

# Mirror, Mirror on the Wall: Children's Preferences and Self-Perceptions of Weight in a Rural Hispanic Community

Carolyn Montoya, PhD, PNP-BC, Blake Boursaw, MS, Beth Tigges, PhD, PNP-BC, & Marie L. Lobo, PhD, RN

## ABSTRACT

**Introduction:** Although studies have documented parents' misperceptions regarding their children's weight, studies examining preadolescent children's self-perceptions of weight—in particular, Hispanic children's self-perceptions of weight—are limited.

**Method:** A convenience sample of 424 children from a rural community, aged 8 to 11 years and in grades 3 through 5,

participated in this cross-sectional, descriptive, nonexperimental study. Using the Children's Body Image Scale, the children were asked to select a figure representing their actual body perception and a figure representing their ideal body perception. The children were weighed and measured, body mass index (BMI) was calculated, and each child was assigned to one of the Centers for Disease Control and Prevention weight categories: underweight, normal or healthy weight, overweight, or obese.

**Results:** Only BMI category was found to be significantly associated with accurate perception,  $\chi^2(3) = 201.4$ ,  $p < .001$ , with only 9% of overweight or obese children selecting figures representing their actual BMI category. Actual BMI category,  $\chi^2(3) = 8.8$ ,  $p = .032$ , and grade level,  $\chi^2(2) = 6.7$ ,  $p = .036$ , had a significant association with selection of an underweight ideal. Overall, 32% of children selected an underweight figure as ideal.

**Discussion:** Prepubertal children who are either overweight or obese do not accurately perceive their weight status. Rather than focusing solely on weight reduction programs, emphasis should be placed on promoting healthy lifestyles and choices. *J Pediatr Health Care.* (2016) ■, ■-■.

Carolyn Montoya, Interim Associate Dean of Academic Affairs and Associate Professor, College of Nursing, University of New Mexico, Albuquerque, NM.

Blake Boursaw, Instructor, College of Nursing, University of New Mexico, Albuquerque, NM.

Beth Tigges, Associate Professor, College of Nursing, University of New Mexico, Albuquerque, NM.

Marie L. Lobo, Professor, College of Nursing, University of New Mexico, Albuquerque, NM.

This study was supported by the Robert Wood Johnson Foundation Nursing and Health Policy Collaborative at the University of New Mexico; Nurse Practitioner Healthcare Foundation/Astellas Promoting Heart Health Across the Age Span Award Program; and College of Nursing, University of New Mexico—Dean's Scholar Program.

Conflicts of interest: None to report.

Correspondence: Carolyn Montoya, PhD, PNP-BC, College of Nursing, University of New Mexico, CO9 5350, 1 University of New Mexico, Albuquerque, NM 87131-0001; e-mail: [cjmontoya@salud.unm.edu](mailto:cjmontoya@salud.unm.edu).

0891-5245/\$36.00

Published by Elsevier Inc. on behalf of the National Association of Pediatric Nurse Practitioners.

<http://dx.doi.org/10.1016/j.pedhc.2015.11.010>

## KEY WORDS

Child, self-concept, rural health, obesity, overweight, Hispanic Americans

Although the latest prevalence data on obesity trends among children and adolescents in the United States indicate that obesity rates may have reached a plateau, childhood obesity remains a significant problem, with a prevalence rate of 17% (Ogden, Carroll, Kit, & Flegal, 2014; Skinner & Skelton, 2014). Hispanic children are disproportionately affected, with a prevalence rate of 22% (Ogden et al., 2014). Several studies also indicate that children living in rural areas are at greater risk for

obesity than are their nonrural counterparts (Conway, Haller, & Lutfiyya, 2012; Davis, Bennett, Befort, & Nollen, 2011; Joens-Matre et al., 2008; Johnson & Johnson, 2015; Liu, Bennett, Harun, & Probst, 2008; Wickrama, Elder, & Abraham, 2007). Although several studies have documented Hispanic parents' misperceptions regarding their children's weight status (Bayles, 2010; Crawford et al., 2004; De La et al., 2009; Duncan, Hanse, Wang, Yan, & Zhang, 2015; Figueroa, Ip, Gesell, & Barkin, 2008; Glassman, Figueroa, & Irigoyen, 2011; Killion, Hughes, Wendt, Pease, & Nicklas, 2006; Reifsnider et al., 2006; Ward, 2008), studies examining preadolescent Hispanic children's self-perception of weight are limited.

Figueroa and colleagues (2008) used a figural scale to assess body image perception in Hispanic children between the ages of 8 and 11 years (123 parent/child dyads) and found that the children did not accurately identify their own body size. Fisher, Lange, Young-Cureton, and Canham (2005) used Collins' (1991) pictorial instrument scale to examine the relationship between perceived and actual body size and body mass index (BMI) in 43 Hispanic third graders. The authors found a positive correlation between the children's perceived and actual self-image and their BMI. Although 30% of the children in this study were classified as overweight, the majority (75%) perceived themselves as having a healthy body weight.

Snethen and Broome (2007) and Snethen, Hewitt, and Petering (2007) used a phenomenological approach and focus groups, respectively, to identify themes among children regarding their weight perceptions. Although both studies were small ( $N = 17$  and  $N = 12$ , respectively), they did include Hispanic children. The children included in the phenomenological study all had a BMI  $\geq 95\%$  (parent-reported heights and weights), yet 30% identified themselves as being of normal weight, and 12% identified themselves as being underweight (Snethen & Broome, 2007). Children who participated in the focus group study were not targeted based on their weight status, and heights and weights were not obtained (Snethen et al., 2007). These children perceived overweight children as not being active.

Taken together, the literature in this review was mixed in both its results and its ability to advance understanding of children's self-perception. Figueroa and colleagues (2008) found that children did not accurately identify their own body size, whereas the results obtained by Fisher and colleagues (2005) indicated that the majority of children perceived themselves as having a healthy body weight. The studies by Snethen and Broome (2007) and Snethen and colleagues (2007) provided limited insight into children's perceptions regarding weight. Accurate weight perception by children should be considered an essential part of developing prevention and intervention strategies for

overweight and obese children. Given that Hispanic children have a greater prevalence of obesity (Ogden et al., 2014), it is particularly important to understand their perceptions related to weight. However, it is difficult to make recommendations related to weight perception, particularly in Hispanic children, given the paucity of studies and the fact that existing studies of school-age Hispanic children had small sample sizes. This study was designed to describe school-aged children's self-perceptions regarding weight in a predominantly Hispanic, rural community. The specific aims were to determine whether there are differences in the accuracy of children's selection of BMI category versus their actual BMI and their perceptions of ideal BMI category, based on age, gender, grade, actual BMI category, and ethnicity.

## METHODS

### Sample

This cross-sectional, descriptive, nonexperimental study was approved by the appropriate institutional review board. It was conducted in a nonmetropolitan rural community in central New Mexico. New Mexico has a population of about 2 million people, with 46% identifying themselves as Hispanic and 40% identifying themselves as non-Hispanic White (U.S. Census Bureau, 2015). The majority of the population in the county where the study was conducted identified themselves as Hispanic (58%). A convenience sample of children between the ages of 8 and 11 years from seven elementary schools were included in the study. In this district, 75% of students aged 8 to 11 years are Hispanic.

The children needed to be able to speak, read, and understand English (self-identified), and parents had to be able to read and understand either English or Spanish. Children with the following conditions or treatments were excluded from the study: a medical condition affecting weight or the ability to eat independently; treatment with long-term steroids, chemotherapy, or immune suppressants; and treatment for obesity. At the time of this study, 1,014 children were enrolled in grades 3 through 5 in this district. A total of 436 children participated in the study; however, 5 participants were eliminated because they did not meet the age criteria, and 7 were noted to have missing data and were therefore eliminated, resulting in a final sample of 424. The response rate from the available population was 42%. All participants received a \$10 gift card to a national retail chain located in the community. Parents received a results letter containing an explanation of their child's measurements and the primary investigator's contact information in case they had any questions.

### Measures

A study packet was distributed in each of the appropriate grade levels in the seven schools, with

information regarding the study, a parent consent form, a child assent form, and a parent information form to be returned to the teacher. All forms were provided in both English and Spanish. Parents were instructed to mark a check box from the following seven categories to indicate the ethnicity of their child: American Indian or Alaska Native, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or other Pacific Islander, White, or other. The form did not include an option for indicating a primary ethnicity versus a secondary ethnicity, nor was there a multiracial category; however, 24 parents indicated a secondary ethnicity for their child.

The child's gender and date of birth were also collected on the parent information form. Age was calculated using years and months. Height in feet and inches and weight in pounds were obtained at each school using the same portable stadiometer (model 217; Seca, Birmingham, United Kingdom) and portable digital scale (model 869; Seca). The Children's BMI Tool for Schools was used to calculate BMI and specific BMI percentiles for age and gender (Centers for Disease Control and Prevention [CDC], 2015b). Children were assigned one of the following four weight categories based on the CDC BMI percentile designations: underweight (<5th percentile); healthy weight (5th percentile to <85th percentile); overweight (85th percentile to <95th percentile); and obese ( $\geq$ 95th percentile; CDC, 2015a).

The Children's Body Image Scale (CBIS), developed by Truby and Paxton (2002), was used for this study. The tool consists of seven figures for boys and seven figures for girls, with each figure representing a gender-specific BMI range for children between the ages of 7 and 12 years. Construct validity of the CBIS tool was established by studying the strength of correlations between perceived/ideal discrepancy and four items: two questions related to body size satisfaction and two scales related to body esteem and dieting behavior (Truby & Paxton, 2002). Reliability was established in a second study, with significant correlations ( $p < .001$ ) between test-retest intervals (3-week period) and Pearson's  $r$  values ranging from 0.67 to 0.87 (Truby & Paxton, 2008). Truby and Paxton (2008) also compared the CBIS with the CDC 2000 growth charts, the UK90 BMI charts, and the International Obesity Taskforce BMI cut-offs.

Based on a synthesis of these values and the gender-specific BMI ranges established by Truby and Paxton (2008), one of the four CDC weight categories was assigned to each figure. For the girls, figure 1 was considered underweight, figures 2 to 5 were healthy weight, figure 6 was overweight, and figure 7 was obese. For the boys, figure 1 was underweight, figures 2 to 4 were healthy weight, figure 5 was overweight, and figures 6 and 7 were obese. The children were shown the gender-specific figures in sequential order. They were

asked to select a figure that "looks most like you" (actual perception) on one page and then to select a figure that "looks like what you would like to look like" (ideal perception) on a second page.

To keep the data collection form brief and feasible, and because of the sensitivity of these issues in the participating community, measures of acculturation, language use, and nativity were not collected. Parents who signed the Spanish consent form and opted to receive results were provided with the results letter in Spanish. Thirteen percent ( $N = 55$ ) of the parents received the results letter in Spanish.

### Statistical Analysis

All statistical analyses were conducted using SPSS 20.0 for Windows (IBM Corp., Armonk, NY). Statistical significance was set at  $p < .05$  for all statistical tests. Bivariate analyses included  $\chi^2$  tests of independence to explore associations between categorical variables. Effect size measures included Cramér's  $V$  for  $\chi^2$  tests, interpreted with the standard cut-offs for small, medium, and large of 0.1, 0.3, and 0.5, respectively (Cohen, 1988). Because of the heterogeneity of small sample racial/ethnic subgroups in this study, analyses by ethnicity only focused on the contrast between Hispanics and (non-Hispanic) Whites and did not consider an "other" category.

### RESULTS

Sample demographics are reported in Table 1. The average age of the children was 9.3 years, and the average weight was 86 lb ( $SD = 27$ ) for girls and 82 lb ( $SD = 25$ ) for boys. The average height for both boys and girls was 54 inches ( $SD = 3.0$ ). Results for actual

**TABLE 1. Sample characteristics**

Characteristic	Sample <i>n</i> (%)
Total	424
Gender	
Male	206 (48.6)
Female	218 (51.4)
Grade	
3rd	120 (28.3)
4th	152 (35.8)
5th	152 (35.8)
Age, year	
8	98 (23.1)
9	141 (33.3)
10	141 (33.3)
11	44 (10.4)
Ethnicity	
Non-Hispanic White	80 (18.9)
Hispanic	299 (70.5)
Black or African American	5 (1.2)
American Indian or Alaskan Native	10 (2.4)
Other	9 (2.1)
Multiracial	24 (5.7)

BMI, CBIS perceived categories, and ideal BMI categories for the overall sample according to gender and ethnicity are presented in Table 2. More than half of the participants (55%,  $N = 235$ ) had an actual BMI percentile in the healthy weight category. The combined BMI categories of overweight and obesity constituted 42% of the sample ( $N = 177$ ), and 3% ( $N = 12$ ) of the participants were in the underweight category.

Our first aim was to determine whether there were differences in the accuracy of children's selection of BMI category using figures from the CBIS scale versus the children's actual BMI based on age, gender, actual BMI category, grade level (third, fourth, or fifth), and ethnicity. Children were classified as "accurate perceivers" if their selected CBIS scale figure reflected the same BMI category as their actual measured BMI.

Table 3 displays the results of the  $\chi^2$  tests conducted to determine the association between the independent variables of gender, age, ethnicity, grade, and BMI category and accuracy of self-perception of weight status. Actual BMI was the only independent variable that was significantly associated with accurate perception,  $\chi^2(3) = 201.4$ ,  $p < .001$ , and the effect size was large ( $V = 0.69$ ). All nonsignificant associations had small ef-

fect sizes. In both the overweight and obese categories, only 9% of the children were accurate perceivers. In contrast, 79% ( $N = 186$ ) of the children in the healthy weight category and 25% in the underweight category were accurate perceivers (Table 3).

The second aim was to determine the association of gender, age, grade level, ethnicity, and actual BMI category with perceptions of ideal BMI category using the CBIS. Because only six children selected the overweight or obese CBIS figures as ideal, the four possible ideal BMI categories were collapsed into two categories for this analysis. One category consisted of the participants who selected underweight as their ideal and the other consisted of the participants who selected either healthy weight, overweight, or obese as their ideal category.

Table 3 also displays a series of  $\chi^2$  tests conducted to determine whether there was any association between gender, age, ethnicity, BMI category, and grade level and the selection of the underweight figure as ideal. Actual BMI category,  $\chi^2(3) = 8.8$ ,  $p = .03$ ,  $V = 0.14$ , and grade level,  $\chi^2(2) = 6.7$ ,  $p = .04$ ,  $V = 0.13$ , both had a significant association with selection of an underweight ideal, albeit with a small effect size. Thirty-nine percent of fourth graders and 37% of healthy-weight children selected an underweight ideal figure. However, age, gender, and ethnicity were not significant predictors of the selection of the underweight figure as ideal.

**TABLE 2. Actual, perceived, and ideal body mass index categories by gender and ethnicity**

Weight category	Actual BMI category <i>n</i> (%)	CBIS perceived BMI category <i>n</i> (%)	CBIS ideal BMI category <i>n</i> (%)
Overall			
Underweight	12 (2.8)	53 (12.5)	136 (32.1)
Healthy weight	235 (55.4)	325 (76.7)	282 (66.5)
Overweight	80 (18.9)	35 (8.3)	5 (1.2)
Obese	97 (22.9)	11 (2.6)	1 (0.2)
Male gender			
Underweight	8 (3.9)	31 (15)	59 (28.6)
Healthy weight	112 (54.4)	155 (75.2)	143 (69.4)
Overweight	40 (19.4)	15 (7.3)	4 (1.9)
Obese	46 (22.3)	5 (2.4)	0 (0)
Female gender			
Underweight	4 (1.8)	22 (10.1)	77 (35.3)
Healthy weight	123 (56.4)	170 (78)	139 (63.8)
Overweight	40 (18.3)	20 (9.2)	1 (0.5)
Obese	51 (23.4)	6 (2.8)	1 (0.5)
Hispanic			
Underweight	6 (2.0)	31 (10.4)	92 (30.8)
Healthy weight	171 (57.2)	237 (79.3)	204 (68.2)
Overweight	55 (18.4)	24 (8.0)	3 (1.0)
Obese	67 (22.4)	7 (2.3)	0 (0)
White			
Underweight	5 (6.2)	13 (16.2)	28 (35.0)
Healthy weight	41 (51.2)	57 (71.2)	49 (61.2)
Overweight	14 (17.5)	7 (8.8)	2 (2.5)
Obese	20 (25.0)	3 (3.8)	1 (1.2)

Note. BMI, body mass index; CBIS, Children's Body Image Scale.

## DISCUSSION

In this study, age, gender, and ethnicity were not associated with children's perceptions of their current body weight. These findings differ from other studies in which age, gender, or ethnicity was shown to have a significant effect on children's perceptions of their body weight (Adams et al., 2000; Collins, 1991; Figueroa et al., 2008; Snethen & Broome, 2007; Snethen et al., 2007; Thompson, Corwin, & Sargent, 1997). Hispanic children did not participate in three of the studies (Adams et al., 2000; Collins, 1991; Thompson et al., 1997), and the study by Figueroa and colleagues (2008) did not include the number of Hispanic children who participated in the study. Two studies had samples of fewer than 20 participants (Snethen & Broome, 2007; Snethen et al., 2007).

In this study, very few overweight and obese children perceived their weight accurately. Studies involving the accuracy of prepubertal children's weight perceptions have had mixed results. Some studies indicate that children in this age group are fairly accurate in terms of their body weight perceptions (Collins, 1991; Skemp-Arlt &

In this study, very few overweight and obese children perceived their weight accurately.

**TABLE 3. Proportion of accurate perceivers and underweight preference by characteristic**

Characteristic	Accurate perceivers n (%)	Effect size and significance V ( $\rho$ value) $\chi^2(df)$	Underweight preference n (%)	Effect size and significance V ( $\rho$ value) $\chi^2(df)$
Gender		0.08 (0.10) $\chi^2(1) = 2.8$		0.07 (0.14) $\chi^2(1) = 2.2$
Male	91 (44.2)		59 (28.6)	
Female	114 (52.3)		77 (35.3)	
Age, year		0.07 (0.54) $\chi^2(3) = 2.2$		0.08 (0.42) $\chi^2(3) = 2.8$
8	41 (41.8)		33 (33.7)	
9	71 (50.4)		51 (36.2)	
10	71 (50.4)		41 (29.1)	
11	22 (50.0)		11 (25.0)	
Ethnicity		0.10 (0.15) $\chi^2(2) = 3.8$		0.04 (0.67) $\chi^2(2) = 0.8$
Hispanic	152 (50.8)		92 (30.8)	
White	37 (46.3)		28 (35.0)	
Grade		0.11 (0.08) $\chi^2(2) = 5.0$		0.13 (0.04) $\chi^2(2) = 6.7$
3	48 (40.0)		39 (32.5)	
4	81 (53.3)		59 (38.8)	
5	76 (50.0)		38 (25.0)	
Actual BMI		0.69 (<.001) $\chi^2(3) = 201.4$		0.14 (0.03) $\chi^2(3) = 8.8$
Underweight	3 (25.0)		2 (16.7)	
Healthy weight	186 (79.1)		87 (37.0)	
Overweight	7 (8.8)		26 (32.5)	
Obese	9 (9.3)		21 (21.6)	

Note. BMI, body mass index; df, degrees of freedom; V, Cramér's V.

Mikat, 2007; Williamson & Delin, 2001); however, these studies did not use the tool employed in the current study (CBIS). Gray, Crawford, Follansbee-Junger, Dumont-Driscoll, and Janicke (2012) used the CBIS and also reported large portions of overweight and obese children misperceiving their weight status, despite the fact that the average age of their sample was older (11.6 years). International studies (Pauline, Selvam, Swaminathan, & Vaz, 2012) found that socioeconomic status in India was associated with body weight perception and that overweight children had four times the odds of perceiving themselves as thinner than their actual weights compared with children who were normal weight. Maximova and colleagues (2008) found that overweight and obese Canadian children and teens significantly misperceived their weight. In that study, overweight and obese children, regardless of age, gender, grade level, or ethnicity, were overwhelmingly more likely to misperceive their actual weight category than were children in the healthy weight category.

In this study a substantial percentage of the children selected an underweight figure as their ideal. These findings are consistent with those of other investigators (Collins, 1991; Gualdi-Russo et al., 2007; Saxton, Hill, Chadwick, & Wardie, 2009; Skemp-Art & Mikat, 2007; Thompson et al., 1997; Truby & Paxton, 2002; Williamson & Delin, 2001). Collins' (1991) study

showed a preference for thinness among female children across all age levels, races (Black and White), weight categories, and school/community settings. Thompson and colleagues (1997) noted that Black girls wanted to be thinner than their current size; however, body dissatisfaction was more prevalent with girls than with boys and with Whites than with Blacks. Skemp-Art and Mikat (2007) found that prepubertal children showed a desire to be thinner than their actual body type. Several international studies also showed that children, most often girls, had either a high degree of body dissatisfaction or a preference for thinness (Gualdi-Russo et al., 2007; Saxton et al., 2009; Truby & Paxton, 2002; Williamson & Delin, 2001).

Although the current study did not show that gender, age, or ethnicity had an effect on underweight preference, both actual BMI category and grade level were found to be significant predictors. However, both of these effect sizes were small. Although it might be expected that children in the overweight or obese categories would express a preference for weighing less, it is disturbing that children in the healthy and underweight categories also expressed this preference. Even though ethnicity was not found to be significant in terms of underweight preference, it is worrisome that approximately one third of children in each ethnic group expressed a preference to be underweight.

Several limitations to this study exist. Although this study is one of the only known studies of weight self-perception to include such a large sample of Hispanic children ( $N = 299$ ; 70% of the sample), no measures were included to assess acculturation, language use, and nativity of the Hispanic children in this community. This study only included the measure of figural drawings for self-perception and ideal weight perception, whereas the majority of studies discussed included more than one measure of self-perception for weight (e.g., survey questions and weight-related survey instruments). The CBIS figures, based on pictures of non-Hispanic White children, have been tested almost exclusively in White populations; however, no differences in the selection of either self or ideal figures were found among Hispanic, White, or other/multiracial children in this study. The figures in this study were presented exactly as developed by Truby and Paxton (2002; sequential order, with facial features). In their review of figural drawing scales, Gardner and Brown (2010) argued for using figures with a plain silhouette because figures containing facial features or clothing may distract the participants from focusing on the size and shape of the drawing.

## CONCLUSION

Hispanic children, 8 to 11 years of age, are no better or worse than are non-Hispanic White children in terms of accurately perceiving their weight status. Gender, age, and grade level do not significantly affect the ability of children in this age group to accurately perceive their weight status. Targeting children who are either overweight or obese to participate in specific weight programs may not be the most effective strategy, considering that these children do not view themselves as being overweight or obese (only 9% of the overweight and obese children were accurate perceivers). It is worrisome that approximately one third of the children in this study expressed a preference for being underweight; these findings suggest that instead of focusing solely on weight programs, healthy lifestyles and choices should be emphasized. Future research should determine whether these results can be replicated using more than one measure of self-perception in a larger population of Hispanic children; in addition,

**It is worrisome that approximately one third of the children in this study expressed a preference for being underweight; these findings suggest that instead of focusing solely on weight programs, healthy lifestyles and choices should be emphasized.**

the finding that so many children desire to be underweight needs further study. Additionally, a larger study of Hispanic children could also include measures of ethnic identity not considered in this study.

## REFERENCES

- Adams, K., Sargent, R. G., Thompson, S. H., Richter, D., Corwin, S. J., & Rogan, T. J. (2000). A study of body weight concerns and weight control practices of 4th and 7th grade adolescents. *Ethnicity & Health, 5*, 79-94.
- Bayles, B. (2010). Perceptions of childhood obesity on the Texas-Mexico border. *Public Health Nursing, 27*, 320-328.
- Centers for Disease Control and Prevention. (2015a). *About child and teen BMI*. Retrieved from [http://www.cdc.gov/healthyweight/assessing/bmi/childrens\\_bmi/about\\_childrens\\_bmi.html](http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html)
- Centers for Disease Control and Prevention. (2015b). *Children's BMI Tool for Schools*. Retrieved from [http://www.cdc.gov/healthyweight/assessing/bmi/childrens\\_bmi/tool\\_for\\_schools.html](http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/tool_for_schools.html)
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Collins, M. E. (1991). Body figure perceptions and preferences among preadolescent children. *International Journal of Eating Disorders, 10*, 199-208.
- Conway, P., Haller, I. V., & Lutfiyya, M. N. (2012). School-aged overweight and obese children in rural America. *Disease-a-Month, 58*, 639-650.
- Crawford, P. B., Gosliner, W., Anderson, C., Strode, P., Becerra-Jones, Y., Samuels, S., ... Ritchie, L. (2004). Counseling Latina mothers of preschool children about weight issues: Suggestions for a new framework. *Journal of the American Dietetic Association, 104*, 387-394.
- Davis, A. M., Bennett, K. J., Befort, C., & Nollen, N. (2011). Obesity and related health behaviors among urban and rural children in the United States: Data from the National Health and Nutrition Examination Survey 2003-2004 and 2005-2006. *Journal of Pediatric Psychology, 36*, 669-676.
- De La, O. A., Jordan, K. C., Ortiz, K., Moyer-Mileur, L. J., Stoddard, G., Friedrichs, M., ... Mihalopoulos, N. L. (2009). Do parents accurately perceive their child's weight status? *Journal of Pediatric Health Care, 23*, 216-221.
- Duncan, D. T., Hanse, A. R., Wang, W., Yan, F., & Zhang, J. (2015). Change in misperception of child's body weight among parents of American preschool children. *Childhood Obesity, 11*, 384-393.
- Figuroa, V., Ip, E. H., Gesell, S. B., & Barkin, S. L. (2008). Accuracy of self- and parental perception of overweight among Latino preadolescents. *North Carolina Medical Journal, 69*, 88-91.
- Fisher, A., Lange, M. A., Young-Cureton, V., & Canham, D. (2005). The relationship between perceived and ideal body size and body mass index in 3rd-grade low socioeconomic Hispanic children. *Journal of School Nursing, 21*, 224-228.
- Gardner, R. M., & Brown, D. L. (2010). Body image assessment: A review of figural drawing scales. *Personality and Individual Differences, 8*, 107-111.
- Glassman, M. E., Figuroa, M., & Irigoyen, M. (2011). Latino parents' perceptions of their ability to prevent obesity in their children. *Family & Community Health, 34*, 4-16.
- Gray, W. N., Crawford, M. J., Follansbee-Junger, K., Dumont-Driscoll, M. C., & Janicke, D. M. (2012). Associations between actual and perceived weight and psychosocial functioning in children: The importance of child perceptions. *Childhood Obesity, 8*, 147-154.
- Gualdi-Russo, E., Albertini, A., Argani, L., Celenza, F., Nicolucci, M., & Toselli, S. (2007). Weight status and body image perception in Italian children. *Journal of Human Nutrition and Dietetics, 21*, 39-45.

- Joens-Matre, R. R., Welk, G. J., Calabro, M. A., Russell, D. W., Nicklay, E., & Hensley, L. D. (2008). Rural-urban differences in physical activity, physical fitness, and overweight prevalence of children. *Journal of Rural Health, 24*, 49-54.
- Johnson, J. A., III, & Johnson, A. M. (2015). Urban-rural differences in childhood and adolescent obesity in the United States: A systematic review and meta-analysis. *Childhood Obesity, 36*, 233-241.
- Killion, L., Hughes, S. O., Wendt, J. C., Pease, D., & Nicklas, T. A. (2006). Minority mothers' perceptions of children's body size. *International Journal of Pediatric Obesity, 1*, 96-102.
- Liu, J., Bennett, K. J., Harun, N., & Probst, J. C. (2008). Urban-rural differences in overweight status and physical inactivity among US children aged 10-17 years. *Journal of Rural Health, 24*, 407-415.
- Maximova, K., McGrath, J. J., Barnett, T., O'Loughlin, J., Paradis, G., & Lambert, M. (2008). Do you see what I see? Weight status misperception and exposure to obesity among children and adolescents. *International Journal of Obesity, 32*, 1008-1015.
- Ogden, C. L., Carroll, M. D., Kit, B. K., & Flegal, K. M. (2014). Prevalence of childhood and adult obesity in the United States, 2011-2012. *JAMA, 311*, 806-814.
- Pauline, M., Selvam, S., Swaminathan, S., & Vaz, M. (2012). Body weight perception is associated with socio-economic status and current body weight in selected urban and rural South Indian school-going children. *Public Health Nutrition, 15*, 2348-2356.
- Reifsnider, E., Flores-Vela, A. R., Beckman-Mendez, D., Nguyen, H., Keller, C., & Dowdall-Smith, S. (2006). Perceptions of children's body sizes among mothers living on the Texas-Mexico Border (La Frontera). *Public Health Nursing, 23*, 488-495.
- Saxton, J., Hill, C., Chadwick, P., & Wardie, J. (2009). Weight status and perceived body size in children. *Archives of Disease in Childhood, 94*, 944-949.
- Skemp-Artl, K. M., & Mikat, R. P. (2007). Body image perceptions and eating patterns among preadolescent children. *Californian Journal of Health Promotion, 5*, 14-22.
- Skinner, A. C., & Skelton, J. A. (2014). Prevalence and trends in obesity and severe obesity among children in the United States, 1999-2012. *JAMA, 168*, 561-566.
- Snethen, J. A., & Broome, M. (2007). Weight, exercise, and health: Children's perceptions. *Clinical Nursing Research, 16*, 138-152.
- Snethen, J. A., Hewitt, J. B., & Petering, D. H. (2007). Addressing childhood overweight: Strategies learned from one Latino community. *Journal of Transcultural Nursing, 18*, 366-372.
- Thompson, S. H., Corwin, S. J., & Sargent, R. G. (1997). Ideal body size beliefs and weight concerns of fourth-grade children. *International Journal of Eating Disorders, 21*, 279-284.
- Truby, H., & Paxton, S. J. (2002). Development of the Children's Body Image Scale. *British Journal of Clinical Psychology, 41*(Pt. 2), 185-203.
- Truby, H., & Paxton, S. J. (2008). The Children's Body Image Scale: Reliability and use with international standards for body mass index. *British Journal of Clinical Psychology, 47*, 119-124.
- U.S. Census Bureau. (2015). *State and county quickfacts, New Mexico, 2011*. Retrieved from <http://quickfacts.census.gov/qfd/states/35000.html>
- Ward, C. L. (2008). Parental perceptions of childhood overweight in the Mexican American population: An integrative review. *Journal of School Nursing, 24*, 407-416.
- Wickrama, K. A. S., Elder, G. H., Jr., & Abraham, W. T. (2007). Rurality and ethnicity in adolescent physical illness: Are children of the growing rural Latino population at excess health risk? *Journal of Rural Health, 23*, 228-237.
- Williamson, S., & Delin, C. (2001). Young children's figural selections: Accuracy of reporting and body size dissatisfaction. *International Journal of Eating Disorders, 29*, 80-84.