adolescent alcohol use.

The purpose of the current study was to examine in a low-income, Mexican American sample, the relations between parenting style and the development of child weight status 3 years later. Based upon previous research, we predicted that children with authoritative and authoritarian parents would be at the lowest risk for developing obesity, whereas children with indulgent or uninvolved parents would be at the highest risk. We considered that indulgent and uninvolved parenting styles would predict the development of child obesity in this population given the potentially beneficial effects of parental control in Mexican American families.

Method

Participants

The baseline sample consisted of 80 Mexican American mother–child dyads who participated in a 4-year study titled Al Bienestar del Niño funded by the National Institutes of Health to investigate the health behaviors in Mexican American children (Hays, Power, & Olvera, 2001). A description of the inclusion criteria, recruitment, and retention strategies is provided elsewhere (Olvera, Sharma, Suminski, Rodriguez, & Power, 2007). The institution's IRB approved the consent form, instruments, and research protocols.

Recruitment

United States Census data for a large metropolitan city in the southwest were examined to identify an inner-city neighborhood densely populated by Mexican Americans. Families were recruited from Catholic Churches and social service agencies, and through flyers distributed at neighborhood bus stops, laundry mats, and shops. Interested families were provided with more information about the study and contact information for the research team. Approximately 104 families expressed interest in the project, 96 actually enrolled in the study, and 80 completed the first measurement session.

Procedure

Because participating families were part of a longitudinal study, data on family background, anthropometric data, and parenting styles were collected during two annual measurement sessions along with other instruments for the four years of the study. At the first session of each year, after the mother had signed the consent form, a bilingual research assistant obtained (or updated) family demographic information. Mothers were interviewed in their preferred language (English or Spanish). Interviewers read each question aloud and used visual cues to represent response choices (e.g., a full dark circle to represent ''always''). During the second session of each year, a bilingual research assistant assessed mothers' and children's height and weight in a nearby laboratory at a university setting. At this time, mothers completed the parenting questionnaire among other measures. To ensure high participation rates, transportation, child care, and a $40 stipend were provided.

Measures

Family Demographics

Mothers responded to questions regarding sociodemographic characteristics of the family such as maternal age, place of birth, occupation, and income.

Anthropometry

Height and weight were assessed to the nearest 0.1 kg and 0.1 cm using a balance beam scale and a secured stadiometer. Each participant's height and weight was taken two times and averaged. The scale was calibrated regularly using standard weights. Indices of body mass index (BMI) were calculated using the quetelet index [weight (kg)/height^2 (m)]. Weight status was determined by children's BMI for age-and gender-specific charts from the CDC (http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm). Children with a BMI from >5th to <85th percentile for age- and gender-specific were classified as normal

weight, a BMI from the 85th to 94th percentile age- and gender-specific were classified as overweight, and a BMI greater than the 95th percentile age- and gender-specific were classified as obese. There were no underweight children in the sample.

Parenting Dimension Inventory (PDI; Slater & Power, 1987)

The PDI is a multidimensional instrument that consists of 57 items that assess parenting dimensions including nurturance, amount of control, consistency, organization, and type of control. Nurturance and amount of control were used here because they were designed to differentiate among Maccoby & Martin's four (1983) parenting styles. Coefficient alphas in the present sample were .72 for nurturance and .68 for amount of control.

Scores on the nurturance and amount of control subscales on PDI at the first year of the study were used to assign mothers to four parenting style groups—authoritative, authoritarian, indulgent, and uninvolved (Maccoby & Martin, 1983). A median split on each scale was conducted, and mothers who scored above the median on both nurturance and amount of control were classified as authoritative. The other parenting style groups were: authoritarian (low nurturance, high control), indulgent (high nurturance, low control), and uninvolved (low nurturance, low control). Sample median splits were used to classify mothers because national norms are not available for these subscales. Although other questionnaires have been developed to assess Maccoby and Martin's (1983) parenting styles, none assigns parents into the four parenting styles using the responsiveness and demandingness dimensions as proposed by Baumrind (1989). Hood, Power, and Hill (2009) demonstrated that parenting styles derived from the PDI in this way significantly predicted children's appraisal of moderately stressful events.

The PDI has been validated with African-American, Asian-American, European-American, and Mexican American parents, and in several pediatric populations (Power, 2002). It predicts a range of outcomes including children's observed effortful control and rule following (Karreman, van Tuijl, van Aken, & Dekovic, 2008), teacher ratings of social competence and behavior problems (Kerr, Lopez, Olson, & Sameroff, 2004), and staff and parent ratings of children's medical treatment adherence (Davis et al., 2001). Although studies of measurement equivalence have not been conducted in Latino samples, it has been shown to predict child outcomes in various Spanish-speaking samples (Olvera, Poston, & Rodriguez, 2006; De Von Figueroa-Moseley, Ramey, Keltner, & Lanzi, 2006). Kochanska & Murray (2000) demonstrate one year stability of the nurturance scale (combined with four items assessing responsiveness to child input) of $r = 0.54$.

Results

Demographic Characteristics of Sample

Eleven pairs out of original 80 mother–child pairs were lost to follow-up reducing the final sample for all analyses to 69 mother–child pairs (33 boys, 36 girls). No significant demographic differences were found between families who remained in the study and those who withdrew ($P < .05$). Demographic characteristics are presented in Table I.

Table I. Mother and child baseline characteristics

Mother characteristics	
Age (years)	
Mean	31
SD	5.4
Range	24–50
Place of birth	
USA	10%
Mexico	90%
Interview preferred language	
Spanish	92%
English	8%
Education	
Less than 8th grade	63%
Some high school	20%
High school graduate	9%
Some college	5%
Vocational/technical	3%
Occupation	
Technician	1%
Labor/service operators	10%
Retail	6%
Homemakers	83%
Median annual family income	$10,000–19,999
Child characteristics	
Age (years)	
Boys ($n = 41$)	
Mean	6.7
SD	1.3
Range	4–8
Girls ($n = 39$)	
Mean	6.9
SD	1.4
Range	4–8
Weight status (%)	
Normal	65
Overweight	14
Obese	21

Most of the mothers were born in Mexico, had low levels of educational attainment, and preferred speaking Spanish during the interview. In contrast, most of the children preferred speaking English during the interview.

Weight Status among Mexican American Children

At baseline, children's mean BMI was 16.9 ($SD = 3.4$). A steady increase in BMI was observed from baseline to Year 2 ($M = 17.6$, $SD = 4.0$) and from year 2 to year 3 ($M = 19.2$; $SD = 4.6$) and leveling off in year 4 ($M = 19.5$; $SD = 4.8$). This was reflected in a high prevalence of overweight or obesity among children. At year 1, 65% (52) of children were classified as normal weight, 14% (11) were overweight, and 21% (17) were obese (Table I). These findings are consistent with those reported in the National Health and Nutrition Examination Survey which found that 34% of the Mexican American children ages 2–11 were overweight/obese (Ogden et al., 2006). For the subsequent 3 years of the study, 82% of the children stayed in the same weight category, one child moved into a lighter category, and 16% moved into a heavier category.

Parenting Styles: Authoritative, Authoritarian, Indulgent, and Uninvolved

As shown in Table II, at baseline, most of the Mexican American mothers were characterized as uninvolved (37%) and indulgent (28%) in their parenting styles. The authoritative (19%) and authoritarian (16%) styles were much less common.

Relationship between Parenting Styles and Child Weight Status

The degree to which Year 1 parenting style predicted changes in weight status 3 years later was examined with an analysis of covariance on the weight status scores. Normal weight children were assigned a score of 0, overweight children a score of 1, and obese children a score of 2. A 4 × 2 ANCOVA (parenting style × gender) was run on the time four weight status scores—the covariate was the weight status score at baseline. That is, both the dependent variable and the covariates for this analysis were child weight status scores (described above). This yielded a significant main effect of parenting style, $F(3, 59) = 3.58$, $P < .05$. As shown in Table II, the increases in overweight/obesity from years 1 to 4 were greater for children of indulgent mothers than for children of authoritative and authoritarian mothers. However, children of indulgent mothers did not differ from children of uninvolved mothers.

Discussion

This study assessed the relations between parenting styles and children's weight status in a 4-year study of low-income, Mexican American families. The results showed that indulgent mothers were significantly more likely than authoritative, or authoritarian, mothers to have children who became overweight 3 years later. Although consistent with the hypothesis that low control parenting styles would be associated with higher obesity risk, the finding that children of authoritarian mothers showed low risk is contrary to the results of Rhee et al. (2006) who found that authoritarian parenting style was the best predictor of weight gain in their predominantly middle class, European-American sample.

The present findings, however, are consistent with cross-sectional studies of parental *feeding styles* and child overweight in low-income, Latino families. For example, Matheson, Robinson, Varady, and Killen (2006) found that for Mexican American mothers, high parental control in feeding was inversely correlated with child BMI, and in two separate studies, Hughes and colleagues (Hughes, Power, Fisher, Mueller, & Nicklas, 2005; Hughes,

Table II. Baseline parenting styles as predictors of changes in child weight status 3 years later

	Authoritative	Authoritarian	Uninvolved	Indulgent
Mothers	19%	16%	37%	28%
Mean	0.51	0.42	0.59	0.87
SE	0.11	0.12	0.08	0.09
Follow-up ANCOVA *F*-values	Indulgent versus Authoritative $F(1, 27) = 4.32$*	Indulgent versus Authoritarian $F(1, 25) = 6.87$*	Indulgent versus Uninvolved $F(1, 39) = 3.66$ (ns)	
	Uninvolved versus Authoritative $F(1, 33) = 0.46$ (ns)	Uninvolved versus Authoritarian $F(1, 31) = 2.10$ (ns)		
		Authoritative versus Authoritarian $F(1, 19) = 0.61$ (ns)		

Note. Estimated marginal means in the model were evaluated at a year one weight status score of 0.43. Weight Status Scores (normal = 0, overweight = 1, obese = 2).
*$p < .05$.

Shewchuk, Baskin, & Nicklas, 2008) found that children of mothers with indulgent feeding styles had the highest BMIs.

In low-income, Mexican American populations, children of indulgent mothers may be at highest risk for the development of obesity for a number of reasons. First, indulgent mothers may show low levels of control in the feeding context as well, thereby allowing children too many choices in today's obesogenic food environment. Second, an indulgent approach to parenting may not provide children with the guidance they need for the development of self-regulation in both the eating and non-eating domains (Lengua, Honorado, & Bush, 2007). Other possible mechanisms are that indulgent mothers may cater more to their children's unhealthy food preferences and possibly serve them less healthy food, or that indulgent mothers provide less encouragement for physical activity and/or allow their children to engage in more sedentary behaviors (e.g., screen time). Contrary to previous research (Cardona, Nicholson, & Fox, 2000; Chao & Kanatsu, 2008; Hill, Bush, & Roosa, 2003; MacPhee, Fritz, & Miller-Heyl, 1996; Varela et al., 2004), most of the Mexican American mothers in this sample were characterized as having an indulgent or uninvolved parenting style. This may have been an artifact of using within-sample medians to assign mothers to parenting styles. If population medians for parents of all ethnicities in the USA had been available, a different distribution of parenting styles may have emerged. The small percentage of authoritative and authoritarian parents might have worked against finding significant differences between these two groups. The amount of control alpha may be a function of the small number of items (5) and the dichotomous response format (for these items, mothers chose between two socially desirable statements—a low control and a high control statement).

Future research should replicate these findings in larger, more diverse samples, and should examine the specific mechanisms that account for the relations between indulgent parenting and child obesity in Mexican American populations. Such research should be longitudinal and include measures of parenting style, family dietary and physical activity patterns, and children's self-regulation and control. Given the increased obesity rates among children in low-income, minority populations, it is important that we better understand the specific ways that parenting practices may contribute to obesity in these populations. Such knowledge would inform the development of effective, family-based prevention and intervention programs for improving children's health.

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